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VOLUME III · JANUARY 1964

Part 73—Radio Broadcast Services.

Part 74—Experimental, Auxiliary, and Special Broadcast Services.

Introduction

Volume III of the Federal Communications Commission's Rules and Regulations contains all the rules for Radio Broadcast Services, and Experimental, Auxiliary, and Special Broadcast Services. This edition is a revision of the September 1961 issue and includes all amendments adopted by the Commission through December 31, 1963.

When this Volume is amended, each amended section or subsection will be followed by a statement of the effective date of the amendment. The number of the transmittal sheet covering the substitute pages will appear in the lower corner of each page. Substitute pages incorporating amendments to these rules will be mailed by the Superintendent of Documents, without request, to all purchasers of the Volume.

This Volume supersedes the edition of September 1961, and no further amendments to that edition will be issued.

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The FCC Rules and Regulations are grouped into ten volumes and sold in volume units by the Superintendent of Documents, Government Printing Office. The price of the volume entitles the purchaser to receive its amended pages for an indefinite period. The ten volumes are comprised of individual Parts, as follows:

VOLUME I

Part 0, Commission Organization.

Part 1, Practice and Procedure.

Part 13, Commercial Radio Operators.

Part 17, Construction, Marking, and Lighting of Antenna Structures.

VOLUME II

Part 2, Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

Part 5, Experimental Radio Services (other than Broadcast).

Part 15, Radio Frequency Devices.

Part 18, Industrial, Scientific, and Medical Equipment.

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VOLUME IV

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Part 93, Land Transportation Radio Services.

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Part 95, Citizens Radio Service.

Part 97, Amateur Radio Service.

Part 99, Disaster Communications Service.

VOLUME VII

Part 21, Domestic Public Radio Services (other than Maritime Mobile).

Part 23, International Fixed Public Radiocommunication Services.

Part 25, Satellite Communications.

VOLUME VIII

Part 31, Uniform System of Accounts for Class A and Class B Telephone Companies.

Part 33, Uniform System of Accounts for Class C Telephone Companies.

VOLUME IX *(Printing postponed indefinitely)*

Part 34, Uniform System of Accounts for Radiotelegraph Carriers.

Part 35, Uniform System of Accounts for Wire-Telegraph and Ocean-Cable Carriers.

VOLUME X

Part 41, Telegraph and Telephone Franks.

Part 42, Preservation of Records of Communication Common Carriers.

Part 43, Reports of Communication Common Carriers and Certain Affiliates.

Part 51, Occupational Classification and Compensation of Employees of Class A and Class B Telephone Companies.

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Part 61, Tariffs.

Part 62, Applications to Hold Interlocking Directorates.

Part 63, Extension of Lines and Discontinuance of Service by Carriers.

Part 64, Miscellaneous Rules Relating to Common Carriers.

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RULES AND REGULATIONS

Part 73 | *Radio Broadcast Services*

JANUARY 1964

FEDERAL COMMUNICATIONS COMMISSION

NOTE: Part 3 was redesignated as Part 73 by Order adopted December 13, 1963, effective December 21, 1963. Section numbers were not otherwise changed.

Contents—PART 73

Subpart A—Standard Broadcast Stations

Subpart C—Noncommercial Educational FM Broadcast Stations

SUBPART G—EMERGENCY ACTION NOTIFICATION SYSTEM AND THE EMERGENCY BROADCAST SYSTEM

AUTHORITY: §§ 73.1 to 73.981 issued under sec. 4 and 303, 48 Stat. 1066, as amended, 1082, as amended; 47 U.S.C. 154, 303. Interpret or apply secs. 301, 303, 307, 48 Stat.1081, 1082, as amended, 1083, as amended, 47 U.S.C. 301, 303, 307. Other statutory and executive order provisions authorizing or interpreted or applied by specific sections are cited to text.

SUBPART A—STANDARD BROADCAST STATIONS

DEFINITIONS

§ 73.1 Standard broadcast station.

The term "standard broadcast station" means a broadcasting station licensed for the transmission of radiotelephone emissions primarily intended to be received by the general public and operated on a channel in the band 535–1605 kilocycles.

§ 73.2 Standard broadcast band.

The term "standard broadcast band" means the band of frequencies extending from 535 to 1605 kilocycles.

§ 73.3 Standard broadcast channel.

The term "standard broadcast channel" means the band of frequencies occupied by the carrier and two side bands of a broadcast signal with the carrier frequency at the center. Channels shall be designated by their assigned carrier frequencies. The 107 carrier frequencies assigned to standard broadcast stations shall begin at 540 kilocycles and be in successive steps of 10 kilocycles.

§ 73.4 Dominant station.

The term "dominant station" means a Class I station, as defined in § 73.21, operating on a clear channel.

§ 73.5 Secondary station.

The term "secondary station" means any station except a Class I station operating on a clear channel.

§ 73.6 Daytime.

The term "daytime" means that period of time between local sunrise and local sunset.

§ 73.7 Nighttime.

The term "nighttime" means that period of time between local sunset and 12 midnight local standard time.

§ 73.8 Sunrise and sunset.

The terms "sunrise and sunset" mean, for each particular location and during any particular month, the time of sunrise and sunset as specified in the instrument of authorization.

§ 73.9 Broadcast day.

The term "broadcast day" means that period of time between local sunrise and 12 midnight local standard time.

§ 73.10 Experimental period.

The term "experimental period" means that time between 12 midnight and local sunrise. This period may be used for experimental purposes in testing and maintaining apparatus by the licensee of any standard broadcast station on its assigned frequency and with its authorized power, provided no interference is caused to other stations maintaining a regular operating schedule within such period. No station licensed for "daytime" or "specified hours" of operation may broadcast any regular or scheduled program during this period.

§ 73.11 Service areas.

(a) The term "primary service area" of a broadcast station means the area in which the groundwave is not subject to objectionable interference or objectionable fading.

(b) The term "secondary service area" of a broadcast station means the area served by the skywave and not subject to objectionable interference. The signal is subject to intermittent variations in intensity.

(c) The term "intermittent service area" of a broadcast station means the area receiving service from the groundwave but beyond the primary service area and subject to some interference and fading.

§ 73.12 Portable transmitter.

The term "portable transmitter" means a transmitter so constructed that it may be moved about conveniently from place to place, and is in fact so moved about from time to time, but not ordinarily used while in motion. In the standard broadcast band, such a transmitter is used in making field intensity measurements for locating a transmitter site for a standard broadcast station. A portable broadcast station will not be licensed in the standard broadcast band for regular transmission of programs intended to be received by the public.

§ 73.13 Auxiliary transmitter.

The term "auxiliary transmitter" means a transmitter maintained only for transmitting the regular programs of a station in case of failure of the main transmitter.

§ 73.14 Technical definitions.

(a) *Combined audio harmonics.* The term "combined audio harmonics" means the arithmetical sum of the amplitudes of all the separate harmonic components. Root sum square harmonic readings may be accepted under conditions prescribed by the Commission.

(b) *Effective field.* The term "effective field" or "effective field intensity" is the root-mean-square (RMS) value of the inverse distance fields at a distance of 1 mile from the antenna in all directions in the horizontal plane.

(c) *Operating power.* "Operating power" is the power that is actually supplied to the radio station antenna.

(d) *Maximum rated carrier power.* "Maximum rated carrier power" is the maximum power at which the transmitter can be operated satisfactorily and is determined by the design of the transmitter and the type and number of vacuum tubes used in the last radio stage.

(e) *Plate input power.* "Plate input power" means the product of the direct plate voltage applied to the tubes in the last radio stage and the total direct current flowing to the plates of these tubes, measured without modulation.

(f) *Antenna power.* "Antenna input power" or "antenna power" means the product of the square of the antenna current and the antenna resistance at the point where the current is measured.

(g) *Antenna current.* "Antenna current" means the radio-frequency current in the antenna with no modulation.

(h) *Antenna resistance.* "Antenna resistance" means the total resistance of the transmitting antenna system at the operating frequency and at the point at which the antenna current is measured.

(i) *Modulator stage.* "Modulator stage" means the last amplifier stage of the modulating wave which modulates a radio-frequency stage.

(j) *Modulated stage.* "Modulated stage" means the radio-frequency stage to which the modulator is coupled and in which the continuous wave (carrier wave) is modulated in accordance with the system of modulation and the characteristics of the modulating wave.

(k) *Last radio stage.* "Last radio stage" means the oscillator or radio-frequency-power amplifier stage which supplies power to the antenna.

(l) *Percentage modulation (amplitude).* "Percentage modulation" with respect to an amplitude modulated wave means the ratio of half the difference between the maximum and minimum amplitudes of the amplitude modulated wave to the average amplitude expressed in percentage.

(m) *Maximum percentage of modulation.* "Maximum percentage of modulation" means the greatest percentage of modulation that may be obtained by a transmitter without producing in its output harmonics of the modulating frequency in excess of those permitted by these regulations.

(n) *High level modulation.* "High level modulation" is modulation produced in the plate circuit of the last radio stage of the system.

(o) *Low level modulation.* "Low level modulation" is modulation produced in an earlier stage than the final.

(p) *Plate modulation.* "Plate modulation" is modulation produced by introduction of the modulating wave into the plate circuit of any tube in which the carrier frequency wave is present.

(q) *Grid modulation.* "Grid modulation" is modulation produced by introduction of the modulating wave into any of the grid circuits of any tube in which the carrier frequency wave is present.

(r) *Blanketing.* Blanketing is that form of interference which is caused by the presence of a broadcast signal of 1 v/m or greater intensity in the area adjacent to the antenna of the transmitting station. The 1 v/m contour is referred to as the blanket contour and the area within this contour is referred to as the blanket area.

§ 73.15 NARBA and the U.S./Mexican Agreement.

The term "NARBA" where used in this part means the North American Regional Broadcasting Agreement signed at Washington, D.C., November 15, 1950, which entered into force April 19, 1960 and to which the signatory countries are The Bahama Islands and Jamaica, Canada, Cuba, the Dominican Republic, and the United States of America. The term "U.S./Mexican Agreement" where used in this part means the Agreement

between the United States of America and the United Mexican States concerning Radio Broadcasting in the Standard Broadcast Band, signed at Mexico, D.F., January 29, 1957, which entered into force June 9, 1961.

ADMINISTRATIVE PROCEDURE

§ 73.17 Cross reference.

See Subpart D of Part 1 of this chapter, for general requirements as to applications, filing of applications and description of application forms, other forms and information to be filed with the Commission, the manner in which applications are processed, and provisions applying to action on applications. See § 1.1111 of Subpart G of that part for the fees to be paid in connection with applications for facilities in the service covered in this subpart.

§ 73.18 Notification of filing of applications.

(a) *Radio Astronomy and Radio Research Installations.* In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new standard broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by 39°15′ N on the north, 78°30′ W on the east, 37°30′ N on the south, and 80°30′ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P. O. Box No. 2, Green Bank, West Virginia, 24944, in writing, of the technical particulars of the proposed station. Such notifications shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the observatory. After receipt of such applications, the Commission will allow a period of 20 days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(b) *Location on Government land.* Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

[*The text of § 73.18 redesignated (a) and (b) added eff. 3-20-67; III(64)-16*]

ALLOCATION OF FACILITIES; AUTHORIZATIONS

§ 73.21 Classes of standard broadcast channels and stations.

(a) *Clear channel.* A clear channel is one on which the dominant station or stations render service over

wide areas, and which are cleared of objectionable interference within their primary service areas and over all or a substantial portion of their secondary service areas. Stations operating on these channels are classified as follows:

(1) *Class I station.* A Class I station is a dominant station operating on a clear channel and designed to render primary and secondary service over an extended area and at relatively long distances. Its primary service area is free from objectionable interference from other stations on the same and adjacent channels, and its secondary service area free from interference except from stations on adjacent channels, and from stations on the same channel in accordance with the channel designation in §§ 73.25 or 73.182. The operating power shall not be less than 10 kilowatts nor more than 50 kilowatts. (Also see § 73.25(a) for further power limitation.)

(2) *Class II station.* A Class II station is a secondary station which operates on a clear channel (see § 73.25) and is designed to render service over a primary service area which is limited by and subject to such interference as may be received from Class I stations. Whenever necessary a Class II station shall use a directional antenna or other means to avoid interference with Class I stations and with other Class II stations, in accordance with § 73.182 (and § 73.22 in the case of Class II–A stations). Class II stations are divided into three groups:

(i) *Class II–A station.* A Class II–A station is an unlimited time Class II station operating on one of the clear channels listed in § 73.22 and assigned to a community within a state specified in the Table contained in that section. A Class II–A station shall operate with power of not less than 10 kilowatts nighttime nor more than 50 kilowatts at any time.

(ii) *Class II–B station.* A Class II–B station is an unlimited time Class II station other than those included in Class II–A. A Class II–B station shall operate with power not less than 0.25 kilowatt nor more than 50 kilowatts.

NOTE: The Class II station operating unlimited time on 760 kc/s at San Diego, Calif., shall be limited to a power of 5 kw and the Class II station operating unlimited time on 750 kc/s at Anchorage, Alaska, shall be limited to a power of 10 kw. Both stations shall protect the I–A station on the same frequency to its 0.5 mv/m 50 percent skywave contour.

(iii) *Class II–D station.* A Class II–D station is a Class II station operating daytime or limited time. A Class II–D station shall operate with power not less than 0.25 kilowatt nor more than 50 kilowatts.

(b) *Regional channel.* A regional channel is one on which several stations may operate with powers not in excess of 5 kilowatts. The primary service area of a station operating on any such channel may be limited to a given field intensity contour as a consequence of interference.

(1) *Class III station.* A Class III station is a station which operates on a regional channel and is designed to render service primarily to a principal center of population and the rural area contiguous thereto. Class III stations are subdivided into two classes.

(i) *Class III–A station.* A class III–A station is a Class III station which operates with power not less than 1 kilowatt nor more than 5 kilowatts and the service area of which is subject to interference in accordance with § 73.182.

(ii) *Class III–B station.* A Class III–B station is a Class III station which operates with power not less than 0.5 kilowatt, nor more than 1 kilowatt night and 5 kilowatts daytime, and the service area of which is subject to interference in accordance with § 73.182.

(c) *Local channel.* A local channel is one on which several stations operate with powers no greater than provided in this paragraph. The primary service area of a station operating on any such channel may be limited to a given field intensity contour as a consequence of interference. Such stations operate with power no greater than 250 watts nighttime, and power daytime no greater than 1 kilowatt (or no greater than 250 watts if the station is located 100 kilometers (62 miles) or closer to the Mexican border, or in the area of the state of Florida south of 28 degrees north latitude and between 80 and 82 degrees west longitude).

(1) *Class IV station.* A Class IV station is a station operating on a local channel and designed to render service primarily to a city or town and the suburban and rural areas contiguous thereto. The power of a station of this class shall not be less than 0.25 kilowatt, and not more than 0.25 kilowatt nighttime and 1 kilowatt daytime, and its service area is subject to interference in accordance with § 73.182. Stations which are licensed to operate with 100 watts day or night may continue to do so.

NOTE 1: Under NARBA, the power ceiling for Class IV stations is 250 watts daytime as well as nighttime. The US-Mexican Agreement permits such stations to operate with up to 1 kilowatt power daytime if they are located further than 100 kilometers (62 miles) from the Mexican border. Pursuant to the US-Mexican Agreement and informal coordination with the other NARBA signatories, the Commission will consider applications for Class IV stations on local channels with daytime powers more than 250 watts, up to 1 kilowatt, if such station is to be located outside of the areas specified in paragraph (c) of this section, and if no objectionable interference would be caused (under the standards set forth in the pertinent international agreement) to a duly notified station in Mexico, Haiti, or any foreign country signatory to NARBA.

NOTE 2: All authorizations of new or changed Class I–B, Class II–B, Class II–D, Class III or Class IV facilities after October 30, 1961, are subject to whatever interference may be received from, or whatever overlap of 2.0 mv/m and 25 mv/m groundwave contours or overlap of 25 mv/m groundwave contours may be involved with, previously or subsequently authorized Class II–A facilities.

[*§ 73.21(c)(1) as amended eff. 7–11–66; III(64)–13*]

§ 73.22 Assignment of Class II–A stations.

(a) *Table of assignments.* One Class II–A station may be assigned on each channel listed in the following table within the designated State or States:

Channel (kc/s)	Location of existing Class I station	State(s) in which Class II–A assignment may be applied for
670	Chicago, Ill.	Idaho.
720	Chicago, Ill.	Nevada or Idaho.
780	Chicago, Ill.	Nevada.
880	New York, N.Y.	North Dakota, South Dakota, or Nebraska.
890	Chicago, Ill.	Utah.
1020	Pittsburgh, Pa.	New Mexico.
1030	Boston, Mass.	Wyoming.
1100	Cleveland, Ohio.	Colorado.
1120	St. Louis, Mo.	California or Oregon.
1180	Rochester, N.Y.	Montana.
1210	Philadelphia, Pa.	Kansas, Nebraska, or Oklahoma.

(b) *Minimum service to "white" areas.* No Class II–A station shall be assigned unless at least 25 percent of its nighttime interference-free service area or at least 25 percent of the population residing therein receives no other interference-free nighttime primary service.

(c) *Power.* Class II–A stations shall operate with not less than 10 kw power nighttime.

(d) *Protection.* (1) *Protection by Class II–A stations to other stations.* The co-channel Class I–A station shall be protected by the Class II–A station to its 0.1 mv/m contour daytime and its 0.5 mv/m 50 percent skywave contour nighttime. All other stations of any class authorized on or before October 30, 1961, shall normally receive protection from objectionable interference from Class II–A stations as provided in § 73.182.

(2) *Protection to Class II–A stations.* A Class II–A station shall normally receive daytime protection to its 0.5 mv/m groundwave contour and nighttime protection to the contour to which it is limited by the co-channel Class I–A station.

(e) *Applications not complying with this section.* Applications for Class II–A stations which do not meet the requirements of paragraphs (b) and (c) of this section will be returned without further consideration.

§ 73.23 Time of operation of the several classes of stations.

The several classes of standard broadcast stations may be licensed to operate in accordance with the following:

(a) Unlimited time permits operation without a maximum limit as to time.

(b) Limited time is applicable to Class II (secondary) stations operating on a clear channel with facilities authorized before November 30, 1959. It permits operation of the secondary station during daytime, and until local sunset if located west of the dominant station on the channel, or if located east thereof, until sunset at the dominant station, and in addition during night hours, if any, not used by the dominant station or stations on the channel.

(c) Daytime permits operation during the hours between average monthly local sunrise and average monthly local sunset. Daytime stations operating on local channels with a power of 0.25 kw may, upon notification to the Commission and to the Engineer in Charge of the radio district in which they are located, operate at hours beyond those specified in their license.

(d) Sharing time permits operation during hours which are so restricted by the station license as to require a division of time with one or more other stations using the same channel.

(e) Specified hours means that the exact operating hours are specified in the license. (The minimum hours that any station shall operate are specified in § 73.71.) Specified hours stations operating on local channels with a power of 0.25 kw, except those sharing time with other stations may, upon notification to the Commission and the Engineer in Charge of the radio district in which they are located, operate at hours beyond those specified in their license.

[§ 73.23(c) & (e) *as amended eff. 7–11–66; III(64)–13*]

§ 73.24 Broadcast facilities; showing required.

An authorization for a new standard broadcast station or increase in facilities of an existing station will be issued only after a satisfactory showing has been made in regard to the following, among others:

(a) That the proposed assignment will tend to effect a fair, efficient, and equitable distribution of radio service among the several states and communities.

(b) (1) That a proposed new daytime station (or change in frequency of an existing daytime station) complies with the standards of station separation set forth in § 73.37.

(2) That a proposed change in daytime facilities (other than a change in frequency or a Class IV station increasing daytime power) does not involve overlap of contours prohibited by § 73.37 with any other station in any area where there is not already such overlap between the two stations.

(3) That a proposed new nighttime operation or change in frequency of any existing nighttime operation (except Class IV stations) would (i) not cause objectionable interference to any existing station (see § 73.182(o)); and (ii) provide a first primary AM service to at least 25 percent of the area within the proposed interference free nighttime service area.

(4) That a proposed change in nighttime facilities (other than a change in frequency) would not cause objectionable interference to any other station (see § 73.182(o)).

NOTE: The preceding provisions of this paragraph (b) shall not be applied to applications for new Class II–A stations or to applications accepted for filing before July 13, 1964. With respect to such applications, a showing must be made that:

(a) Objectionable interference will not be caused to existing stations or that, if interference will be caused, the need for the proposed service outweighs the need for the service which will be lost by reason of such interference. (For special provisions concerning interference from Class II–A stations to stations of other classes authorized after October 30, 1961, see Note 2 to §§ 73.21 and 73.22 (d).) (For determining objectionable interference, see §§ 73.182 and 73.186.)

(b) The proposed station will not suffer interference to such an extent that its service would be reduced to an unsatisfactory degree.

[§ 73.24(b) *as amended eff. 8–13–64; III(64)–2*]

(c) That the applicant is financially qualified to construct and operate the proposed station.

(d) That the applicant is legally qualified. That the applicant (or the person or persons in control of an applicant corporation or other organization) is of good character and possesses other qualifications sufficient to provide a satisfactory public service.

(e) That the technical equipment proposed, the location of the transmitter, and other technical phases of operation comply with the regulations governing the same, and the requirements of good engineering practice. (See technical regulations of this subpart and § 73.188.)

(f) That the facilities sought are subject to assignment as requested under existing international agreements and the rules and regulations of the Commission.

(g) That the population within the 1 v/m contour does not exceed 1.0 percent of the population within the 25 mv/m contour: *Provided, however,* That where the number of persons within the 1 v/m contour is 300 or less the provisions of this paragraph are not applicable.

(h) That, in the case of an application for a Class II station, the proposed station would radiate, during two hours following local sunrise and two hours preceding local sunset, in any direction toward the 0.1 mv/m groundwave contour of a co-channel United States Class I station, no more than the maximum radiation values permitted under the provisions of § 73.187.

(i) That, in the case of an application for a Class II–A station (see § 73.22), 25 percent or more of the area or population within the nighttime interference-free service contour of the proposed station receives no nighttime interference-free primary service from another station.

(j) That the public interest, convenience and necessity will be served through the operation under the proposed assignment.

§ 73.25 Clear channels; Classes I and II stations.

The frequencies in the following tabulations are designated as clear channels and assigned for use by the Classes of stations given:

(a) On each of the following channels, one Class I station will be assigned, operating with power of 50 kw: 640, 650, 660, 670, 700, 720, 750, 760, 780, 820, 830, 840, 870, 880, 890, 1020, 1030, 1040, 1100, 1120, 1160, 1180, 1200, and 1210 kc/s. In addition, on the channels listed in this paragraph, Class II stations may be assigned as follows:

(1) On 670, 720, 780, 880, 890, 1020, 1030, 1100, 1120, 1180, and 1210 kc/s, one Class II–A unlimited time station, assigned and located pursuant to the provisions of § 73.22.

(2) On the channel 750 kc/s, an unlimited time Class II station located at Anchorage, Alaska.

(3) On the channel 760 kc/s, an unlimited time Class II station located at San Diego, California.

(4) On any of the channels listed in this paragraph (to the extent consistent with the assignments provided in subparagraphs (1), (2), and (3) of this paragraph), unlimited time Class II stations located in Alaska, Hawaii, Virgin Islands, or Puerto Rico, which will not deliver more than 5 microvolts per meter groundwave day or night or 25 microvolts per meter 10 percent time skywave at night at any point within the continental limits of the United States excluding Alaska.

(5) On any of the channels listed in this paragraph (to the extent consistent with the Class I, Class II–A, and Anchorage and San Diego Class II assignments provided in this paragraph, and, in the case of limited time stations, subject to the restrictions contained in § 73.38), limited time and daytime only stations, as follows:

(i) In Alaska, Hawaii, Puerto Rico, and Virgin Islands.

(ii) Within the continental United States excluding Alaska, where the station would operate with facilities authorized as of October 30, 1961.

NOTE 1: In view of special circumstances arising from the provision of pre-sunrise broadcast service on 640 kc/s at Ames, Iowa, applications will be accepted for broadcast operations on 640 kc/s between 6:00 a.m., c.s.t., and local sunrise at Ames, Iowa, with not to exceed 1 kw power: *Provided,* That such applications will be acted upon only after and in light of the decision reached in Docket No. 11290.

NOTE 2: In view of special circumstances arising from the provision of a service during some nighttime hours by a Class II station operating on 830 kc/s at New York, N.Y. (i.e., from 6:00 a.m. to local sunrise and from sunset at Minneapolis to 10:00 p.m., c.s.t.), applications will be accepted for such operation: *Provided,* That they will be acted upon only after and in light of the decision reached in Docket No. 11227.

NOTE 3: On the frequency 770 kc/s, two Class I stations may be assigned.

NOTE 4: See NARBA concerning priority for Canadian Class I–B and Cuban Class I–C assignments on 640 kc/s.

NOTE 5: See NARBA concerning Cuban Class II–E assignments on 660, 670, 760, 780, 830, 1020, 1030, and 1120 kc/s.

NOTE 6: See the U.S.-Mexican Agreement concerning Mexican use of 660, 760, and 830 kc/s.

(b) To each of the following channels there may be assigned Class I and Class II stations: 680, 710, 810, 850, 940, 1000, 1060, 1070, 1080, 1090, 1110, 1130, 1140, 1170, 1190, 1500, 1510, 1520, 1530, 1540, 1550, and 1560 kc/s.

NOTE 1: See NARBA and the U.S.-Mexican Agreement concerning a Cuban Class II–E assignment on, and Mexican use of, 1030 kc/s.

NOTE 2: Class I and Class II stations on 1540 kc/s shall deliver not over 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent time skywave at any point of land in the Bahama Islands, and such stations operating nighttime (i.e., sunset to sunrise at the location of the Class II station) shall be located not less than 650 miles from the nearest point of land in the Bahama Islands.

(c) For Class II stations which will not deliver over 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent time skywave at any point on the Canadian border, and provided that such stations operating nighttime (i.e., sunset to sunrise at the location of the Class II station) are located not less than 650

miles from the nearest point on the Canadian border, 690, 740, 860, 990, 1010, and 1580 kc/s.

NOTE: See NARBA concerning priority for Cuban Class I–B assignment on 1010 kc/s, Class I–C assignments on 690 and 860 kc/s, and Class I–D assignment on 740 kc/s.

(d) The frequencies 730, 800, 900, 1050, 1220, and 1570 kc/s, for Class II stations which operate daytime only, which will not deliver at any point on the Mexican border over 5 microvolts per meter groundwave, and which operate with no more than the following powers:

(1) If not located within the areas specified in subparagraph (2) of this paragraph, 5 kilowatts.

(2) If operating on any of the following frequencies within the following specified areas, no more than one kilowatt:

(i) 800 kc/s: less than 1319 kilometers (820 miles) from Ciudad Juarez, Chihuahua.

(ii) 1050 kc/s: less than 998 kilometers (620 miles) from Monterrey, Nuevo Leon.

(iii) 1570 kc/s: less than 998 kilometers (620 miles) from Ciudad Acuna, Coahuila.

NOTE: See the U.S./Mexican Agreement concerning specific U.S. unlimited time Class II assignments on each of the following channels: 730, 800, 900, 1050, and 1220 kc/s.

(e) The frequency 540 kc/s, for Class II stations which will not deliver a signal of more than 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent skywave at any point on the Canadian border, nor more than 10 microvolts per meter daytime or 50 microvolts per meter nighttime at any point on the Mexican border; *Provided*, That stations operating at night shall be located:

(1) Within the continental United States including Alaska; and

(2) Not less than 650 miles from the nearest point on the Canadian border; and

(3) North of the parallel 35° N. if west of the meridian 93° W., or north of the parallel 30° N. if east of said meridian.

NOTE: See § 2.106 of this chapter with respect to use of 540 kc/s.

§ 73.26 Regional channels: Classes III–A and III–B stations.

The following frequencies are designated as regional channels and are assigned for use by Class III–A and III–B stations: 550, 560, 570, 580, 590, 600, 610, 620, 630, 790, 910, 920, 930, 950, 960, 970, 980, 1150, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1350, 1360, 1370, 1380, 1390, 1410, 1420, 1430, 1440, 1460, 1470, 1480, 1590, and 1600 kc/s.

NOTE: See NARBA concerning Cuban Class I–C assignment on 550 kc/s, Class I–D assignments on 570, 590, 630, 920, 950 and 980 kc/s, and Class III–E assignments on 790, 910, and 1150 kc/s.

§ 73.27 Local channels: Class IV stations.

The following frequencies are designated as local channels and are assigned for use by Class IV stations: 1230, 1240, 1340, 1400, 1450, and 1490 kc/s.

NOTE: See NARBA concerning Cuban Class IV–E assignments on 1240 and 1340 kc/s.

§ 73.28 Assignment of stations to channels.

(a) With respect to applications for new Class II–A stations, and other applications accepted for filing before July 13, 1964, the individual assignments of stations to channels which may cause interference to other United States stations only shall be made in accordance with the provisions of this part for the respective classes of stations involved. (For determining objectionable interference, see §§ 73.22, and 73.182 through 73.186.)

(b) Except as provided in § 73.21(c) concerning Class IV stations, no assignment of a standard broadcast station will be made which would be inconsistent with the provisions of NARBA or the U.S./Mexican Agreement. Similarly, as long as protection for U.S. assignments from Haitian assignments continues, no U.S. assignment of a standard broadcast station will be made which would cause objectionable interference (under the standards set forth in NARBA) to a duly notified Haitian station. (The Haitian stations considered to be duly notified are those notified and accepted in accordance with past agreements, and those subsequently notified in accordance with the procedures and understandings which have pertained thus far.) In all cases where an individual assignment may cause interference with, or may involve a channel assigned for priority of use by, a station in another North American country, the classifications, allocation requirements, and engineering standards set forth in NARBA and the U.S./Mexican Agreement shall be observed.

NOTE: (a) In general, an application for a standard broadcast station assignment, the grant of which would be consistent with the provisions of NARBA and the U.S./Mexican Agreement and would not cause objectionable interference to a duly notified station in Haiti, will be considered and acted upon by the Commission in accordance with its rules and established procedure for action upon such applications. However, in particular cases such applications may also present considerations of an international nature which require that a different procedure be followed. In such cases the procedure to be followed will be determined by the Commission in the light of the special considerations involved.

(b) With respect to applications for facilities which would involve conflict with NARBA only as to a country which has signed but not completed formal ratification of that agreement, and facilities which would cause objectionable interference to a duly notified Haitian station, special provisions of a procedural nature are contained in § 1.570 of this chapter.

(c) Engineering standards now in force domestically differ in some respects from those specified for international purposes. The engineering standards specified for international purposes (in NARBA and the U.S./Mexican Agreement) will be used to determine: (1) The extent to which interference might be caused by a proposed station in the United States to a station in another country of the North American Region; and (2) whether the United States should register an objection to any new or changed assignment notified by another country of the North American Region. The

domestic standards in effect in the United States will be used to determine the extent to which interference exists or would exist from a foreign station where the value of such interference enters into a calculation of: (1) the service to be rendered by a proposed operation in the United States; or (2) the permissible interfering signal from one station in the United States to another United States station.

(d) With respect to applications for new Class II–A stations, and other applications accepted for filing before July 13, 1964, the following shall apply: Upon showing that a need exists, a Class II, III or IV station may be assigned to a channel available for such class, even though interference will be received within its normally protected contour, subject to the following conditions: (1) No objectionable interference will be caused by the proposed station to existing stations or that if interference will be caused, the need for the proposed service outweighs the needs for the service which will be lost by reason of such interference; (2) Primary service will be provided to the community in which the proposed station is to be located; (3) The interference received does not affect more than 10 percent of the population in the proposed station's normally protected primary service area; however, in the event that the nighttime interference received by a proposed Class II or III station would exceed this amount, then an assignment may be made if the proposed station would provide either a standard broadcast nighttime facility to a community not having such a facility or if 25 percent or more of the nighttime primary service area of the proposed station is without primary nighttime service. This subparagraph (3) of this paragraph shall not apply to existing Class IV stations on local channels applying for an increase in power above 250 watts, nor to new Class IV stations proposing power in excess of 250 watts with respect to population in the primary service area outside the equivalent 250 watt, 0.5 mv/m contour.

[*§ 73.28 (a) & (d) amended eff. 8–13–64; III (64)–2*];

§ 73.29 Class IV stations on regional channels.

No license will be granted for the operation of a Class IV station on a regional channel: *Provided, however*, That Class IV stations presently authorized to operate on regional channels will not be required to change frequency, or power but will not be protected against interference from Class III stations.

§ 73.30 Station location and program origination.

(a) Except as provided in paragraph (b) of this section, each standard broadcast station will be licensed to serve primarily a particular city, town, political subdivision, or community which will be specified in the station license and the station will be considered to be located in such place. Unless licensed as a synchronous amplifier transmitter, each station shall maintain a studio, which will be known as the main studio, in the place where the station is located provided that the main studio may be located at the transmitter site whether or not the transmitter site is in the place where the station is located. A majority (computed on the basis of duration and not number) of a station's programs or in the case of a station affiliated with a network ⅔ of such station's non-network programs, whichever is smaller, shall originate from the main studio or from the other studios or remote points situated in the place where the station is located.

(b) Stations will be licensed to serve more than one city, town, political subdivision, or community only where a satisfactory showing is made that each such place meets all the requirements of the rules and regulations of this subpart with respect to the location of main studios; that the station can and will originate a substantial number of local live programs from each such place; and that the requirements as to origination of programs contained in paragraph (a) of this section would place an unreasonable burden on the station if it were licensed to serve only one city, town, political subdivision, or community. A station licensed to serve more than one place shall be considered to be located in and shall maintain main studios in each such place. With respect to such station the requirements as to origination of programs contained in paragraph (a) of this section shall be satisfied by the origination of programs from any or all of the main studios or from other studios and remote points situated in any or all of the places in which the main studios are located.

(c) The transmitter of each standard broadcast station shall be so located that primary service is delivered to the borough or city in which the main studio is located in accordance with the rules and regulations of this subpart.

§ 73.31 Authority to move main studio.

The licensee of a station shall not move its main studio outside the borders of the borough or city, state, district, territory, or possession in which it is located, unless such move is to the location of the station's transmitter, without first securing a modification of construction permit or license. The licensee shall promptly notify the Commission of any other change in location of the main studio.

§ 73.32 Special experimental authorizations.

(a) Special experimental authorization may be issued to the licensee of a standard broadcast station in addition to the regular license upon informal application therefor and upon a satisfactory showing in regard to the following, among others:

(1) That the applicant has a program of research and experimentation which indicates reasonable promise of contribution to the development and practical application of broadcasting, and will be in addition to and advancement of the work that can be accomplished under its regular license.

(2) That the experimental operation and experimentation will be under the direct supervision of a qualified engineer with an adequate staff of engineers qualified to carry on the program of research and experimentation.

(3) That the public interest, convenience, and necessity will be served by granting the authorization requested.

(b) In case a special experimental authorization permits additional hours of operation, no licensee shall transmit any commercial or sponsored program or make any commercial announcement during such time of operation. In case of other additional facilities, no additional charge shall be made by reason of transmission with such facilities.

(c) A special experimental authorization will not be extended after the actual experimentation is concluded.

(d) The program of research and experimentation as outlined in the application for a special experimental authorization shall be adhered to in the main unless the licensee is authorized to do otherwise by the Commission.

(e) The Commission may require from time to time a broadcast station holding such experimental authorization to conduct experiments that are deemed desirable and reasonable.

(f) A supplemental report shall be filed with and made a part of each application for an extension of a special experimental authorization and shall include statements of the following:

(1) Comprehensive summary of all research and experimentation conducted.

(2) Conclusions and outline of proposed program for further research and development.

(3) Comprehensive summary and conclusions as to the social and economic effects of its use.

§ 73.33 Antenna systems; showing required.

(a) An application for authority to install a broadcast antenna shall specify a definite site and include full details of the antenna design and expected performance. (Site-to-be-determined applications which were on file prior to October 28, 1953, may be granted conditioned upon the filing within 60 days of such grant of an application for modification of permit specifying a site conforming to Commission's rules and standards.)

(b) All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application. If the station is using a directional antenna, a proof of performance must also be filed.

§ 73.34 Normal license period.

(a) Licenses for standard broadcast stations ordinarily will be issued for a period of three years and, when regularly renewed, at three year intervals thereafter: *Provided, however*, That, if the Commission finds that the public interest, convenience, and necessity will be served thereby, it may issue either an initial license or a renewal thereof for a lesser term. When regularly issued or renewed, licenses will be issued to expire at the hour of 3:00 a.m., eastern standard time, in accordance with the following schedule, and at three year intervals thereafter.

(1) For stations located in Florida, Puerto Rico and Virgin Islands, February 1, 1964.

(2) For stations located in Alabama and Georgia, April 1, 1964.

(3) For stations located in Arkansas, Louisiana and Mississippi, June 1, 1964.

(4) For stations located in Tennessee, Kentucky and Indiana, August 1, 1964.

(5) For stations located in Ohio and Michigan, October 1, 1964.

(6) For stations located in Illinois and Wisconsin, December 1, 1964.

(7) For stations located in Iowa and Missouri, February 1, 1965.

(8) For stations located in Minnesota, North Dakota, South Dakota, Montana and Colorado, April 1, 1965.

(9) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1965.

(10) For stations located in Texas, August 1, 1965.

(11) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico, and Idaho, October 1, 1965.

(12) For stations located in California, December 1, 1965.

(13) For stations located in Washington, Oregon, Alaska, Guam and Hawaii, February 1, 1966.

(14) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont, April 1, 1966.

(15) For stations located in New Jersey and New York, June 1, 1966.

(16) For stations located in Delaware and Pennsylvania, August 1, 1966.

(17) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1966.

(18) For stations located in North Carolina, South Carolina, December 1, 1966.

§ 73.35 Multiple ownership.

No license for a standard broadcast station shall be granted to any party (including all parties under common control) if:

(a) Such party directly or indirectly owns, operates, or controls one or more standard broadcast stations and the grant of such license will result in any overlap of the predicted or measured 1 mv/m groundwave contours of the existing and proposed stations, computed in accordance with § 73.183 or § 73.186; or

(b) Such party, or any stockholder, officer or director of such party, directly or indirectly owns, operates, controls, or has any interest in, or is an officer or director of any other standard broadcast station if the grant of such license would result in a concentration of control of standard broadcasting in a manner inconsistent with public interest, convenience, or necessity. In determining whether there is such a concentration of control, consideration will be given to the facts of each case with particular reference to such factors as the size, extent and location of areas served, the number of people served, classes of stations involved and the extent of other competitive service to the areas in question. The Commission, however, will in any event consider that there would be such a concentration of control contrary to the public interest, convenience or necessity for any party or any of its stockholders, officers or directors to have a direct or indirect interest in, or be stockholders, officers, or directors of, more than seven standard broadcast stations.

NOTE 1: The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

NOTE 2: In applying the foregoing provisions to the stockholders of a corporation which has more than 50 voting stockholders, only those stockholders need be considered who are officers or directors or who directly or indirectly own 1 percent or more of the outstanding voting stock.

NOTE 3: Paragraph (a) of this section will not be applied so as to require divestiture, by any licensee, of existing facilities. Said paragraph will not apply to applicatons for increased power for Class IV stations, to applications for assignment of license or transfer of control filed in accordance with §§ 1.540(b) or 1.541(b) of this chapter, or to applications for assignment of license or transfer of control to heirs or legatees by will or intestacy where no new or increased overlap would be created between commonly owned stations. Said paragraph will apply to all applications for new stations, to all other applications for assignment or transfer, and to all applications for major changes in existing stations except major changes that will result in overlap no greater than that already existing. (The resulting overlap areas in such major change cases may consist partly or entirely of new terrain. However, if the population in the resulting overlap areas substantially exceeds that in the previously existing overlap areas, the Commission will not grant the application if it finds that to do so would be against the public interest, convenience, and necessity.) Commonly owned stations with overlapping contours prohibited by paragraph (a) of this section may not be assigned or transferred to a single person, group, or entity, except as provided in this Note.

[*§ 73.35, amended in III(64)-1 and III(64)-3, as further amended re Note 3, eff. 12-28-64; III(64)-5*]

§ 73.36 Special field test authorization.

(a) Upon a showing that a need exists, a special test authorization to operate a portable or regularly authorized transmitter may be issued to persons desiring to make field intensity surveys to determine values of soil conductivity, or other factors influencing radio wave propagation, in particular areas or paths for the period necessary to conduct the survey. Such authorizations may be granted upon the following conditions:

(1) No objectionable interference will result to the operation of other authorized radio services; in this connection, the power requested shall not exceed that necessary for the purposes of the test.

(2) The carrier will be unmodulated except for half-hourly voice identification.

(3) The plate power (E_p x I_p) of the final stage of the transmitter shall not exceed authorized test power and the antenna current shall be maintained at a constant value for each phase of the test.

(4) The test equipment shall not be permanently installed, unless such installation has been separately authorized. Mobile units shall not be deemed permanent installations.

(5) The equipment must be operated by or under the personal direction of either a licensed radiotelephone first-class or second-class operator.

(6) A report, under oath, containing the measurements, their analysis and other results of the survey shall be filed with the Commission within sixty (60) days from the termination of the test authorization. The measurements taken shall be sufficiently complete, in accordance with § 73.186, so as to permit a determination of the inverse distance field at 1 mile in pertinent directions.

(7) The plate voltage (E_p) and plate current (I_p) of the final stage of the transmitter shall be logged at half-hour intervals and at any time that such power is changed. Certified copies of such log notations shall be submitted to the Commission with the required report.

(8) Operation shall conform to the requirements of Subpart G of this part.

(b) The test equipment, installation and operation thereof need not comply with the requirements of Commission rules and standards except as specified in this section: *Provided however*, That the equipment, installation and operation shall be consistant with good engineering principles and practices.

(c) No authorization shall be issued unless the applicant for such authorization is determined to be legally qualified. Requests for authorizations to operate a transmitter under this section shall be made in writing, signed by the applicant (with no special form provided, however), and shall set forth the following information:

(1) Purpose, duration and need for the survey.

(2) Frequency, plate power and time of operation.

(3) A brief description of the test antenna system and its estimated effective field and its proposed location.

(4) In the case of a directional test antenna, an estimate of the maximum fields expected to be radiated in the direction of pertinent broadcast stations.

(5) In the case of a person who is not a licensee or permittee of this Commission the information required by section II of FCC Form 301.

(d) The authorization may be modified or terminated by notification from the Commission if in its judgment such action will promote the public interest, convenience or necessity.

[*§ 73.36(c) Intro. text amended eff. 11-26-65; III(64)-11*]

§ 73.37 Minimum separation between stations; prohibited overlap.

(a) Except as indicated in other paragraphs of this section, and except for Class II-A stations, no application will be accepted for a new station (or change in frequency) if the proposed operation would involve overlap of signal strength contours with any other station as set forth below in this paragraph; and no application will be accepted for a change (other than a change in frequency) of the facilities of an existing station (including the daytime facilities of an existing Class II-A station) if the proposed change would in-

volve such overlap in any area where there is not already such overlap between the stations involved:

Frequency separation	Contour of proposed new station (Classes II-B, II-D, III, and IV)	Contour of any other station
	mv/m	
Co-channel	0.005	0.1 mv/m (Class I).
	0.025	0.5 mv/m (Other classes).
	0.5	0.025 mv/m (All classes).
10 kc/s	0.5	0.5 mv/m (All classes).
20 kc/s	2	25 mv/m (All classes).
	25	2 mv/m (All classes).
30 kc/s	25	25 mv/m (All classes).

(b) An application for a new daytime station or a change in the daytime facilities of an existing station may be granted notwithstanding overlap of the proposed 0.5 mv/m contour and the 0.025 mv/m contour of another co-channel station, where the applicant station is or would be the first standard broadcast facility in a community of any size wholly outside of an urbanized area (as defined by the latest U.S. Census), or the first standard broadcast facility in a community of 25,000 or more population wholly or partly within an urbanized area, or when the facilities proposed would provide a first primary service to at least 25 percent of the interference-free area within the proposed 0.5 mv/m contour: *Provided*, That:

(1) The proposal complies with paragraph (a) of this section in all other respects and is consistent with all other provisions of this part; and

(2) No overlap would occur between the 1 mv/m contour of the proposed facilities and the 0.05 mv/m contour of any co-channel station.

(c) In determining overlap received, an application for a new Class IV station with daytime power of 250 watts, or greater, shall be considered on the assumption that both the proposed operation and all existing Class IV stations operate with 250 watts and utilize non-directional antennas. With respect to applications for new Class IV facilities, the provisions of paragraph (b) of this section shall be applied using the assumption mentioned in this paragraph for determining overlap received.

(d) If otherwise consistent with the public interest and subject to section 316 of the Communications Act, an application requesting an increase in the daytime power of an existing Class IV station on a local channel from 250 watts to a maximum of one kilowatt, or from 100 watts to a maximum of 500 watts, may be granted notwithstanding overlap prohibited by paragraph (a) of this section. In the case of a 100 watt Class IV station increasing daytime power, the provisions of this paragraph shall not be construed to permit an increase in power to more than 500 watts, if prohibited overlap would be involved, even if successive applications should be tendered.

NOTE 1: The foregoing provisions of this section shall not be applied to applications for new Class II–A stations or to applications accepted for filing before July 1, 1964. With respect to such applications, the following shall apply: An authorization will not be granted for a station on a frequency of ±30 kc/s from that of another station if the area enclosed by the 25 mv/m groundwave contours of the two stations overlap, nor will an authorization be granted for the operation of a station on a frequency ±20 kc/s or ±10 kc/s from the frequency of another station if the area enclosed by the 25 mv/m groundwave contour of either one overlaps the area enclosed by the 2 mv/m groundwave contour of the other. (As to overlap with Class II–A stations, see § 73.21, Note 2.)

NOTE 2: In the case of applications for changes (other than frequency) in the facilities of standard broadcast stations covered by this section, an application therefor will be accepted even though overlap of signal strength contours as mentioned in this section would occur with another station in an area where such overlap does not already exist, if: (1) the total area of overlap with that station would be reduced; (2) there would be no net increase in the area of overlap with any other station; and (3) there would be created no area of overlap with any station with which overlap does not now exist.

NOTE 3: The provisions of this section concerning prohibited overlap of signal strength contours will not apply where: (1) the area of such overlap lies entirely over sea water; or (2) the only overlap involved would be that caused to a foreign station, in which case the provisions of the North American Regional Broadcasting Agreement (NARBA) and the U.S./Mexican Agreement will apply. Where overlap would be received from a foreign station, the provisions of this section will apply.

[*§ 73.37 amended in III(64)–2, as further amended to add Notes 2 and 3 eff. 4–19–65, III(64)–7*]

§ 73.38 Limited time operation.

(a) Starting November 30, 1959, no authorization will be granted for:

(1) A new limited time station;

(2) A limited time station operating on a changed frequency:

(3) A limited time station with a new transmitter site materially closer to the 0.1 mv/m contour of a co-channel U.S. Class I station; or

(4) Modification of the operating facilities of a limited time station resulting in increased radiation toward any point on the 0.1 mv/m contour of a co-channel U.S. Class I station, during the hours after local sunset in which the limited time station is permitted to operate by reason of location east of the Class I station.

EQUIPMENT

§ 73.39 Indicating instruments—specifications.

(a) Instruments indicating the plate current or plate voltage of the last radio stage (linear scale instruments) shall meet the following specifications:

(1) Length of scale shall be not less than $2\frac{3}{10}$ inches.

(2) Accuracy shall be at least 2 percent of the full scale reading.

(3) The maximum rating of the meter shall be such that it does not read off scale during modulation.

(4) Scale shall have at least 40 divisions.

(5) Full scale reading shall not be greater than five times the minimum normal indication.

(b) Instruments indicating antenna current, common point current, and base currents shall meet the following specifications:

(1) Instruments having logarithmic or square law scales.

(i) Shall meet same requirements as paragraph (a) (1), (2) and (3) of this section for linear scale instruments.

(ii) Full scale reading shall not be greater than three times the minimum normal indication.

(iii) No scale division above one-third full scale reading (in amperes) shall be greater than one-thirtieth of the full scale reading. (Example: An ammeter meeting requirement (i) having full scale reading of 6 amperes is acceptable for reading currents from 2 to 6 amperes, provided no scale division between 2 and 6 amperes is greater than one-thirtieth of 6 amperes, 0.2 ampere.)

(2) Radio frequency instruments having expanded scales.

(i) These instruments shall meet same requirements as paragraph (a) (1), (2), and (3) of this section for linear scale instruments.

(ii) Full scale reading shall not be greater than five times the minimum normal indication.

(iii) No scale division above one-fifth full scale reading (in amperes) shall be greater than one-fiftieth of the full scale reading. (Example: An ammeter meeting the requirement (i) is acceptable for indicating currents from 1 to 5 amperes, provided no division between 1 and 5 amperes is greater than one-fiftieth of 5 amperes, 0.1 ampere.)

(iv) Manufacturers of instruments of the expanded scale type must submit data to the Commission showing that these instruments have acceptable expanded scales, and the type number of these instruments must include suitable designation.

(c) A thermocouple type ammeter meeting the requirements of paragraph (b) of this section shall be permanently installed in the antenna circuit or a suitable jack and plug arrangement may be made to permit removal of the meter from the antenna circuit so as to protect it from damage by lightning. Where a jack and plug arrangement is used, contacts shall be made of silver and capable of operating without arcing or heating, and shall be protected against corrosion. Insertion and removal of the meter shall not interrupt the transmissions of the station. When removed from the antenna circuit, the meter shall be stored in a suitable housing at the base of the tower in which it is used. Care shall be exercised in handling the meter to prevent damage which would impair its accuracy. Where the meter is permanently connected in the antenna circuit, provision may be made to short or open the meter cir-

cuit when it is not being used to measure antenna current. Such switching shall be accomplished without interrupting the transmissions of the station.

(d) Remote reading antenna ammeter(s) may be employed and the indications logged as the antenna current, or in the case of directional antenna, the common point current and base currents, in accordance with the following:

(1) Remote reading antenna, common point or base ammeters may be provided by:

(i) Inserting second thermocouple directly in the antenna circuit with remote leads to the indicating instrument.

(ii) Inductive coupling to thermocouple or other device for providing direct current to indicating instrument.

(iii) Capacity coupling to thermocouple or other device for providing direct current to indicating instrument.

(iv) Current transformer connected to second thermocouple or other device for providing direct current to indicating instrument.

(v) Using transmission line current meter at transmitter as remote reading ammeter. See subparagraph (7) of this paragraph.

(vi) Using indications of phase monitor for determining the antenna base currents or their ratio in the case of directional antennas, provided that the base current readings are read and logged in accordance with the provision of the station license, and provided further that the indicating instruments in the unit are connected directly in the current sampling circuits with no other shunt circuits of any nature. The meters in the phase monitor may utilize arbitrary scale divisions provided a calibration curve showing the relationship between the arbitrary scale and the scale of the base meters is maintained at the transmitter location.

(vii) Using indications of remote control equipment provided that the indicating instruments are capable of being connected directly into the antenna circuit at the same point as, but below (transmitter side), the antenna ammeter. The meter(s) in the remote control equipment may utilize an arbitrary scale division provided a calibration curve showing the relationship between the arbitrary scale and the scale of the antenna ammeter is maintained at the remote control point. The meter(s) in the remote control equipment must be calibrated once a week against the regular meter and the results thereof entered in the operating log.

(2) Remote ammeters shall be connected into the antenna circuit at the same point as, but below (transmitter side), the antenna ammeter(s), and shall be calibrated to indicate within 2 percent of the regular meter over the entire range above one-third or one-fifth full scale. See paragraphs (b) (1) (i), (iii) and (b) (2) (i), (iii) of this section.

(3) The regular antenna ammeter, common point ammeter, or base current ammeters shall be above (antenna side) the coupling to the remote meters in the antenna circuit so they do not read the current to ground through the remote meter(s).

(4) All remote meters shall meet the same requirements as the regular antenna ammeter with respect to scale accuracy, etc.

(5) Calibration shall be checked against the regular meter at least once a week.

(6) All remote meters shall be provided with shielding or filters as necessary to prevent any feed-back from the antenna to the transmitter.

(7) In the case of shunt excited antennas, the transmission line current meter at the transmitter may be considered as the remote antenna ammeter provided the transmission line is terminated directly into the excitation circuit feed line, which shall employ series tuning only (no shunt circuits of any type shall be employed) and insofar as practicable, the type and scale of the transmission line meter should be the same as those of the excitation circuit feed line meter (meter in slant wire feed line or equivalent).

(8) Remote reading antenna ammeters employing vacuum tube rectifiers or semi-conductor devices are acceptable, provided:

(i) The indicating instruments shall meet all the above requirements for linear scale instruments.

(ii) Data are submitted under oath showing the unit has an over-all accuracy of at least 2 percent of the full scale reading.

(iii) The installation, calibration, and checking are in accordance with the requirements of this paragraph.

(9) In the event there is any question as to the method of providing, or the accuracy of the remote meter, the burden of proof of satisfactory performance shall be upon the licensee and the manufacturer of the equipment.

(e) Stations determining power by the indirect method may log the transmission line current in lieu of the antenna current provided the instrument meets the above requirements for antenna ammeters, and further provided that the ratio between the transmission line current and the antenna current is entered each time in the log. In case the station is authorized for the same operating power for both day and nighttime operation, this ratio shall be checked at least once daily. Stations which are authorized to operate with nighttime power different from the daytime power shall check the ratio for each power at least once daily.

(f) No instrument, the seal of which has been broken, or the accuracy of which is questionable, shall be employed. Any instrument which was not originally sealed by the manufacturer that has been opened shall not be used until it has been recalibrated and sealed in accordance with the following: Repairs and recalibration of instruments shall be made by the manufacturer, by an authorized instrument repair service of the manufacturer or by some other properly qualified and equipped instrument repair service. In either case the instrument must be resealed with the symbol or trade-mark of the repair service and a certificate of calibration supplied therewith.

(g) Since it is usually impractical to measure the actual antenna current of a shunt excited antenna system, the current measured at the input of the excitation circuit feed line is accepted as the antenna current.

(h) [Reserved]

(i) The function of each instrument shall be clearly and permanently shown on the instrument itself or on the panel immediately adjacent thereto.

§ 73.40 Transmitter; design, construction, and safety of life requirements.

(a) *Design.* The general design of standard broadcast transmitting equipment [main studio microphone (including telephone lines, if used, as to performance only) to antenna output] shall be in accordance with the following specifications. (In cases where telephone lines are not available to give the performance as required in these specifications a relay transmitter may be authorized to supersede the lines.) For the points not specifically covered in this paragraph, the principles set out shall be followed. The equipment shall be so designed that:

(1) The maximum rated carrier power (determined by § 73.42) is in accordance with the requirements of § 73.41.

(2) The equipment is capable of satisfactory operation at the authorized operating power or the proposed operating power with modulation of at least 85 to 95 percent with no more distortion than given in subparagraph (3) of this paragraph.

(3) The total audio frequency distortion from microphone terminals, including microphone amplifier, to antenna output does not exceed 5 percent harmonics (voltage measurements of arithmetical sum or r. s. s.) when modulated from 0 to 84 percent, and not over 7.5 percent harmonics (voltage measurements of arithmetical sum or r. s. s.) when modulating 85 percent to 95 percent (distortion shall be measured with modulating frequencies of 50, 100, 400, 1000, 5000 and 7500 cycles up to tenth harmonic or 16000 cycles, or any intermediate frequency that readings on these frequencies indicate is desirable).

(4) The audio frequency transmitting characteristics of the equipment from the microphone terminals (including microphone amplifier unless microphone frequency correction is included in which event proper allowance shall be made accordingly) to the antenna output does not depart more than 2 decibels from that at 1000 cycles between 100 and 5000 cycles.

(5) The carrier shift (current) at any percentage of modulation does not exceed 5 percent.

(6) The carrier hum and extraneous noise (exclusive of microphone and studio noises) level (unweighted r.s.s.) is at least 45 decibels below 100 percent modulation for the frequency band of 30 to 20,000 cycles.

(7) The transmitter shall be equipped with suitable indicating instruments in accordance with the requirements of § 73.58 and any other instruments necessary for the proper adjustment and operation of the equipment.

(8) Adequate provision is made for varying the transmitter power output between sufficient limits to compensate for excessive variations in line voltage, or other factors which may affect the power output.

(9) The transmitter is equipped with automatic frequency control equipment capable of maintaining the operating frequency within the limit specified by § 73.59.

(i) The maximum temperature variation at the crystal from the normal operating temperature shall not be greater than,

Plus or minus 0.1° C. when an *X* or *Y* cut crystal is employed, or

Plus or minus 1.0° C. when low temperature coefficient crystal is employed.

(ii) Unless otherwise authorized, a thermometer shall be installed in such manner that the temperature at the crystal can be accurately measured within 0.05° C. for *X* or *Y* cut crystal or 0.5° for low temperature coefficient crystal.

(iii) It is preferable that the tank circuit of the oscillator tube be installed in the temperature controlled chamber.

NOTE: Explanations of excessive frequency deviations will not be accepted when temperature variations are in excess of the values specified.

(10) Means are provided for connection and continuous operation of approved modulation monitor and approved frequency monitor. The radio frequency energy for operation of the approved frequency monitor shall be obtained from a radio-frequency stage prior to the modulated stage unless the monitor is of such design as to permit satisfactory operation when otherwise connected and the monitor circuits shall be such that the carrier is not heterodyned thereby.

(11) Adequate margin is provided in all component parts to avoid overheating at the maximum rated power output.

(12) Any emission appearing on a frequency removed from the carrier by between 15 kc/s and 30 kc/s, inclusive, shall be attenuated at least 25 db below the level of the unmodulated carrier. Compliance with the specification will be deemed to show the occupied bandwidth to be 30 kc/s or less.

(13) Any emission appearing on a frequency removed from the carrier by more than 30 kc/s and up to and including 75 kc/s, inclusive, shall be attenuated at least 35 db below the level of the unmodulated carrier.

(14) Any emission appearing on a frequency removed from the carrier by more than 75 kc/s shall be attenuated at least $43+ 10 \text{ Log}_{10}$ (Power, in watts) decibels below the level of the unmodulated carrier, or 80 decibels, whichever is the lesser attenuation.

(b) *Construction.* In general, the transmitter shall be constructed either on racks and panels or in totally enclosed frames protected as required by article 810 of the National Electrical Code (section 8192 (a), (b), and (c)), and as set forth in this paragraph and paragraph (c) of this section.

NOTE: The final stages of high power transmitters may be assembled in open frames provided the equipment is enclosed by a protective fence.

(1) Means shall be provided for making all tuning adjustments, requiring voltages in excess of 350 volts to be applied to the circuit, from the front of the panels with all access doors closed.

(2) Proper bleeder resistors or other automatic means shall be installed across all the condenser banks to remove any charge which may remain after the high voltage circuit is opened (in certain instances the plate circuit of the tubes may provide such protection; however, individual approval of such shall be obtained by the manufacturer in case of standard equipment, and the licensee in case of composite equipment).

(3) All plate supply and other high voltage equipment, including transformers, filters, rectifiers and motor generators, shall be protected so as to prevent injury to operating personnel.

(i) Commutator guards shall be provided on all high voltage rotating machinery (coupling guards on motor generators, although desirable, are not required).

(ii) Power equipment and control panels of the transmitter shall meet the above requirements (exposed 220 volt AC switching equipment on the front of the power control panels is not recommended; however, it is not prohibited).

(iii) Power equipment located at a broadcast station but not directly associated with the transmitter (not purchased as part of same), such as power distribution panels, control equipment on indoor or outdoor stations and the substations associated therewith, are not under the jurisdiction of the Commission; therefore, § 73.46 does not apply.

(iv) It is not necessary to protect the equipment in the antenna tuning house and the base of the antenna with screens and interlocks, provided the doors to the tuning house and antenna base are fenced and locked at all times, with the keys in the possession of the operator on duty at the transmitter. Ungrounded fencing or wires should be effectively grounded, either directly or through proper static leaks. Lighting protection for the antenna system is not specifically required but should be installed.

(v) The antenna, antenna lead-in, counterpoise (if used), etc., shall be installed so as not to present a hazard. The antenna may be located close by or at a distance from the transmitter building. A properly designed and terminated transmission line should be used between the transmitter and the antenna when located at a distance.

(4) Metering equipment. (In addition to the following requirements, instruments shall meet the requirements of §§ 73.39 and 73.58.)

(i) All instruments having more than 1,000 volts potential to ground on the movement shall be protected by a cage or cover in addition to the regular case. (Some instruments are designed by the manufacturer to operate safely with voltages in excess of 1,000 volts on the movement. If it can be shown by the manufacturer's rating that the instrument will operate safely at the applied potential, additional protection is not necessary.)

(ii) In case the plate voltmeter is located on the low potential side of the multiplier resistor with one terminal of the instrument at or less than 1,000 volts above ground, no protective case is required. However, it is good practice to protect voltmeters subject to more than 5,000 volts with suitable over-voltage

protective devices across the instrument terminals in case the winding opens.

(iii) The antenna ammeters (both regular and remote) and any other radio frequency instrument which it is necessary for the operator to read shall be so installed as to be easily and accurately read without the operator having to risk contact with circuits carrying high potential radio frequency energy.

(c) *Wiring and shielding.* (1) The transmitter panels or units shall be wired in accordance with standard switchboard practice, either with insulated leads properly cabled and supported or with rigid bus bar properly insulated and protected.

(2) Wiring between units of the transmitter, with the exception of circuits carrying radio frequency energy, shall be installed in conduits or approved fiber or metal raceways to protect it from mechanical injury.

(3) Circuits carrying low level radio frequency energy between units shall be either concentric tube, two wire balanced lines, or properly shielded to prevent the pickup of modulated radio frequency energy from the output circuits.

(4) Each stage (including the oscillator) preceding the modulated stage shall be properly shielded and filtered to prevent unintentional feedback from any circuit following the modulated stage (an exception to this requirement may be made in the case of high level modulated transmitters of approved manufacture which have been properly engineered to prevent reaction).

(5) The crystal chamber, together with the conductor or conductors to the oscillator circuit shall be totally shielded.

(6) The monitors and the radio frequency lines to the transmitter shall be thoroughly shielded.

(d) *Installation.* (1) The installation shall be made in suitable quarters.

(2) Since an operator must be on duty at the transmitter control point during operation, suitable facilities for his welfare and comfort shall be provided at the control point.

(e) [Reserved]

(f) *Studio equipment.* (1) The studio equipment shall be subject to all the above requirements where applicable except as follows:

(i) If it is properly covered by an underwriter's certificate, it will be considered as satisfying the safety requirements.

(ii) Section 8192 of article 810 of the National Electrical Code shall apply for voltages only when in excess of 500 volts.

(2) No specific requirements are made relative to the design and acoustical treatment. However, the studios and particularly the main studio should be in accordance with the standard practice for the class of station concerned, keeping the noise level as low as reasonably possible.

§ 73.41 Maximum rated carrier power; tolerances.

The maximum rated carrier power of a transmitter shall be an even power step as recognized by the Commission's plan of allocation (250 watts, 500 watts, 1 kw., 5 kw., 10 kw., 25 kw., 50 kw.) and shall not be less than the authorized power nor shall it be greater than the value specified in the following table:

Class of station	Maximum power authorized to station	Maximum rated carrier power permitted to be installed
Class IV	250, 500 or 1,000 watts	1,000
Class III	500 or 1,000 watts	1,000
	5,000 watts	5,000
Class II	250, 500 or 1,000 watts	1,000
	5,000 or 10,000 watts	10,000
	25,000 or 50,000 watts	50,000
Class I	10,000 watts	10,000
	25,000 or 50,000 watts	50,000

[§ 73.41 *as amended eff. 7-11-66; III(64)-13*]

§ 73.42 Maximum rated carrier power; how determined.

The maximum rated carrier power of a standard broadcast transmitter shall be determined as the sum of the applicable power ratings of the vacuum tubes employed in the last radio stage.

§ 73.43 Changes in equipment; authority for.

No licensee or permittee shall change, in the last radio stage, the number of vacuum tubes, nor change to vacuum tubes of different power rating or class of operation, nor shall it change the system of modulation, without authority of the Commission.

§ 73.44 Other changes in equipment.

Other changes except as provided for in this subpart which do not affect the maximum power rating or operating power of the transmitter or the operation or precision of the frequency control equipment may be made at any time without authority of the Commission, but in the next succeeding application for renewal of license such changes which affect the information already on file shall be shown in full.

§ 73.45 Radiating system.

(a) All applicants for new, additional, or different broadcast facilities and all licensees requesting authority to change the transmitter site of an existing station shall specify a radiating system the efficiency of which complies with the requirements of good engineering practice for the class and power of the station. (See §§ 73.186 and 73.189.)

(b) No broadcast station licensee or permittee shall change the physical height of the transmitting antenna, or supporting structures, or make any changes in the radiating system which will measurably alter the radiation patterns, except upon application to and authority from the Commission.

(c) Should any changes occur which would alter the resistance of the antenna system, the licensee shall immediately make a new determination of the antenna resistance (see § 73.54) and shall submit application for authority to determine power by the direct method on the basis of the new measurements. In this connection, see §§ 73.316(g) and 73.685(h).

(d) The antenna and/or supporting structure shall be painted and illuminated in accordance with the specifications supplied by the Commission pursuant to section 303 (q) of the Communications Act of 1934 as amended. (See Part 17 of this chapter, Construction, Marking, and Lighting of Antenna Structures.)

(e) The simultaneous use of a common antenna or antenna structure by more than one standard broadcast station, or by one or more standard broadcast stations and one or more stations of any other class or service may be authorized provided:

(1) Complete verified engineering data are submitted showing that satisfactory operation of each station will be obtained without adversely affecting the operation of the other station.

(2) The minimum antenna height or field intensity for each standard broadcast station concerned complies with paragraph (a) of this section.

(f) If a common tower is used for antenna and/or antenna supporting purposes by two or more licensees or permittees of standard broadcast stations or by one or more such licensees or permittees and one or more licensees or permittees of any other class or service, each permittee or licensee shall be responsible for painting and illuminating the structure when obstruction marking and lighting are required by the Commission.

[*§ 73.45(e)(3) deleted and Par. (f) as adopted eff. 9-20-65; III(64)-10*]

§ 73.46 Transmitter.

(a) The transmitter proper and associated transmitting equipment of each broadcast station shall be designed, constructed, and operated in accordance with good engineering practice in all phases not otherwise specifically included in the regulations in this subpart.

(b) The transmitter shall be wired and shielded in accordance with good engineering practice and shall be provided with safety features in accordance with the specifications of article 810 of the current National Electrical Code as approved by the American Standard Association.

(c) The station equipment shall be so operated, tuned, and adjusted that emissions outside of the authorized channel do not cause harmful interference to the reception of other radio stations. Standard broadcast stations employing radio transmitters type accepted after January 1, 1960, shall maintain the bandwidth occupied by their emissions in accordance with the specifications set forth in § 73.40(a). Stations employing transmitters installed or type accepted prior to January 1, 1960, shall achieve the highest degree of compliance practicable with their existing equipment. In either case, should harmful interference to the reception of other radio stations occur, the licensee may be required to take such further steps as may be necessary to eliminate the interference.

(d) The audio distortion, audio frequency response, carrier hum, noise level, and other essential phases of the operation which control the external effects shall at all times conform to the requirements of good engineering practice.

§ 73.47 Equipment performance measurements.

(a) The licensee of each standard broadcast station shall make the following equipment performance measurements at yearly intervals. One such set shall be made during the four-month period preceding the date of filing application for renewal of station license:

(1) Data and curves showing over-all audio frequency response from 30 to 7500 CPS for approximately 25, 50, 85, and 100 (if obtainable) percent modulation. Family of curves should be plotted (one for each percentage above) with DB above and below a reference frequency of 1000 CPS as ordinate and audio frequency as abscissa.

(2) Data and curves showing audio frequency harmonic content for 25, 50, 85, and 100 percent modulation for fundamental frequencies of 50, 100, 400, 1000, 5000, and 7500 CPS (either arithmetical or root sum square values up to the tenth harmonic or 16000 CPS). Plot family of curves (one for each percentage above) with percent distortion as ordinate and audio frequency as abscissa.

(3) Data showing percentage carrier shift for 25, 50, 85, and 100 percent modulation with 400 CPS tone.

(4) Carrier hum and extraneous noise generated within the equipment and measured as the level below 100 percent modulation throughout the audio spectrum or by bands.

(5) Measurements or evidence showing that spurious radiations including radio frequency harmonics are suppressed or are not present to a degree capable of causing objectionable interference to other radio services. Field intensity measurements are preferred but observations made with a communications type receiver may be accepted. However, in particular cases involving interference or controversy, the Commission may require actual measurements. Measurements shall be made with the equipment adjusted for normal program operation and shall include all circuits between main studio amplifier input and antenna output including equalizer or correction circuits normally employed, but without compression if such amplifier is employed.

(b) The data required by paragraph (a) of this section together with a description of instruments and procedure, signed by the engineer making the measurements, shall be kept on file at the transmitter and retained for a period of two years and on request shall be made available during that time to any duly authorized representative of the Federal Communications Commission.

§ 73.48 Acceptability of broadcast transmitters for licensing.

(a) In order to facilitate the filing of and action on applications for station authorizations, transmitters

will be accepted for licensing by the Commission under one of the following conditions:

(1) A transmitter may be type-accepted upon the request of any manufacturer of transmitters built in quantity by following the type acceptance procedure set forth in Part 2 of this chapter, provided that the data and information submitted indicate that the transmitter meets the requirements of § 73.40. If accepted, such transmitter will be included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment". Applicants specifying transmitters included on such a list need not submit detailed descriptions and diagrams where the correct type number is specified, provided that the equipment proposed is identical with that accepted. Copies of this list are available for inspection at the Commission's office in Washington, D. C., and at each of its field offices.

(2) An application specifying a transmitter not included on the Radio Equipment List, Part B, may be accepted upon the request of a prospective licensee submitting with the application for construction permit a complete description of the transmitter, including the circuit diagram, listing of all tubes used, function of each, multiplication in each stage, plate current and voltage applied to each tube, a description of the oscillator circuit together with any devices installed for the purpose of frequency stabilization and the means of varying output power to compensate for power supply voltage variations. However, if this data has been filed with the Commission by a manufacturer in connection with a request for type acceptance, it need not be submitted with the application for construction permit but may be referred to as "on file". Measurement data for type acceptance made in accordance with subparagraph (1) of this paragraph shall be submitted with the license application.

(3) A transmitter shown on an instrument of authorization by manufacturer and type number, or as a composite, and which was in use prior to June 30, 1955, may continue to be used by the licensee, his successors or assignees, provided such transmitter continues to comply with the rules and regulations.

(4) A permittee may, without further authority, install a transmitter other than that specifically authorized in its construction permit if such transmitter is listed in the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment" as accepted for the power authorized.

(5) A licensee may, without further authority, install and utilize a transmitter other than that specifically authorized in its station license if the transmitter so installed and utilized is listed in the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment" as accepted for the power authorized if the Commission and the Engineer in Charge of the radio district in which the station is located are notified within 3 days after the date of installation of the transmitter. Such notice shall include the make and type number of the transmitter and a certification by the licensee that the transmitter as installed complies with the appropriate technical provisions of this subpart.

(b) Additional rules with respect to withdrawal of type-acceptance, modification of type-accepted equipment and limitations on the findings upon which type acceptance is based are set forth in Part 2 of this chapter.

§ 73.49 Requirements for approval of frequency monitors.

(a) *General requirements.* (1) Any manufacturer desiring to submit a monitor for type approval shall supply the Commission with full specification details (two sworn copies) as well as the test data specified in paragraph (c) of this section. If this information appears to meet the requirements of the rules, shipping instructions will be issued to the manufacturer. The shipping charges to and from the Laboratory at Laurel, Maryland, shall be paid for by the manufacturer. Approval of a monitor will only be given on the basis of the data obtained from the sample monitor submitted to the Commission for test.

(2) In approving a monitor upon the basis of the tests conducted by the Laboratory, the Commission merely recognizes that the type of monitor has the inherent capability of functioning in compliance with the rules, if properly constructed, maintained, and operated. The Commission realizes that the frequency monitor may have limited range over which the visual indicator will determine deviations. Accordingly, it may be necessary that adjunct equipment be used to determine major deviations.

NOTE: In addition to the visual indicator, the range of which may be limited in order to obtain the required accuracy, an aural indicator should also be employed to indicate frequency deviations beyond the range of the visual indicator particularly where the visual indicator is so designed that the indication becomes zero when the deviations become considerably greater than the range of the instrument.

(3) Additional rules with respect to withdrawal of type approval, modification of type approval equipment and limitations on the findings upon which type approval is based are set forth in Part 2, Subpart F, of this chapter.

(b) *General specifications.* The general specifications that frequency monitors shall meet before they will be approved by the Commission are as follows:

(1) The unit shall have an accuracy of at least five parts per million under ordinary conditions (temperature, humidity, power supply, and other conditions which may affect its accuracy) encountered in standard broadcast stations throughout the United States.

(2) The range of the indicating device shall be at least from 20 cycles below to 20 cycles above the assigned frequency.

(3) The scale of the indicating device shall be so calibrated as to be accurately read within at least 1 cycle.

(4) [Reserved]

(5) [Reserved]

(6) The monitor circuit shall be such that it may be continuously operated and the emitted carrier of the station is not heterodyned thereby.

(7) Means shall be provided for adjustment of the temperature or other means for correction of the indications of the monitor to agree with the external standard.

(c) *Tests to be made by the Laboratory Division of the F. C. C.* The tests to be made at the Laboratory will include the determination of the following:

(1) *Accuracy.* (i) Oscillator frequency, as received.

(ii) Constancy of oscillator frequency, as measured several times in 1 month.

(iii) Accuracy of readings of frequency-difference instrument.

(iv) Functioning of frequency adjustment device.

(v) Effects on frequency of changing tubes and of voltage variations.

(2) *Temperature control stability.* Effect on frequency of variation of room temperature through a range not to exceed 10° to 35° C.

(3) *Sensitivity.* Response of indicating instrument to small changes of frequency.

(4) *General construction.* (i) Inspection to determine ability to stand shipment and service.

(ii) Special tests to determine quality of construction, such as effect of tilting or tipping on frequency.

(5) *Miscellaneous performance.* Various, depending on character of apparatus (e. g., changes after stopping and starting, effect of varying coupling with transmitter, etc.).

(d) *Test operation of equipment.* The equipment will be operated in a test in the same way and the same conditions under which it will be used in service as specified by the manufacturer. The manufacturer shall supply to the Laboratory Division all instructions or services which will be supplied to the purchaser of the equipment. The equipment, as submitted, shall be adjusted for operation in connection with broadcast stations operating on 1600 kilocycles.

[*§ 73.49(b)(4) and (b)(5) deleted and reserved eff. 7-14-67; III(64)-18*]

§ 73.50 Requirements for approval of modulation monitors.

(a) Any manufacturer desiring to submit a monitor for type approval shall supply the Commission with full specification details (two sworn copies) specified in paragraph (b) of this section. If this information appears to meet the requirements of the rules, shipping instructions will be issued to the manufacturer. The shipping charges to and from the Laboratory at Laurel, Maryland, shall be paid for by the manufacturer. Approval of a monitor will only be given on the basis of the data obtained from the sample monitor submitted to the Commission for test.

(1) In approving a monitor upon the basis of the tests conducted by the Laboratory, the Commission merely recognizes that the type of monitor has the inherent capability of functioning in compliance with the rules, if properly constructed, maintained, and operated.

(2) Additional rules with respect to withdrawal of type approval, modification of type approval equipment and limitations on the findings upon which type approval is based are set forth in Part 2, Subpart F, of this chapter.

(b) The specifications that the modulation monitor shall meet before it will be approved by the Commission are as follows:

(1) A DC meter for setting the average rectified carrier at a specific value and to indicate changes in carrier intensity during modulation.

(2) A peak indicating light or similar device that can be set at any predetermined value from 50 to 120 percent modulation to indicate on positive peaks, and/or from 50 to 100 percent negative modulation.

(3) A semi-peak indicator with a meter having the characteristics given below shall be used with a circuit such that peaks of modulation of duration between 40 and 90 milliseconds are indicated to 90 percent of full value and the discharge rate adjusted so that the pointer returns from full reading to 10 percent of zero within 500 to 800 milliseconds. A switch shall be provided so that this meter will read either positive or negative modulation and, if desired, in the center position it may read both in a full-wave circuit. The characteristics of the indicating meter are as follows:

(i) The damping factor shall be between 16 and 200. The useful scale length shall be at least 2.3 inches. The meter shall be calibrated for modulation from 0 to 110 percent and in decibels below 100 percent with 100 percent being 0 db.

(ii) The accuracy of the reading on percentage of modulation shall be ±2 percent for 100 percent modulation, and ±4 percent of full scale reading at any other percentage of modulation.

(4) The frequency characteristics curve shall not depart from a straight line more than ±½ db from 30 to 10000 cycles. The amplitude distortion or generation of audio harmonics shall be kept to a minimum.

(5) The modulation meter shall be equipped with appropriate terminals so that an external peak counter can be readily connected.

(6) Modulation will be tested at 115 volts ±5 percent and 60 cycles, and the above accuracies shall be applicable under these conditions.

(7) All specifications not already covered above, and the general design, construction, and operation of these units must be in accordance with good engineering practice.

(c) The modulation monitor may be a part of the frequency monitor.

TECHNICAL OPERATION

§ 73.51 Operating power; how determined.

(a) Except as provided in paragraph (b) of this section, the operating power shall be determined by the direct method (the square of the antenna current times the antenna resistance at the point where the current is measured and at the operating frequency).

(b) Operating power shall be determined on a temporary basis by the indirect method: (1) In case of an emergency where the licensed antenna system has been damaged by causes beyond the control of the licensee (see § 73.45), or (2) Pending completion of authorized changes in the antenna system, or (3) If any change is made in the antenna system or any other change is made which may affect the antenna system. (See § 73.45.)

§ 73.52 Operating power; indirect measurement.

(a) The operating power determined by indirect measurement from the plate input power of the last radio stage is the product of the plate voltage (Ep), the total plate current of the last radio stage (Ip), and the proper factor (F) given in paragraph (b) of this section: That is

$$\text{Operating power} = Ep \times Ip \times F$$

(b) Factor to be used.

Factor (F)	Method of modulation	Maximum rated carrier power	Class of amplifier
0.70	Plate	0.25–1.0 kw	
.80	Plate	5 kw and over	
.35	Low Level	0.25 kw and over	B
.65	Low Level	0.25 kw and over	BC [1]
.35	Grid	0.25 kw and over	

[1] All linear amplifier operation where efficiency approaches that of Class C operation.

(c) In computing operating power by the indirect method, the factor in paragraph (b) of this section shall apply in all cases, and no distinction will be recognized due to the operating power being less than the maximum rated carrier power.

[§ 73.52(b) *as amended eff. 7-11-66; III(64)-13*]

§ 73.54 Operating power; direct measurement.

(a) Applications to determine the operating power by the direct method shall be made on FCC Form 302.

(b) The resistance variation method, substitution method and bridge method are acceptable methods of measuring the total antenna resistance.

(c) A determination of the resistance of an omnidirectional antenna shall be made by taking a series of measurements at 5, 10, 15, and 20 kc/s on each side of the operating frequency. The values measured should be plotted with frequency as abscissa and resistance in ohms as ordinate and a smooth curve drawn. The point on the ordinate where this curve intersects the operating frequency gives the value of the antenna resistance.

(d) Antenna resistance for a directional antenna system shall be measured at the point of common radio frequency input to the directional antenna system. The following conditions shall obtain:

(1) The antenna shall be finally adjusted for the required pattern.

(2) The reactance at the operating frequency and at the point of measurement shall be adjusted to zero or as near thereto as practical.

(3) Suitable radio-frequency bridge or other method shall be employed to determine the resistance and reactance at the point of common radio frequency input.

(4) Resistance and reactance measurements at approximately 5, 10, 15, and 20 kc/s on each side of the operating frequency shall be made. The values measured shall be plotted and the resistance at the operating frequency determined in the same manner as set forth in paragraph (c) of this section.

(5) A permanently installed antenna ammeter shall be placed in each element of the system as well as at the point of measurement of resistance.

(e) The license for a station of power of 5 kw or under which employs a directional antenna will specify the antenna resistance as 92.5 percent of that determined at the point of common input. The resistance specified for stations of a power over 5 kw will be 95 percent of that determined at the point of common input.

§ 73.55 Modulation.

The percentage of modulation shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice. In no case is it to exceed 100 percent on negative peaks of frequent recurrence. Generally, it should not be less than 85 percent on peaks of frequent recurrence; but where necessary to avoid objectionable loudness modulation may be reduced to whatever level is necessary, even if the resulting modulation is substantially less than 85 percent on peaks of frequent recurrence.

[*§ 73.55 as amended eff. 9–1–65; III(64)–9*]

§ 73.56 Modulation monitors.

(a) Each station shall have in operation, either at the transmitter or at the place the transmitter is controlled, a modulation monitor of a type approved by the Commission.

NOTE: Approved modulation monitors are included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment". Copies of this list are available for inspection at the Commission's office in Washington, D. C. and at each of its field offices.

(b) In the event that the modulation monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) The degree of modulation of the station shall be monitored with a cathode ray oscilloscope or other acceptable means.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with § 1.549 of this chapter may be filed with the Engineer in Charge of the radio district in which the station is operating for such additional time as may be required to complete repairs of the defective instrument.

(d) Each station operated by remote control shall continuously, except when other readings are being taken, monitor percent of modulation or shall be equipped with an automatic device to limit percent of modulation on negative peaks to 100.

§ 73.57 Operating power; maintenance of.

(a) The operating power of each station shall be maintained as near as practicable to the licensed power and shall not exceed the limits of 5 percent above and 10 percent below the licensed power, except that in an emergency when due to causes beyond control of the licensee it becomes impossible to operate with full licensed power, the station may be operated with reduced power for a period not to exceed 10 days,

provided the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified immediately after the emergency develops and also upon the resumption of licensed power.

(b) In addition to maintaining the operating power within the above limitations, stations employing directional antenna systems shall maintain the ratio of the antenna currents in the elements of the system within 5 percent of that specified by the terms of the license or other instrument of authorization.

§ 73.58 Indicating instruments.

(a) Each standard broadcast station shall be equipped with indicating instruments which conform with the specifications set forth in § 73.39 for measuring the DC plate circuit current and voltage of the last radio frequency amplified stage; the radio frequency base current of each antenna element; and, for stations employing directional antenna systems, the radio frequency current at the point of common input to the directional antenna.

(b) In the event that any one of these indicating instruments becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the instrument is found to be defective and immediately after the repaired or replacement instrument has been installed and is functioning properly.

(3) If the defective instrument is the antenna current meter of a nondirectional station which does not employ a remote antenna ammeter, or if the defective instrument is the common point meter of a station which employs a directional antenna, and does not employ a remote common point meter, the operating power shall be determined by the indirect method in accordance with § 73.52 during the entire time the station is operated without the antenna current meter or common point meter. However, if a remote antenna ammeter or a remote common point meter is employed and the antenna current meter or common point meter becomes defective, the remote meter may be used in determining operating power by the direct method pending the return to service of the regular meter, provided other meters are maintained at same value previously employed.

(c) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request in accordance with § 1.549 of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

(d) Remote antenna ammeters and remote common point meters are not required; therefore, authority to operate without them is not necessary. However, if a remote antenna ammeter or common point meter is employed and becomes defective, the antenna base currents may be read and logged once daily for each mode of operation, pending the return to service of the regular remote meter.

§ 73.59 Frequency tolerance.

The operating frequency of each station shall be maintained within 20 cycles of the assigned frequency.

§ 73.60 Frequency monitor.

(a) The licensee of each station shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a frequency monitor of a type approved by the Commission which shall be independent of the frequency control of the transmitter.

NOTE: Approved frequency monitors are included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment". Copies of this list are available for inspection at the Commission's office in Washington, D. C. and at each of its field offices.

(b) In the event that the frequency monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) The frequency of the station shall be measured by an external source at least once each 7 days and the results entered in the station log.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with § 1.549 of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

§ 73.61 New equipment; restrictions.

The Commission will authorize the installation of new transmitting equipment in a broadcast station or changes in the frequency control of an existing transmitter only if such equipment is so designed that there is reasonable assurance that the transmitter is capable of maintaining automatically the assigned frequency within the limits specified in § 73.59.

§ 73.62 Automatic frequency control equipment; authorization required.

New automatic frequency control equipment and changes in existing automatic frequency control equipment that may affect the precision of frequency control or the operation of the transmitter shall be installed only upon authorization from the Commission.

§ 73.63 Auxiliary transmitter.

Upon showing that a need exists for the use of an auxiliary transmitter in addition to the regular transmitter of a broadcast station, a license therefor may be issued: *Provided*, That:

(a) An auxiliary transmitter may be installed either at the same location as the main transmitter or at another location.

(b) A licensed operator shall be in control whenever an auxiliary transmitter is placed in operation.

(c) The auxiliary transmitter shall be maintained so that it may be placed in operation at any time for any one of the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitter.

(2) The transmission of the regular programs during maintenance or modification work on the main transmitter necessitating discontinuance of its operation.

(3) Emergency Broadcast System operation, provided the auxiliary transmitter is used in connection with a National Defense Emergency Authorization.

(4) Upon request of a duly authorized representative of the Commission.

(d) The auxiliary transmitter shall be tested at least once each week to determine that it is in proper operating condition and that it is adjusted to the licensed frequency: *Provided, however*, That the test in any week may be omitted if the auxiliary transmitter has been operated during the week pursuant to paragraph (c) of this section and such operation was satisfactory. Tests while using the regular antenna shall be conducted only between 12 midnight and 9 a.m., local standard time. Tests with a dummy load may be conducted at any time.

(e) The auxiliary transmitter shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) An auxiliary transmitter which is licensed at a geographical location different from that of the main transmitter shall be equipped with a frequency control which will automatically hold the frequency within the limits prescribed by the regulations in this part without any manual adjustment during operation or when it is being put into operation.

(g) The operating power of an auxiliary transmitter may be less than the authorized power, but in no event shall it be greater than such power.

(h) All regulations as to safety requirements and spurious emissions applying to broadcast transmitting equipment shall apply also to an auxiliary transmitter.

[*§ 73.63(d) amended eff. 11-26-65; III(64)-11*]

§ 73.64 Alternate main transmitters.

The licensee of a standard broadcast station may be licensed for alternate main transmitters provided that a technical need for such alternate transmitters is shown, such as licensees maintaining 24-hour schedule and needing alternate operations for maintenance, or where developmental work requires alternate operation, and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) The transmitters have the same power rating except at stations operating with different daytime and nighttime power, when it shall be permissible to employ transmitters of power ratings appropriate to either the licensed daytime or nighttime power.

(c) The external effects from both transmitters are substantially the same as to frequency stability, reliability of operation, radio harmonics and other spurious emissions, audio frequency range and audio harmonic generation in the transmitter.

§ 73.65 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted

and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37. 17.39, 17.40, 17.41, and 17.42 of that part.

REMOTE CONTROL

AUTHORITY: §§ 73.66 to 73.68 issued under sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318.

§ 73.66 Remote control authorization.

(a) Application to operate a station by remote control may be made as a part of the application for construction permit for a new station, provided that the proposal is for nondirectional operation.

(b) Application to operate an authorized station by remote control shall be made on FCC Form 301-A.

(c) An authorization for remote control will be issued only after a satisfactory showing has been made in regard to the following, among others:

(1) The location of the remote control point(s);

(2) The directional antenna system, if such is authorized, is in proper adjustment and is stable.

[*§ 73.66 (a) and (c) amended eff. 3-22-67; III (64)-17*]

§ 73.67 Remote control operation.

(a) Operation by remote control shall be subject to the following conditions:

(1) The equipment at the operating and transmitting positions shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by the licensee.

(2) The control circuits from the operating positions to the transmitter shall provide positive on and off control and shall be such that open circuits, short circuits, grounds or other line faults will not actuate the transmitter and any fault causing loss of such control will automatically place the transmitter in an inoperative position.

(3) A malfunction of any part of the remote control equipment and associated line circuits resulting in improper control or inaccurate meter readings shall be cause for the immediate cessation of operation by remote control.

(4) Control and monitoring equipment shall be installed so as to allow the licensed operator at the remote control point to perform all the functions in a manner required by the Commission's rules.

(5) The indications at the remote control point of the antenna current meter or, for directional antennas, the common point current meter and remote base current meters, shall be read and entered in the operating log each half hour.

(6) The indications at the transmitter, if a directional antenna station, of the common point current, base currents, phase monitor sample loop currents and phase indications shall be read and entered in the operating log once each day for each pattern. These readings must be made within two hours after the commencement of operation for each pattern.

(b) All stations, whether operating by remote control or direct control, shall be equipped so as to be able to follow the prescribed procedure set forth in § 73.921(b).

§ 73.68 Remote control renewal application.

(a) An application for renewal of a remote control authorization may be made on the application for renewal of station license.

(b) Stations employing directional antenna and operated by remote control shall make a skeleton proof of performance each year, consisting of three or four measurements on each radial used in the original application and must submit the results of these measurements, plus the monitoring point readings, with the renewal application.

OPERATION

§ 73.71 Minimum operation schedule.

(a) All standard broadcast stations are required to maintain an operating schedule of not less than two-thirds of the total hours they are authorized to operate between 6 a.m. and 6 p.m., local standard time, and two-thirds of the total hours they are authorized to operate between 6 p.m. and midnight, local standard time, on each day of the week except Sunday: *Provided, however*, That stations authorized for daytime operation only need comply only with the minimum requirement for operation between 6 a.m. and 6 p.m.

(b) In the event that causes beyond a licensee's control make it impossible to adhere to the operating schedule in paragraph (a) of this section or to continue operating, the station may limit or discontinue operation for a period of not more than 10 days, without further authority of the Commission. However, the Commission and the Engineer in Charge of the radio district in which the station is located shall be immediately notified in writing if the station is unable to maintain the minimum operating schedule and shall be subsequently notified when the station resumes regular operation.

§ 73.72 Operation during experimental period.

The licensee of each standard broadcast station shall operate or refrain from operating its station during the experimental period as directed by the Commission in order to facilitate frequency measurement or for the determination of interference.

§ 73.73 Specified hours.

If the license of a station specifies the hours of operation, the schedule so specified shall be adhered to except as provided in §§ 73.71 and 73.72.

§ 73.74 Sharing time.

If the licenses of stations authorized to share time do not specify hours of operation, the licensees shall endeavor to reach an agreement for a definite schedule of periods of time to be used by each. Such agreement shall be in writing and each licensee shall file the same in triplicate original with each application to the Commission for renewal of license. If and when such written agreements are properly filed in conformity with this section the file mark of the Commission will be affixed thereto, one copy will be retained by the Commission, one copy forwarded to the Engineer in Charge of the radio district in which the station is located, and one copy returned to the licensee to be posted with the station license and considered as a part thereof. If the license specifies a proportionate time division, the agreement shall maintain this proportion. If no proportionate time division is specified in the license, the licensees shall agree upon a division of time. Such division of time shall not include simultaneous operation of the stations unless specifically authorized by the terms of the license.

§ 73.75 Sharing time; equivalence of day and night hours.

For the purpose of determining the proportionate division of time of the broadcast day for sharing time stations 1 night hour shall be considered the equivalent of 2 day hours.

§ 73.76 Sharing time; experimental period.

If the license of a station authorized to share time does not specify the hours of operation, the station may be operated for the transmission of regular programs during the experimental period provided an agreement thereto is reached with the other stations with which the broadcast day is shared and further provided such operation is not in conflict with § 73.72. Time-sharing agreements for operation during the experimental period need not be submitted to the Commission.

§ 73.77 Sharing time; departure from regular schedule.

A departure from the regular operating schedule set forth in a time-sharing agreement will be permitted only in cases where an agreement to that effect is reduced to writing, is signed by the licensees of the stations affected thereby and filed in triplicate by each licensee with the Commission prior to the time of the proposed change. If time is of the essence, the actual departure in operating schedule may precede the actual filing of written agreement, provided appropriate notice is sent to the Commission and the Engineer in Charge of the radio district in which the station is located.

§ 73.78 Sharing time stations; notification to Commission.

If the licensees of stations authorized to share time are unable to agree on a division of time, the Commission shall be so notified by statement to that effect filed with the applications for renewals of licenses. Upon receipt of such statement the Commission will designate the applications for a hearing and, pending such hearing, the operating schedule previously adhered to shall remain in full force and effect.

§ 73.79 License to specify sunrise and sunset hours.

If the licensee of a broadcast station is required to commence or cease operation, or to change the mode of operation of the station at the times of sunrise and sunset at any particular location, the controlling times for each month of the year are set forth in the station's instrument of authorization. Uniform sunrise and sunset times are specified for all of the days of each month, based upon the actual times of sunrise and sunset for the fifteenth day of the month adjusted to the nearest quarter hour. In accordance with a standardized procedure described therein, actual sunrise and sunset times are derived by interpolation in the tables of the 1946 American Nautical Almanac, issued by the Nautical Almanac Office of the United States Naval Observatory.

§ 73.80 Secondary station; filing of operating schedule.

The licensee of a secondary station which is authorized to operate limited time and which may resume operation at the time the dominant station (or stations) on the same channel ceases operation shall, with each application for renewal of license, file in triplicate a copy of its regular operating schedule, bearing a signed notation by the licensee of the dominant station of its objection or lack of objection thereto. Upon approval of such operating schedule, the Commission will affix its file mark and return one copy to the licensee authorized to operate limited time, which shall be posted with the station license and considered as a part thereof. Departure from said operating schedule will be permitted only in accordance with the procedure set forth in § 73.77.

§ 73.81 Secondary station; failure to reach agreement.

If the licensee of a secondary station authorized to operate limited time and a dominant station on a channel are unable to agree upon a definite time for resumption of operation by the station authorized limited time, the Commission shall be so notified by the licensee of the station authorized limited time. After receipt of such statement the Commission will designate for hearing the applications of both stations for renewal of license, and pending the hearing the schedule previously adhered to shall remain in full force and effect.

§ 73.82 Departure from schedule; material violation.

In all cases where a station licensee is required to prepare and file an operating schedule, any deviation or departure from such schedule, except as herein authorized, shall be considered as a violation of a material term of the license.

§ 73.83 Local standard time.

All references in this part to standard time or local standard time refer to local standard time as determined and fixed by the Interstate Commerce Commission.

§ 73.84 Daylight saving time.

If local time is changed from standard time to daylight saving time at the location of all stations sharing time on the same channel, the hours of operation of all such stations on that channel shall be understood to refer to daylight saving time, and not standard time, as long as daylight saving time is observed at such locations. This provision shall govern when the time is changed by provision of law or general observance of daylight saving time by the various communities, and when the time of operation of such stations is specified in the license or is mutually agreed upon by the licensees: *Provided, however,* That when the license specifies average time of sunrise and sunset, local standard time shall be observed. In no event shall a station licensed for daytime only operate on regular schedule prior to local sunrise, or shall a station licensed for greater daytime power than nighttime power or for a different radiation pattern for daytime operation than for nighttime operation operate with the daytime power or radiation pattern prior to local sunrise.

§ 73.85 Changes in time; agreement between licensees.

Where the local time is not changed from standard time to daylight saving time at the location of all stations sharing time on the same channel, the hours of operation of such stations shall be understood to have reference to standard time, and not daylight saving time, unless said licensees mutually agree upon a new schedule which shall be effective only while daylight saving time is observed at the location of some of these stations.

§ 73.86 Local standard time; license provisions.

The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to local standard time unless modification of such license with respect to hours of operation is authorized by the Commission.

§ 73.87 Program transmissions prior to local sunrise.

Except as provided in § 73.98 and § 73.99, no standard broadcast station shall operate at times, or with modes or powers, other than those specified in the basic instrument of authorization.

[*§ 73.87 amended eff. 8-15-67; III(64)-18*]

§ 73.88 Blanketing interference.

The licensee of each broadcast station is required to satisfy all reasonable complaints of blanketing interference within the 1 v/m contour.

§ 73.89 Use of frequency and modulation monitors at auxiliary transmitters.

(a) The following shall govern the installation of approved frequency and modulation monitors at auxiliary transmitters:

(1) In case the auxiliary transmitter location is at a site different from that of the main transmitter, an approved frequency monitor shall be installed at the auxiliary transmitter, except when the frequency of the auxiliary transmitter can be monitored by means of the frequency monitor at the main transmitter.

(2) The provision that the frequency monitor may be located at the site of the main transmitter shall not relieve the obligation that the frequency deviation of the auxiliary transmitter shall be maintained within 20 cycles.

(3) Installation of an approved modulation monitor at the location of the auxiliary transmitter, when different from that of the main transmitter, is optional with the licensee. However, when it is necessary to operate the auxiliary transmitter beyond 2 calendar days, a modulation monitor shall be installed and operated at the auxiliary transmitter. The monitor (if taken from the main transmitter) shall be reinstalled at the main transmitter immediately upon resumption of operation of the main transmitter.

(4) In all cases where the auxiliary transmitter and the main transmitter have the same location, the same frequency and modulation monitor may be used for monitoring both transmitters, provided they are so arranged as to be switched readily from one transmitter to the other.

§ 73.90 Emergency Weather Warnings.

Upon receipt of notification of an Emergency Weather Warning of a condition of immediate danger to life and property from the United States Weather Bureau, all standard broadcast stations may, at their option, during authorized hours of operation only, broadcast the Emergency Action Notification Signal (two 5-second carrier breaks and 15 seconds of 1,000 CPS tone) followed by the Emergency Weather Warning. Nothing in this section shall be construed as authorizing a daytime only or limited time station to operate during unauthorized hours.

(Sec. 606, 48 Stat. 1104, as amended; 47 U.S.C. 606, E.O. 11092, 28 F.R. 1847)

§ 73.91 Discontinuance of operation.

The licensee of each station shall notify the Commission in Washington, D. C., and the Engineer in Charge of the radio district where such station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee, shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D. C., office of the Commission for cancellation.

§ 73.92 Station and operator licenses; posting of.

(a) The station license and any other instrument of station authorization shall be posted in a conspicuous place and in such manner that all terms are visible, at the place the licensee considers to be the principal control point of the transmitter. At all other control points listed on the station authorization, a photocopy of the station license and other instruments of station authorization shall be posted.

(b) The original operator license, or FCC Form 759, of each station operator shall be posted at the place where he is on duty as an operator.

§ 73.93 Operator requirements.

(a) One or more radio operators holding a valid radiotelephone first-class operator license, except as provided in paragraph (b) of this section, shall be in actual charge of the transmitting apparatus and shall be on duty either at the transmitter location or remote control point. If operation by remote control has not been authorized, the transmitter shall be readily accessible and clearly visible to the operator at his normal operating position. If operation by remote control is authorized, the control and monitoring equipment shall be readily accessible and clearly visible to the operator at his normal operating position.

(b) In cases where a station is authorized for nondirectional operation with power not in excess of 10 kilowatts, the routine operation of the transmitter may be performed by an operator holding a valid first-class or second-class radiotelephone or radiotelegraph operator license or a radiotelephone third-class operator permit which has been endorsed for broadcast station operation. The operator shall be on duty at the trans-

mitter or authorized remote control point and in actual charge thereof. Except at times when the operation of the station is under the immediate supervision of an operator holding a valid radiotelephone first-class operator license, adjustments of the transmitting equipment shall be limited to the following:

(1) Those necessary to turn the transmitter on and off.

(2) Adjustments of external controls as may be required to compensate for voltage fluctuations in the power supply.

(3) Adjustments of external controls to maintain modulation of the transmitter within the prescribed limits.

(4) Adjustments of external controls necessary to effect routine changes in operating power which are required by the station's instrument of authorization.

(5) Adjustments of external controls necessary to effect operation in accordance with a National Defense Emergency Authorization during an Emergency Action Condition.

It shall be the responsibility of the licensee to insure that the person who may be required to perform these tasks as well as to perform other duties (such as reading meters and making log entries) is properly instructed so as to be capable of performing the duties required of him at times when not under the immediate supervision of a radiotelephone first-class operator. Where necessary, printed step-by-step instructions shall be posted for those transmitter adjustments which the lesser grade operator is authorized to make. Should the transmitting apparatus be observed to be operating in any manner inconsistent with this subpart or the current instrument of authorization for the station at any time when an operator holding a valid radiotelephone first-class operator license is not immediately available, and none of the above adjustments is effective in correcting the condition of improper operation, the emissions of the station shall be immediately terminated.

(c) If the routine operation of the transmitting apparatus at a standard broadcast station with power of 10 kw or less and nondirectional antenna is performed by an operator other than a radiotelephone first-class operator pursuant to the provisions of paragraph (b) of this section, the licensee shall either employ one or more operators holding a valid radiotelephone first-class operator license as a full-time member of the station staff or, in the alternative, contract in writing for the services on a part-time basis of one or more such operators. The radiotelephone first-class operator or operators shall perform transmitter maintenance and shall be promptly available at all times to correct conditions of improper operation beyond the scope of authority of the lesser grade operator on duty. If such services are on a contract part-time basis, a signed copy of the agreement shall be kept in the files of the station and at the transmitter or control point and shall be made available for inspection upon request by any authorized representative of the Commission. A signed copy of the agreement shall also be forwarded to the Commission and to the Engineer in Charge of the radio district in which the station is located within 3 days after the agreement is signed.

[§ 73.93(c) *Note deleted eff. 11–26–65; III(64)–11*]

(d) The licensed operator on duty and in charge of a standard broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another radio station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such other stations: *Provided, however,* That

such duties shall in nowise interfere with the proper operation of the standard broadcast transmitter.

(e) At all standard broadcast stations, a complete inspection of all transmitting equipment in use shall be made by an operator holding a valid radiotelephone first-class operator license at least once each day, 5 days each week, with an interval of no less than 12 hours between successive inspections. This inspection shall include such tests, adjustments, and repairs as may be necessary to insure operation in conformance with the provisions of this subpart and the current instrument of authorization for the station.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

[§ 73.93(a) and (b) as amended eff. 5-14-65; III (64)-8]

§ 73.95 Equipment tests.

(a) During the process of construction of a standard broadcast station the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may without further authority of the Commission, conduct equipment tests during the experimental period for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations, and the applicable engineering standards. In addition the Commission may authorize equipment tests other than during the experimental period if such operation is shown to be desirable to the proper completion of construction and adjustment of the transmitting equipment and antenna system. An informal application for such authority, giving full details regarding the need for such tests, shall be filed with the Commission at least two (2) days (not including Sundays and Saturdays and legal holidays when the offices of the Commission are not open) prior to the date on which it is desired to begin such operation.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid and shall be conducted only during the experimental period (12 midnight to local sunrise) unless otherwise specifically authorized.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of program tests. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations and the applicable engineering standards, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 73.96 Program tests.

(a) Upon completion of construction of a standard broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and applicable engineering standards and when an application for station license has been filed showing the station to be in satisfactory operating condition, the permittee may request authority to conduct program tests: *Provided*, That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified. All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application. If the station is using a directional antenna, a proof of performance must also be filed as required by § 73.33(b).

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation on program test authority shall be in strict compliance with the rules governing standard broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized.

(e) The granting of program test authority shall not be construed as approval by the Commission of the application for station license.

§ 73.97 Station inspection.

The licensee of any radio station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 73.98 Operation during emergency.

(a) The licensee of a standard broadcast station or permittee of such a station operating under program test authority is authorized only to disseminate radio communications intended to be received by the public. However, during a period of emergency or imminent emergency in the area in which the station is located such a licensee or permittee may also (during the hours, at the frequency, and with the facilities specified in its instrument of authorization) utilize such station for transmitting communications directly related to the emergency which are intended to be received by specific individuals for the purpose of dispatching aid, assisting in rescue operations, or otherwise promoting the safety of life and property or alleviating hardship. In the course of such operation or any other operation permitted under the provisions of this section a station may communicate with stations of other classes and in other services. For the purposes of this section, an emergency shall mean a situation that would generally and seriously endanger life and property or cause substantial hardship as a result of events such as hurricane or other severe weather conditions, flood, earthquake or wide-area forest fire. The term shall not include situations resulting from frosts, or localized fires which are not a source of general danger.

(b) During periods of emergency or imminent emergency, the licensee of an unlimited-time standard broadcast station, or the permittee of such a station operating under program test authority may, if authorized different powers or antenna patterns for daytime and nighttime service, utilize daytime facilities during nighttime hours to disseminate communications directly related to the emergency which are intended to be received by the public or by specific individuals for the purposes specified in paragraph (a) of this section, if: (1) There are no other standard broadcast stations in the area authorized to operate and actually operating during the hours involved; or (2) such other stations are for any reason not presenting material concerning the emergency during the hours involved; or (3) such licensee or permittee is prepared to make a showing on request that all or part of the area which was affected by the emergency and which it planned to serve was not covered with an adequate signal by such other stations presenting emergency material during the hours involved: *Provided, however,* That if such nighttime emergency operation is not continuous but is interspersed with with operations not related to the emergency, the latter operations shall be with normally authorized nighttime facilities: *Provided further,* That such nighttime emergency operation may contain music, but it shall not contain other program material of any kind not related to the emergency, spot announcements (including promotional announcements for a commercial program), or commercial continuity.

(c) During periods of emergency or imminent emergency, a licensee of a standard broadcast station (other than an unlimited-time station), or a permittee of such a station operating under program test authority, may operate at times other than those specified in its instrument of authorization or sharing-time agreement to disseminate communications directly related to the emergency which are intended to be received by the public or by specific individuals for the purposes specified in paragraph (a) of this section, if: (1) There is no standard broadcast station authorized to operate unlimited time in the area; or (2) if no standard broadcast station authorized to operate unlimited-time in the area is engaged in transmitting material concerning the emergency; or (3) such licensee or permittee is prepared to make a showing on request that all or part of the area which was affected by the emergency and which it planned to serve was not covered with an adequate signal by the unlimited-time stations at the time that the extra-hours operation occurred. (Stations sharing time must reach agreement with respect to the division of time for operation under the terms of this paragraph.) Announcements warning of emergencies such as blizzards, hurricanes or tornadoes many hours in advance of the time when they might possibly be expected, and announcements concerning school closings or changes in school bus schedules, road conditions or other matters necessitated by severe weather conditions shall not be made at times other than those specified in instruments of authorization or sharing-time agreements if adequate advance warning can be given during normal hours of operation. Operation under the provisions of this paragraph may contain music, but it shall not contain other program material of any kind not related to the emergency, spot announcements (including promotional announcements for a commercial program), or commercial continuity.

(d) A licensee or permittee operating under the provisions of this section shall (1) as soon as possible after the beginning of such emergency use, send notice to the Commission at Washington, D.C., and to the Engineer in Charge of the district in which the station is located stating the nature of the emergency and the use to which the station is being put; (2) discontinue such emergency operation as soon as the conditions requiring such operation are no longer present or the public has had an opportunity to be adequately informed; and (3) immediately upon cessation of such emergency operation notify the Commission in Washington, D.C., and the Engineer in Charge of the district in which the station is located, and shall in such

notice justify the operation by stating the nature of the emergency, the exact times of operation, the type of emergency information transmitted, the total amount of time devoted to transmission of emergency information, the total amount of time (if any) devoted to music when not engaged in transmitting emergency information, the power, frequency, and antenna pattern used during the emergency operation, and other pertinent details. The notice shall also be accompanied by the program and operating logs of the station covering the periods involved, and, in the case of a station operating under the provisions of paragraph (b) or (c) of this section, a statement that there has been compliance with the prohibition against spot announcements, commercial continuity, or program material of any kind (except music) not related to the emergency.

(e) The decision to operate under the provisions of this section lies solely with the licensee or permittee of the station, requests by governmental or other officials not being controlling. However, such emergency operation shall terminate upon order of the Commission.

(f) Operation under the provisions of this section shall in no event occur on frequencies other than those specified in the instruments of authorization or as otherwise expressly provided by the Commission or by law. When operating under the provisions of this section, power shall not exceed and antenna pattern shall not differ from that specified in the instrument of authorization or as otherwise provided by the Commission or by law, the only permissible deviations with regard to power and antenna pattern being those set forth in paragraph (b) of this section.

(g) No operation under this section shall be permitted if an Emergency Action Condition, under the provisions of Subpart G of this part, is in effect. If a station is operating under this section and an Emergency Action Condition is declared, compliance with the Emergency Action Notification shall take precedence.

§ 73.99 Presunrise service authority.

(a) In order to afford the maximum uniformity in early morning operations compatible with interference considerations, the following classes of standard broadcast permittees and licensees are eligible to request presunrise service authority (PSA):

(1) Class II stations except those operating on Class I–A clear channels not assigned to the United States under the North American Regional Broadcasting Agreement (NARBA) or the United States/Mexican Agreement, and those assigned to U.S. I–A clear channels and located east of the cochannel I–A station.

(2) Class III stations.

(b) When issued, a PSA will permit:

(1) Class II stations to commence operation with their daytime antenna systems either at 6 a.m. local standard time or at sunrise at the westernmost Class I station located east of the Class II station (whichever is later), and to continue such operation until local sunrise: *Provided*, That the permissible power, to be specified in the PSA, shall not exceed 500 watts (or the authorized daytime or critical hours power, if less than 500 watts), or such lesser power as may be determined on the basis of calculations made pursuant to paragraph (c) of this section.

NOTE: Pending decision in Docket 17562, Class II stations on U.S. I–A channels, located west of the cochannel dominant station, may operate with their facilities licensed for use immediately after local sunrise without limitation to 500 watts power. Applications by such stations for PSA's will not be required until that proceeding is resolved, but presunrise operation may not begin prior to 6 a.m. local standard time.

(2) Class III stations to commence operation with their daytime antenna systems at 6 a.m. local standard time, and to continue such operation until local sunrise: *Provided*, That the permissible *power*, to be specified in the PSA, shall not exceed 500 watts or such lesser power as may be determined on the basis of calculations made pursuant to paragraph (c) of this section.

(c) Notwithstanding the provisions of §§ 1.571 and 1.580 of this chapter, requests for PSA's shall be treated as proposals for minor changes in existing facilities and, as such, are not subject to the procedural requirements or remedies applicable to applications for new facilities and major changes therein. PSA requests shall be submitted by letter, signed in the manner specified in § 1.513 of this chapter, with the following information:

(1) Name, call letters and station location.

(2) For Class II stations, a showing that objectionable interference, as determined by the Standard Broadcast Technical Standards of this subpart or by the engineering standards of the NARBA or the United States/Mexican Agreement (whichever is controlling), will not be cause within the 0.5 mv/m 50 percent skywave contour of any domestic or foreign Class I-B clear channel station located west of the Class II station. In addition, the applicant must show that foreign Class II stations (if any) assigned to the same channel will receive full treaty protection. If the foregoing protections cannot be achieved on the basis of 500-watt operation, calculations may be submitted to establish the level to which power must be reduced to preclude objectionable interference: *Provided*, That with respect to Canadian Class II stations, permissible radiation may be established by the use of figure 12 of § 73.190, in the manner described in paragraph (c)(3) of this section.

(3) For Class III stations, a showing that cochannel stations in foreign countries will receive full treaty protection. If such protection cannot be achieved on the basis of 500-watt operation, calculations may be submitted to establish the level to which power must be reduced to preclude objectionable interference: *Provided,* That with respect to Canadian Class III stations, such power level may be established by a showing that the radiation at the pertinent vertical angle toward cochannel Canadian stations does not exceed that defined in Figure 12 of § 73.190. If the latter showing cannot be made on the basis of 500-watt operation, calculations may be submitted to establish the level to which power must be reduced in order to limit radiation at the pertinent vertical angle to the values specified in Figure 12 of § 73.190.

(4) A description of the method whereby any proposed power reduction will be achieved.

(d) Calculations made under paragraph (c) of this section shall not take outstanding PSA's into account, nor shall the grant of a PSA confer any degree of interference protection on the holder thereof.

(e) Operation under a PSA is not mandatory, and will not be included in determining compliance with the requirements of § 73.71. To the extent actually undertaken, however, presunrise operation will be considered by the Commission in determining overall compliance with past programing representations and station policy concerning commercial matter.

(f) The PSA is secondary to the basic instrument of authorization and may be suspended, modified, or withdrawn by the Commission without prior notice or right to hearing, if necessary to resolve interference conflicts, to implement agreements with foreign governments, or in other circumstances warranting such action.

(g) The PSA will be issued for a term coinciding with the current basic instrument of authorization and, unless surrendered by the holder or suspended, modified or withdrawn by the Commission, will have continuing or renewed effect under succeeding instruments.

(h) The issuance of a PSA is intended to include the waiver of §§ 73.45, 73.182, and 73.188 in situations where the operation might otherwise be considered as technically substandard. However, such special conditions as the Commission may deem appropriate may be included in the PSA to insure the operation of the transmitter and associated equipment in accordance with all phases of good engineering practice.

(i) In the event of permanent discontinuance of presunrise operation, the PSA shall be forwarded to the Commission's Washington office for cancellation, and the Engineer in Charge of the radio district in which the station is located shall be notified accordingly.

[*73.99 adopted eff. 8-15-67; III (64)-18*]

Other Operating Requirements

§ 73.111 General requirements relating to logs.

(a) The licensee or permittee of each standard broadcast station shall maintain program, operating, and maintenance logs as set forth in §§ 73.112, 73.113, and 73.114. Each log shall be kept by the station employee or employees (or contract operator) competent to do so, having actual knowledge of the facts required, who in the case of program and operating logs shall sign the appropriate log when starting duty, and again when going off duty.

(b) The logs shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required for the particular class of station concerned is readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log. Each sheet shall be numbered and dated. Time entries shall be either in local standard or daylight saving time and shall be indicated accordingly.

(c) No log or preprinted log or schedule which becomes a log, or portion thereof, shall be erased, obliterated, or willfully destroyed within the period of retention provided by the provisions of this part. Any necessary correction shall be made only pursuant to §§ 73.112, 73.113, and 73.114, and only by striking out the erroneous portion, or by making a corrective explanation on the log or attachment to it as provided in those sections.

(d) Entries shall be made in the logs as required by §§ 73.112, 73.113, and 73.114. Additional information such as that needed for billing purposes or for the cuing of automatic equipment may be entered on the logs. Such additional information, so entered, shall not be subject to the restrictions and limitations in the Commission's rules on the making of corrections and changes in logs.

[*§ 73.111 (a), (c), and (d) as amended eff. 2-21-66; III (64)-12*]

§ 73.112 Program log.

(a) The following entries shall be made in the program log:

(1) *For each program.* (i) An entry identifying the program by name or title. The name or title should be included on each page of the log containing entries pertaining to that particular program (i.e., if a pro-

gram begins on one page of the log and continues on the next page, the title should be repeated).

(ii) An entry of the time each program begins and ends. If programs are broadcast during which separately identifiable program units of a different type or source are presented, and if the licensee wishes to count such units separately, the beginning and ending time for the longer program need be entered only once for the entire program. The program units which the licensee wishes to count separately shall then be entered underneath the entry for a longer program, with the beginning and ending time of each such unit, and with the entry indented or otherwise distinguished so as to make it clear that the program unit referred to was broadcast within the longer program. For example, a recorded entertainment program from 8 a.m. to 9 a.m. within which a 5-minute newscast is broadcast at 8:30, would be shown as follows:

8:00–9:00:
Morning Record Parade.
8:30–8:35:
News and Weather.

(iii) An entry classifying each program as to type, using the definitions set forth in Note 1 at the end of this section.

(iv) An entry classifying each program as to source, using the definitions set forth in Note 2 at the end of this section. (For network programs, also give name or initials of network, e.g., ABC, CBS, NBC, Mutual.)

(v) An entry for each program presenting a political candidate, showing the name and political affiliation of such candidate.

(2) *For commercial matter.* (i) An entry identifying (*a*) the sponsor(s) of the program, (*b*) the person(s) who paid for the announcement, or (*c*) the person(s) who furnished materials or services referred to in § 73.119(d). If the title of a sponsored program includes the name of the sponsor, e.g., XYZ News, a separate entry for the sponsor is not required.

(ii) Commercial continuity. An entry showing the total amount of commercial continuity (CC) within each commercially sponsored program. See Note 3 following this section for definition of commercial continuity and Note 5 for statement as to computation of commercial time.

(iii) Commercial announcement. An entry showing the duration of each commercial announcement (CA) and an entry which shows either the beginning time of each such announcement or which divides the log to show the 15-minute time segment (beginning on the hour) within which the announcement was broadcast. See Note 3 following this section for definition of commercial announcement and Note 5 for statement as to computation of commercial time.

(iv) An entry showing that the appropriate announcement(s) (sponsorship, furnishing material or services, etc.) have been made as required by section 317 of the Communications Act and § 73.119. A checkmark (√) will suffice but shall be made in such a way as to indicate the matter to which it relates.

(3) *For public service announcements.* (i) An entry showing that a public service announcement (PSA) has been broadcast together with the name of the organization or interest on whose behalf it is made. See Note 4 following this section for definition of a public service announcement.

(4) *For other announcements.* (i) An entry of the time that each required station identification announcement is made (call letters and licensed location; see § 73.117).

(ii) An entry for each announcement presenting a political candidate showing the name and political affiliation of such candidate.

(iii) An entry for each announcement made pursuant to the local notice requirements of §§ 1.580 (pregrant) and 1.594 (designation for hearing) of this chapter, showing the time it was broadcast.

(iv) An entry showing that a mechanical reproduction announcement has been made in accordance with the provisions of § 73.118.

(b) Program log entries may be made either at the time of or prior to broadcast. A station broadcasting the programs of a national network which will supply it with all information as to such programs, commercial matter and other announcements for the composite week need not log such data but shall record in its log the time when it joins the network, the name of each network program broadcast, the sponsor(s), if a commercially sponsored program, the time it leaves the network, and any nonnetwork matter broadcast required to be logged. The information supplied by the network shall be retained with the program logs.

(c) No provision of this section shall be construed as prohibiting the recording or other automatic maintenance of data required for program logs. However, where such automatic logging is used, the licensee must comply with the following requirements:

(1) The licensee, whether employing manual or automatic logging or a combination thereof, must be able accurately to furnish the Commission with all information required to be logged;

(2) Each recording, tape, or other means employed shall be accompanied by a certificate of the operator or other responsible person on duty at the time or other duly authorized agent of the licensee, to the effect that it accurately reflects what was actually broadcast. Any

information required to be logged which cannot be incorporated in the automatic process shall be maintained in a separate record which shall be similarly authenticated;

(3) The licensee shall extract any required information from the recording for the days specified by the Commission or its duly authorized representative and submit it in written log form, together with the underlying recording, tape, or other means employed.

(d) Program logs shall be changed or corrected only in the manner prescribed in § 73.111(c) and only in accordance with the following:

(1) *Manually kept log.* Where, in any program log, or preprinted program log, or program schedule which upon completion is used as a program log, a correction is made before the person keeping the log has signed the log upon going off duty, such correction, no matter by whom made, shall be initialed by the person keeping the log prior to his signing of the log when going off duty, as attesting to the fact that the log as corrected is an accurate representation of what was broadcast. If corrections or additions are made on the log after it has been so signed, explanation must be made on the log or on an attachment to it, dated and signed by either the person who kept the log, the station program director or manager, or an officer of the licensee.

NOTE 1. *Program type definitions.* The definitions of the first eight types of programs (a) through (h) are intended not to overlap each other and will normally include all the various programs broadcast. Definitions (i) through (k) are subcategories and the programs classified thereunder will also be classified under one of the appropriate first eight types. There may also be further duplication within types (i) through (k); (e.g., a program presenting a candidate for public office, prepared by an educational institution, would be classified as Public Affairs (PA), Political (POL), and Educational Institutions (ED)).

(a) Agricultural programs (A) include market reports, farming, or other information specifically addressed, or primarily of interest, to the agricultural population.

(b) Entertainment programs (E) include all programs intended primarily as entertainment, such as music, drama, variety, comedy, quiz, etc.

(c) News programs (N) include reports dealing with current local, national, and international events, including weather and stock market reports; and when an integral part of a news program, commentary, analysis, and sports news.

(d) Public affairs programs (PA) include talks, commentaries, discussions, speeches, editorials, political programs, documentaries, forums, panels, roundtables, and similar programs primarily concerning local, national, and international public affairs.

(e) Religious programs (R) include sermons or devotionals; religious news; and music, drama, and other types of programs designed primarily for religious purposes.

(f) Instructional programs (I) include programs (other than those classified under Agricultural, News, Public Affairs, Religious or Sports) involving the discussion of, or primarily designed to further an appreciation or understanding of, literature, music, fine arts, history, geography, and the natural and social sciences; and programs devoted to occupational and vocational instruction, instruction with respect to hobbies, and similar programs intended primarily to instruct.

(g) Sports programs (S) include play-by-play and pre- or post-game related activities and separate programs of sports instruction, news or information (e.g., fishing opportunities, golfing instruction, etc.).

(h) Other programs (O) include all programs not falling within definitions (a) through (g).

(i) Editorials (EDIT) include programs presented for the purpose of stating opinions of the licensee.

(j) Political programs (POL) include those which present candidates for public office or which give expressions (other than in station editorials) to views on such candidates or on issues subject to public ballot.

(k) Educational Institution programs (ED) include any program prepared by, in behalf of, or in cooperation with, educational institutions, educational organizations, libraries, museums, PTA's, or similar organizations. Sports programs shall not be included.

NOTE 2. *Program source definitions.*—(a) A local program (L) is any program originated or produced by the station, or for the production of which the station is primarily responsible, employing live talent more than 50 percent of the time. Such a program, taped or recorded for later broadcast, shall be classified as local. A local program fed to a network shall be classified by the originating station as local. All nonnetwork news programs may be classified as local. Programs primarily featuring records or transcriptions shall be classified as recorded even though a station announcer appears in connection with such material. However, identifiable units of such programs which are live and separately logged as such may be classified as local. (E.g., if during the course of a program featuring records or transcriptions a nonnetwork 2-minute news report is given and logged as a news program, the report may be classified as local.)

(b) A network program (NET) is any program furnished to the station by a network (national, regional or special). Delayed broadcasts of programs originated by networks are classified as network.

(c) A recorded program (REC) is any program not otherwise defined in this Note including, without limitation, those using recordings, transcriptions or tapes.

NOTE 3. Definition of commercial matter (CM) includes commercial continuity (network and nonnetwork) and commercial announcements (network and nonnetwork) as follows:

(a) Commercial continuity (CC) is the advertising message of a program sponsor.

(b) A commercial announcement (CA) is any other advertising message for which a charge is made, or other consideration is received.

(1) Included are (i) "bonus spots"; (ii) trade-out spots, and (iii) promotional announcements of a future program where consideration is received for such an announcement or where such announcement identifies the sponsor of a future program beyond mention of the sponsors' name as an integral part of the title of the program. (E.g., where the agreement for the sale of time provides that the sponsor will receive promotional announcements, or when the promotional an-

nouncement contains a statement such as "Listen tomorrow for the—[name of program]—brought to you by—[sponsor's name]—.")

(2) Other announcements including but not limited to the following are not commercial announcements:

(i) Promotional announcements, except as heretofore defined in paragraph (b).

(ii) Station identification announcements for which no charge is made.

(iii) Mechanical reproduction announcements.

(iv) Public service announcements.

(v) Announcements made pursuant to § 73.119(d) that materials or services have been furnished as an inducement to broadcast a political program or a program involving the discussion of controversial public issues.

(vi) Announcements made pursuant to the local notice requirements of §§ 1.580 (pre-grant) and 1.594 (designation for hearing) of this chapter.

NOTE 4. *Definition of a public service announcement.* A public service announcement is an announcement for which no charge is made and which promotes programs, activities, or services of Federal, State, or local governments (e.g., recruiting, sales of bonds, etc.) or the programs, activities or services of nonprofit organizations (e.g., UGF, Red Cross Blood Donations, etc.), and other announcements regarded as serving community interests, excluding time signals, routine weather announcements, and promotional announcements.

NOTE 5. *Computation of commercial time.* Duration of a recorded announcement shall be stated precisely. As to live announcements, the entry shall be as close an approximation to the time consumed as possible. The amount of commercial time scheduled will usually be sufficient. It is not necessary, for example, to correct an entry of a 20-second commercial to accommodate varying reading speeds even though the actual time consumed might be a few seconds more or less than the scheduled time. However, it is incumbent upon the licensee to ensure that the entry represents as close an approximation of the time actually consumed as possible.

[§ 73.112 *amended in III(64)-9, par. (d) as adopted eff. 2-21-66; III(64)-12*]

§ 73.113 Operating log.

(a) The following entries shall be made in the operating log by the properly licensed operator in actual charge of the transmitting apparatus only:

(1) An entry of the time the station begins to supply power to the antenna and the time it stops.

(2) An entry of each interruption of the carrier wave, where restoration is not automatic, its cause and duration followed by the signature of the person restoring operation (if licensed operator other than the licensed operator on duty).

(3) An entry, at the beginning of operation and at intervals not exceeding one-half hour, of the following (actual readings observed prior to making any adjustments to the equipment) and, when appropriate, an indication of corrections made to restore parameters to normal operating values:

(i) Operating constants of last radio stage (total plate voltage and plate current).

(ii) Antenna current or common point current (if directional) without modulation, or with modulation if the meter reading is not affected by modulation.

(iii) Frequency monitor reading.

(4) An entry each day of the following where applicable:

(i) Antenna base current(s) without modulation, or with modulation if the meter reading is not affected by modulation, for each mode of operation:

(*a*) Where remote antenna meters or a remote common point meter are normally employed but are defective.

(*b*) Where required by the station license for directional antenna operation.

(ii) Where there is remote control operation of a directional antenna station, readings for each pattern taken at the transmitter (within 2 hours of commencement of operation with each pattern) of:

(*a*) Common point current without modulation, or with modulation if the meter reading is not affected by modulation.

(*b*) Base current(s) without modulation, or with modulation if the meter reading is not affected by modulation.

(*c*) Phase monitor sample loop current(s) without modulation or with modulation if the meter reading is not affected by modulation.

(*d*) Phase indications.

(5) Any other entries required by the instrument of authorization or the provisions of this part.

(6) The entries required by § 17.38 (a), (b), and (c) of this chapter.

(b) Automatic devices accurately calibrated and with appropriate time, date and circuit functions may be utilized to record the entries in the operating log: *Provided*, That:

(1) They do not affect the operation of circuits or accuracy of indicating instruments of the equipment being recorded;

(2) The recording devices have an accuracy equivalent to the accuracy of the indicating instruments;

(3) The calibration is checked against the original indicators at least once a week and the results noted in the maintenance log;

(4) Provision is made to actuate automatically an aural alarm circuit located near the operator on duty if any of the automatic log readings are not within the tolerances or other requirements specified in the rules or instrument of authorization;

(5) Unless the alarm circuit operates continuously, devices which record each parameter in sequence must read each parameter at least once during each 10-

minute period and clearly indicate the parameter being recorded;

(6) The automatic logging equipment is located at the remote control point if the transmitter is remotely controlled, or at the transmitter location if the transmitter is manually controlled;

(7) The automatic logging equipment is located in the near vicinity of the operator on duty and is inspected by him periodically during the broadcast day; and

(8) The indicating equipment conforms with the requirements of § 73.39 except that the scales need not exceed 2 inches in length and arbitrary scales may not be used.

(c) In preparing the operating log, original data may be recorded in rough form and later transcribed into the log, but in such a case all portions of the original memoranda shall be preserved as a part of the complete log.

(d) Operating logs shall be changed or corrected only in the manner prescribed in § 73.111(c) and only in accordance with the following:

(1) *Manually kept log.* Any necessary corrections in a manually kept operating log shall be made only by the person making the original entry who shall make and initial each correction prior to signing the log when going off duty in accordance with § 73.111(a). If corrections or additions are made on the log after it has been so signed, explanation must be made on the log or on an attachment to it, dated and signed by either the operator who kept the log, the station technical supervisor or an officer of the licensee.

(2) *Automatic logging.* No automatically kept operating log shall be altered in any way after entries have been recorded. Any errors or omissions found in an automatically kept operating log shall be noted and explained in a memorandum signed by the operator on duty (who, under the provisions of paragraph (b)(7) of this section, is required to inspect the automatic equipment), or by the station technical supervisor or an officer of the licensee. Such memorandum shall be affixed to the original log in question.

[*§ 73.113(a) Intro. text amended and (a)(6), (c), and (d) adopted eff. 2-21-66; III(64)-12*]

§ 73.114 Maintenance log.

(a) The following entries shall be made in the maintenance log:

(1) An entry each week of the following where applicable:

(i) A notation indicating the readings of the tower base current ammeter(s) and the associated remote antenna ammeter(s) (actual readings observed prior to remote antenna ammeter recalibration) and indicating calibration of the remote ammeter(s) against the tower base ammeter(s).

(ii) Time and result of test of auxiliary transmitter.

(iii) A notation of all frequency checks and measurements made independently of the frequency monitor and of the correlation of these measurements with frequency monitor indications.

(iv) A notation of the calibration check of automatic recording devices as required by § 73.113(b)(3).

(2) An entry of the data and time of removal from and restoration to service of any of the following equipment in the event it becomes defective:

(i) Modulation monitor.

(ii) Frequency monitor.

(iii) Final stage plate voltmeter.

(iv) Final stage plate ammeter.

(v) Base current ammeter(s).

(vi) Common point ammeter.

(3) Record of tower light inspections where required by § 17.38(d) of this chapter (Part 17—Construction, Marking and Lighting of Antenna Structures).

(4) Entries made so as to describe fully any experimental operation pursuant to § 73.10.

(5) Any other entries required by the current instrument of authorization of the station and the provisions of this subpart.

(b) Upon completion of the inspection required by § 73.93(e), the inspecting operator shall enter a signed statement that the required inspection has been made, noting in detail the tests, adjustments and repairs which were accomplished in order to insure operation in accordance with the provisions of this subpart and the current instrument of authorization of the station. The statement shall also specify the amount of time, exclusive of travel time to and from the transmitter, which was devoted to such inspection duties. If complete repair could not be effected, the statement shall set forth in detail the items of equipment concerned, the manner and degree in which they are defective, and the reason for failure to make satisfactory repairs.

(c) The inspecting operator shall sign and date the maintenance log at the conclusion of each inspection. In preparing the maintenance log, original data may be recorded in rough form and later transcribed into the log, but in such cases all portions of the original memorandum shall be preserved as a part of the complete log.

(d) Any necessary corrections in the maintenance log shall be made by the inspecting operator who shall initial and date all changes prior to signing the log. If corrections or additions are made on the log after

it has been so signed, explanation must be made the subject of a separate memorandum, dated and signed by the operator who made the entry in question, or the station's technical supervisor or by an officer of the licensee. Such memorandum shall explain fully the circumstances surrounding the errors or ambiguities, and shall be affixed to the original log in question. If written and signed by other than the inspecting operator who made the entry, the memorandum shall contain a satisfactory explanation of why such signature is lacking.

[§ 73.114 as amended eff. 2-21-66; III(64)-12]

§ 73.115 Retention of logs.

Logs of standard broadcast stations shall be retained by the licensee or permittee for a period of 2 years: *Provided, however*, That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further*, That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

NOTE: Application forms for licenses and other authorizations require that certain operating and program data be supplied. It is suggested that these application forms be kept in mind in connection with maintenance of station program and operating records.

§ 73.116 Availability of logs and records.

The following shall be made available upon request by an authorized representative of the Commission:

(a) Program, operating and maintenance logs.

(b) Equipment performance measurements required by § 73.47.

(c) Copy of most recent antenna resistance or common-point impedance measurements submitted to the Commission.

(d) Copy of most recent field intensity measurements to establish performance of directional antennas required by § 73.151.

§ 73.117 Station identification.

(a) A licensee of a standard broadcast station shall make station identification announcement (call letters and location) at the beginning and ending of each time of operation and during operation (1) on the hour and (2) either on the half hour or at the quarter hour following the hour and at the quarter hour preceding the next hour: *Provided*,

(b) Such identification announcement need not be made on the hour when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production of longer duration than 30 minutes. In such cases the identification announcement shall be made at the beginning of the program, at the first interruption of the entertainment continuity, and at the conclusion of the program.

(c) Such identification announcement need not be made on the half hour or quarter hours when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production. In such cases an identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion of the program: *Provided*, That an announcement within 5 minutes of the times specified in paragraph (a) (2) of this section will satisfy the requirements of identification announcements.

(d) In the case of variety show programs, baseball game broadcasts, or similar programs of longer duration than 30 minutes, the identification announcement shall be made within 5 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(e) In the case of all other programs the identification announcement shall be made within 2 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(f) In making the identification announcement the call letters shall be given only on the channel of the station identified thereby, except as otherwise provided in § 73.287 of the Commission's rules governing FM broadcast stations.

§ 73.118 Mechanical reproductions.

(a) No mechanically reproduced program consisting of a speech, news event, news commentator, forum, panel discussion, or special event in which the element of time is of special significance, or any other program in which the element of time is of special significance and presentation of which would create, either intentionally or otherwise, the impression or belief on the part of the listening audience that the event or program being broadcast is in fact occurring simultaneously with the broadcast, shall be broadcast without an appropriate announcement being made either at the beginning or end of such reproduction or at the beginning or end of the program in which such reproduction is used that it is

a mechanical reproduction or a mechanically reproduced program: *Provided, however,* That each such program of one minute or less need not be announced as such.

(b) The exact form of identifying announcement is not prescribed, but the language shall be clear and in terms commonly used and understood. Any other program mechanically reproduced or series of mechanical reproductions, including a mechanical reproduction used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of sponsorship of the program proper, need not be announced as provided in paragraph (a) of this section, but the licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

(c) The requirements of paragraph (a) of this section are waived with respect to network programs, transcribed and rebroadcast at a later hour because of the time zone differentials between the place where the program originates and where it is rebroadcast, this waiver being applicable whether the off-the-line recording is made by the network itself at one of its key stations or by an individual station, but only when the off-the-line recording is for broadcast at an hour not exceeding the time zone differential between the place where the program originates and where it is rebroadcast. Each station which broadcasts network programs at a later hour in accordance with this waiver shall make an appropriate announcement at least once each day between the hours of 10:00 a.m. and 10:00 p.m., stating that some or all of the network programs which are broadcast by that station are delayed broadcasts by means of transcription. This waiver provision also applies during the annual periods in which daylight saving time will be effective with respect to network programs transcribed and rebroadcast one hour later because of the time differential resulting from the adoption of daylight saving time in some areas.

§ 73.119 Sponsored programs, announcement of.

(a) When a standard broadcast station transmits any matter for which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, such station, the station shall broadcast an announcement that such matter is sponsored, paid for, or furnished, either in whole or in part, and by whom or on whose behalf such consideration was supplied: *Provided, however,* That "service or other valuable consideration" shall not include any service or property furnished without charge or at a nominal charge for use on, or in connection with, a broadcast unless it is so furnished in consideration for an identification in a broadcast of any person, product, service, trademark, or brand name beyond an identification which is reasonably related to the use of such service or property on the broadcast.

(b) The licensee of each standard broadcast station shall exercise reasonable diligence to obtain from its employees, and from other persons with whom it deals directly in connection with any program matter for broadcast, information to enable such licensee to make the announcement required by this section.

(c) In any case where a report concerning the providing or accepting of valuable consideration by any person for inclusion of any matter in a program intended for broadcasting) has been made to a standard broadcast station, as required by section 508 of the Communications Act of 1934, as amended, of circumstances which would have required an announcement under this section had the consideration been received by such standard broadcast station, an appropriate announcement shall be made by such station.

(d) In the case of any political program or any program involving the discussion of public controversial issues for which any records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which such material or services are used that such records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such program: *Provided, however,* That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or conclusion of the program.

(e) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received, or by whom the material or services referred to in paragraph (d) of this section are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

(f) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for, or furnished, either in whole or in part, or for which material or services referred to in paragraph (d) of this section are furnished, by a corporation, committee, association, or other unincorporated group, the announcement required by this section shall disclose the name of such corporation, committee, association, or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association, or other unincor-

porated group shall be made available for public inspection at the studios or general offices of one of the standard broadcast stations carrying the program in each community in which the program is broadcast.

(g) In the case of broadcast matter advertising commercial products or services, an announcement stating the sponsor's corporate or trade name, or the name of the sponsor's product, when it is clear that the mention of the name of the product constitutes a sponsorship identification, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

(h) The announcements required by section 317(a) of the Communications Act of 1934, as amended, are waived with respect to the broadcast of "want ad" or classified advertisements sponsored by individuals. The waiver granted in this paragraph shall not extend to classified advertisements or want ads sponsored by any form of business enterprise, corporate or otherwise. Whenever sponsorship announcements are omitted pursuant to this paragraph the following conditions shall be observed:

(1) The licensee shall maintain a list showing the name, address, and (where available) the telephone number of each advertiser and shall attach this list to the program log for each day's operation; and

(2) Shall make this list available to members of the public who have a legitimate interest in obtaining the information contained in the list.

(i) Commission interpretations in connection with the provisions of this section may be found in the Commission's Public Notice entitled "Applicability of Sponsorship Identification Rules" (FCC 63-409; 28 F.R. 4732, May 10, 1963) and such supplements thereto as are issued from time to time.

(Sec. 317, 48 Stat. 1089, as amended; 47 U.S.C. 317)

[§ 73.119(h) *redesignated par.* (i) *and a new* (h) *adopted eff. 6-2-67; III(64)-18*]

§ 73.120 Broadcasts by candidates for public office.

(a) *Definitions.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, State or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who:

(1) Has qualified for a place on the ballot or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method, and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other such candidates for that office to use such facilities: *Provided,* That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Rates and practices.* (1) The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means direct or indirect. A candidate shall, in each case, be charged no more than the rate the station would charge if the candidate were a commercial advertiser whose advertising was directed to promoting its business within the same area as that encompassed by the particular office for which such person is a candidate. All discount privileges otherwise offered by a station to commercial advertisers shall be available upon equal terms to all candidates for public office.

(2) In making time available to candidates for public office no licensee shall make any discrimination between candidates in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the

effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Records; inspection.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests, and the charges made, if any, if request is granted. Such records shall be retained for a period of two years.

NOTE: See § 1.526 of this chapter.

(e) *Time of request.* A request for equal opportunities must be submitted to the licensee within one week of the day on which the prior use occurred.

(f) *Burden of proof.* A candidate requesting such equal opportunities of the licensee, or complaining of non-compliance to the Commission shall have the burden of proving that he and his opponent are legally qualified candidates for the same public office.

(Sec. 315, 48 Stat. 1088, as amended, 47 U.S.C. 315)

[§ 73.120(d) *Note as adopted eff. 5-14-65; III(64)-7*]

§ 73.121 Rebroadcast.

(a) The term "rebroadcast" means reception by radio of the programs of a radio station, and the simultaneous or subsequent retransmission of such programs by a broadcast station.

NOTE 1: As used in § 73.121, program includes any complete program or part thereof, or any signals if other than A-3 emission.

NOTE 2: In case a program is transmitted from its point of origin to a broadcast station entirely by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast.

[§ 73.121(a) *amended eff. 8-16-66; III(64)-14*]

(b) The licensee of a standard broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard or FM broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program. The foregoing requirements concerning notification of call letters and certification of authority shall not apply to a station when rebroadcasting Defense Network (FM) programs. (Blanket authorizations for the rebroadcast of such programs have been filed with the Commission by all Defense Network (FM) stations.)

NOTE: The notice and ecertification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of a standard broadcast station several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

(c) (1) The licensee of the standard broadcast station located within a state or the District of Columbia, may, without further authority of the Commission rebroadcast on a noncommercial basis a noncommercial program of a United States international broadcast station.

(2) The licensee of a standard broadcast station located in any territory or insular possession of the United States may, without further authority of the Commission, rebroadcast any program of a United States international broadcast station.

(3) In the case of any rebroadcast under the provisions of this paragraph, the Commission shall be notified of the call letters of each station whose programs are rebroadcast and the licensee shall certify that express authority has been received from the licensee of the station originating the program.

(d) No licensee of a standard broadcast station shall rebroadcast the program of any other class of United States radio station without written authority having first been obtained from the Commission upon application accompanied by written consent or certification of consent of the licensee of the station originating the program.

NOTE 1: The broadcasting of a program relayed by a remote pick-up broadcast station (§ 74.401 of this chapter) is not considered a rebroadcast.

NOTE 2: Informal application may be employed.

NOTE 3: By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 73.121 (d) is suspended only insofar as it requires prior written au-

thority of the Commission for the rebroadcasting of programs originated for that express purpose by United States Government radio stations.

(e) In case of a program rebroadcast by several standard broadcast stations, such as a chain rebroadcast, the person legally responsible for distributing the program or the network facilities may obtain the necessary authorization for the entire rebroadcast both from the Commission and from the person or licensee of the station originating the program.

(f) Attention is directed to section 325 (b) of the Communications Act of 1934, which reads as follows (see also § 1.545 of this chapter):

No person shall be permitted to locate, use, or maintain a radio broadcast studio or other place or apparatus from which or whereby sound waves are converted into electrical energy, or mechanical or physical reproduction of sound waves produced, and caused to be transmitted or delivered to a radio station in a foreign country for the purpose of being broadcast from any radio station there, having a power output of sufficient intensity, and/or being so located geographically that its emissions may be received consistently in the United States, without first obtaining a permit from the Commission upon proper application therefor.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

§ 73.122 Lotteries.

(a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U.S.C. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize, such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question.

(Sec. 1304, 62 Stat. 763, 18 U.S.C. 1304)

§ 73.123 Personal attacks; political editorials.

(a) When, during the presentation of views on a controversial issue of public importance, an attack is made upon the honesty, character, integrity or like personal qualities of an identified person or group, the licensee shall, within a reasonable time and in no event later than 1 week after the attack, transmit to the person or group attacked (1) notification of the date, time and identification of the broadcast; (2) a script or tape (or an accurate summary if a script or tape is not available) of the attack; and (3) an offer of a reasonable opportunity to respond over the licensee's facilities.

(b) The provisions of paragraph (a) of this section shall be inapplicable to attacks on foreign groups or foreign public figures or where personal attacks are made by legally qualified candidates, their authorized spokesmen, or those associated with them in the campaign, on other such candidates, their authorized spokesman, or persons associated with the candidates in the campaign.

NOTE: In a specific factual situation, the fairness doctrine may be applicable in this general area of political broadcasts. See section 315(a) of the Act (47 U.S.C. 315(a)); public notice: Applicability of the Fairness Doctrine in the Handling of Controversial Issues of Public Importance, 29 F.R. 10415.

(c) Where a licensee, in an editorial, (i) endorses or (ii) opposes a legally qualified candidate or candidates, the licensee shall, within 24 hours after the editorial, transmit to respectively (i) the other qualified candidate or candidates for the same office or (ii) the candidate opposed in the editorial (1) notification of the date and the time of the editorial; (2) a script or tape of the editorial; and (3) an offer of a reasonable opportunity for a candidate or a spokesman of the candidate to respond over the licensee's facilities: *Pro-*

vided, however, That where such editorials are broadcast within 72 hours prior to the day of the election, the licensee shall comply with the provisions of this paragraph sufficiently far in advance of the broadcast to enable the candidate or candidates to have a reasonable opportunity to prepare a response and to present it in a timely fashion.

[§ *73.123 adopted eff. 8-14-67; III(64)-18*]

§ 73.124 Fraudulent billing practices.

No licensee of a standard broadcast station shall knowingly issue to any local, regional or national advertiser, advertising agency, station representative, manufacturer, distributor, jobber or any other party, any bill, invoice, affidavit or other document which contains false information concerning the amount actually charged by the licensee for the broadcast advertising for which such bill, invoice, affidavit or other document is issued, or which misrepresents the nature, content or quantity of such advertising. Licensees shall exercise reasonable diligence to see that their agents and employees do not issue any documents which would violate this section if issued by the licensee.

NOTE: Commission interpretations in connection with this Rule may be found in a separate Public Notice issued Oct. 22, 1965, entitled "Applicability of Fraudulent Billing Rule." (FCC 65-952.)

[§ *73.124 as adopted eff. 11-29-65; III(64)-11*]

LICENSING POLICIES

§ 73.131 Exclusive affiliation of station.

No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, broadcasting the programs of any other network organization. (The term "network organization" as used herein includes national and regional network organizations. See ch. VII, J, of Report on Chain Broadcasting.)

§ 73.132 Territorial exclusivity.

No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which prevents or hinders another station serving substantially the same area from broadcasting the network's programs not taken by the former station, or which prevents or hinders another station serving a substantially different area from broadcasting any program of the network organization. This section shall not be construed to prohibit any contract, arrangement, or understanding between a station and a network organization pursuant to which the station is granted the first call in its primary service area upon the programs of the network organization.

§ 73.133 Term of affiliation.

No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which provides, by original term, provisions for renewal, or otherwise for the affiliation of the station with the network organization for a period longer than 2 years: *Provided,* That a contract, arrangement, or understanding for a period up to 2 years, may be entered into within six months prior to the commencement of such period.

§ 73.134 Option time.

No license shall be granted to a standard broadcast station which options for network programs any time subject to call on less than 56 days' notice, or more time than a total of 3 hours within each of four segments of the broadcast day, as herein described. The broadcast day is divided into four segments, as follows: 8 a.m. to 1 p.m.; 1 p.m. to 6 p.m.; 6 p.m. to 11 p.m.; 11 p.m. to 8 a.m. (These segments are to be determined for each station in terms of local time at the location of the station but may remain constant throughout the year regardless of shifts from standard to daylight saving time or vice versa.) Such option may not be exclusive as against other network organizations and may not prevent or hinder the station from optioning or selling any or all of the time covered by the option, or other time, to other network organizations.

NOTE 1: As used in this section, an option is any contract, arrangement, or understanding, express or implied, between a station and a network organization which pre-

vents or hinders the station from scheduling programs before the network agrees to utilize the time during which such programs are scheduled, or which requires the station to clear time already scheduled when the network organization seeks to utilize the time.

NOTE 2: All time options permitted under this section must be for specified clock hours, expressed in terms of any time system set forth in the contract agreed upon by the station and network organization. Shifts from daylight saving to standard time or vice versa may or may not shift the specified hours correspondingly as agreed by the station and network organization.

§ 73.135 Right to reject programs.

No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which (a) with respect to programs offered pursuant to an affiliation contract, prevents or hinders the station from rejecting or refusing network programs which the station reasonably believes to be unsatisfactory or unsuitable; or which (b) with respect to network programs so offered or already contracted for, prevents the station from rejecting or refusing any program which, in its opinion, is contrary to the public interest, or from substituting a program of outstanding local or national importance.

§ 73.136 Network ownership of stations.

No license shall be granted to a network organization, or to any person directly or indirectly controlled by or under common control with a network organization, for more than one standard broadcast station where one of the stations covers substantially the service area of the other station, or for any standard broadcast station in any locality where the existing standard broadcast stations are so few or of such unequal desirability (in terms of coverage, power, frequency, or other related matters) that competition would be substantially restrained by such licensing. (The word "control" as used herein is not limited to full control but includes such a measure of control as would substantially affect the availability of the station to other networks.)

NOTE: Effective date of this section with respect to any station may be extended from time to time in order to permit the orderly disposition of properties; and it shall be suspended indefinitely with respect to regional network organizations.

§ 73.137 Dual network operation.

No license shall be issued to a standard broadcast station affiliated with a network organization which maintains more than one network: *Provided*, That this section shall not be applicable if such networks are not operated simultaneously, or if there is no substantial overlap in the territory served by the group of stations comprising each such network.

§ 73.138 Control by networks of station rates.

No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, fixing or altering its rates for the sale of broadcast time for other than station to other networks.

§ 73.139 Special rules relating to contracts providing for reservation of time upon sale of a station.

No license, renewal of license, assignment of license, or transfer of control of a corporate licensee shall be granted or authorized to a standard broadcast station which has a contract, arrangement or understanding, express or implied, pursuant to which, as consideration or partial consideration for the assignment of license or transfer of control, the assignor of a station license or the transferor of stock, where transfer of a corporate licensee is involved, or the nominee of such assignor or transferor retains any right of reversion of the license or any right to the reassignment of the license in the future, or reserves the right to use the facilities of the station for any period whatsoever.

DATA AND MEASUREMENTS

§ 73.150 Data required with applications for directional antenna systems.

(a) The following engineering data shall be submitted with the application for authority to install a directional antenna:

(1) Complete description of the proposed system showing:

(i) Number of elements.

(ii) Type of each element (i.e., guyed or self-supporting, uniform cross section or tapered (specifying base width), grounded or insulated, etc.).

(iii) Complete engineering details of top loading or sectionalizing, if any.

(iv) Height of vertical lead of each element in feet (height above base insulator or base, if grounded).

(v) Overall height in feet of each element above ground.

(vi) Details including sketches of ground system for each element (length and number of radials, dimensions of ground screen, if used, and depth buried) and outlines of property.

(vii) Ratio of fields from elements (identifying elements).

(2) Calculated horizontal (ground) plane field intensity patterns for each mode of operation plotted to the largest scale possible on standard letter-size polar coordinate paper (main engraving approximately 7" x 10") using only scale divisions and subdivisions having values of 1, 2, 2.5, or 5 times 10^{nth} and showing:

(i) Inverse field intensity at 1 mile and effective field intensity (RMS).

(ii) Direction true north shall be shown at zero azimuth.

(iii) Direction and distance to each existing station with which interference may be involved. (All directions shall be determined by accurate calculation or from Lambert Conformal Conic Projection Map such as United States Coast and Geodetic Survey Map, No. 3060a, or map of equal accuracy, and all distances shall be determined by accurate calculation or from United States Albers Equal Area Projection Map scale 1/2,500,000 or map of equal accuracy. These may be obtained from United States Geological Survey, Department of the Interior, Washington, D.C., 20240, and the United States Coast and Geodetic Survey, Department of Commerce, Washington, D.C., 20235.)

(iv) Orientation of array with respect to True North and time phasing of fields from elements (specifying degrees leading [+] or lagging [−]) and space phasing of elements (identifying elements). (Space phasing should be given in feet as well as in degrees.)

(v) The location of all the minima in the pattern.

(3) Calculated field intensity vs. azimuth patterns for every 5 degrees of elevation through 60 degrees in those instances where radiation at angles above the horizontal plane is a pertinent factor in station allocation. These patterns may be plotted in polar or rectangular coordinates but shall be submitted one to a page. Minor lobe and null detail occurring between the 5 degree intervals need not be submitted.

(4) Data used in computing the patterns in subparagraphs (2) and (3) of this paragraph including:

(i) Formula used for calculating the horizontal patterns, sample calculations. (Derivation of formula if other than standard is used.)

(ii) All assumptions made and basis therefore, including electrical height, current distribution and efficiency of each element, and ground conductivity.

(iii) Complete tabulation of final calculated data used in plotting patterns, including data for determination of RMS value of pattern.

(5) Values of field intensity less than 10 percent of the effective field intensity of the patterns in subparagraphs (2) and (3) of this paragraph shown on an enlarged scale.

(6) In the event actual inverse distance field intensities expected to be determined in practice (that is, the values determined from actual measurements, particularly in sharp nulls) are different from the calculated values in subparagraphs (2) and (3) of this paragraph, the maximum expected operating values (MEOV) as well as the calculated values shall be shown on both the full patterns and the enlarged sections.

(7) Any additional information required by the application form.

§ 73.151 Field intensity measurements to establish performance of directional antennas.

(a) In addition to the information required by the license application form, the following showing must be submitted to indicate that the pattern obtained for each mode of directional operation is essentially the same as that predicted by the application and required by terms of the authorization and that any specific requirements set out are fully met:

(1) Horizontal field intensity pattern(s) showing the inverse field intensity at 1 mile and effective field intensity (RMS) as determined from field intensity measurements taken and analyzed in accordance with § 73.186 in at least the following directions:

(i) Those specified in the instrument of authorization.

(ii) In major lobes. Generally at least three radials are necessary to establish a major lobe; however, additional radials may be required.

(iii) Along sufficient number of other radials to establish the effective field. In the case of a relatively simple directional antenna pattern, approximately five radials in addition to those in subdivisions (i) and (ii) of this subparagraph are sufficient. However, when more complicated patterns are involved, that is, patterns having several or sharp lobes or nulls, measurements shall be taken along as many radials as may be necessary, to definitely establish the pattern(s).

(2) Pattern(s) plotted with direction true north as zero azimuth and showing the orientation of array with respect to true north, time and space phasing of elements, and both calculated and measured parameters. (Specify degrees leading [+] or lagging [−] and space phasing in feet as well as in degrees.)

(3) Pattern(s) plotted to the largest scale possible on standard letter-size polar coordinate paper

(main engraving approximately 7" x 10") using divisions and subdivisions having values of 1, 2, 2.5, or 5 times 10^{nth} (no other values shall be used). All values of field intensity less than 10 percent of the RMS field intensity of the pattern shown on an enlarged scale.

(4) Complete tabulation of all data used in plotting the above pattern(s).

(5) The 25 and 5 mv/m field intensity contours and the nighttime interference-free contour, when the pattern is for nighttime operation, as well as any other contours specified by the instrument of authorization, plotted on a map which has the largest practical scale. These contours need not be shown for distances greater than 20 miles from the antenna except that the field intensity contours on the far side of the business and residential areas of the city in which the main studio is located shall be shown. When the station is limited by interference within the 5 mv/m contour the latter contour need not be shown. In the event the 5 mv/m contour includes and extends beyond the city and beyond 20 miles, the highest signal intensity contour that entirely includes the city may be plotted in lieu of the 5 mv/m contour; in the event that the 5 mv/m contour does not include the city, the contour of highest signal intensity encompassing the city shall be plotted in addition to the 5 mv/m contour.

(6) The actual field intensity measured at each monitoring point established in the various directions for which a limiting field was specified in the instrument of authorization together with accurate and detailed description of each monitoring point together with ordinary snapshots, clear and sharp, taken with the field intensity meter in its measuring position and with the camera so located that its field of view takes in as many pertinent landmarks as possible. In addition, the directions for proceeding to each monitoring point together with a rough sketch or map upon which has been indicated the most accessible approaches to the monitoring points should be submitted.

§ 73.152 Field intensity measurements in support of applications or evidence at hearings.

In the determination of interference, groundwave field intensity measurements will take precedence over theoretical values, provided such measurements are properly taken and presented. When measurements of groundwave signal intensity are presented, they shall be sufficiently complete in accordance with § 73.186 to determine the field intensity at 1 mile in the pertinent directions for that station.

NOTE: The antenna resistance measurements required by § 73.186 need not be taken or submitted.

STANDARD BROADCAST TECHNICAL STANDARDS

§ 73.181 Introduction.

(a) There are presented in this subpart the Technical Standards giving interpretations and further considerations concerning the rules and regulations of the Federal Communications Commission governing standard broadcast stations. While rules and regulations form the basis of good engineering practice, these standards may go beyond the rules and regulations and set up engineering principles for consideration of various allocation problems. These standards have been approved by the Commission and thus are considered as reflecting the opinion of the Commission in all matters involved.

NOTE: See also § 73.28.

(b) The Technical Standards set forth in this subpart are those deemed necessary for the construction and operation of standard broadcast stations to meet the requirements of technical regulations and for operation in the public interest along technical lines not specifically enunciated in the regulations. These standards are based on the best engineering data available from evidence supplied in formal and informal hearing and extensive surveys conducted in the field by the Commission's personnel. Numerous informal conferences have been held with radio engineers, manufacturers of radio equipment and others for the guidance of the Commission in the formulation of these standards.

(c) These standards are complete in themselves and supersede any previous announcements or policies which may have been enunciated by the Commission on engineering matters concerning standard broadcast stations.

(d) While these standards provide for flexibility and set forth the conditions under which they are applicable, it is not expected that material deviation therefrom as to fundamental principles will be recognized unless full information is submitted as to the reasonableness of such departure and the need therefor.

(e) These standards will necessarily change as progress is made in the art, and accordingly it will be necessary to make revisions from time to time. The Commission will accumulate and analyze engineering data available as to the progress of the art so that its standards may be kept current with the developments.

§ 73.182 Engineering standards of allocation.

(a) Sections 73.21 to 73.34, inclusive, govern allocation of facilities in the standard broadcast band of 535 to 1605 kc/s. Section 73.21 establishes three classes of channels in this band, namely, clear channels for the use of high-powered stations, regional channels for the use of medium-powered stations, and local channels for the use of low-powered stations. The classes and power of standard broadcast stations which will be assigned to the various channels are set forth in § 73.21. The classification of the standard broadcast stations are as follows:

(1) Class I stations are dominant stations operating on clear channels with powers of not less than

10 or more than 50 kw. These stations are designed to render primary and secondary service over an extended area and at relatively long distances, hence have their primary service areas free from objectionable interference from other stations on the same and adjacent channels and secondary service areas free from objectionable interference from stations on the same channels. (The secondary service area of a Class I station is not protected from adjacent channel interference. However, if it is desired to make a determination of the area in which adjacent channel groundwave interference (10 kc/s removed) to skywave service exists, it may be considered as the area where the ratio of the desired 50% skywave of the Class I station to the undesired groundwave of a station 10 kc/s removed is 1 to 4.) From an engineering point of view, Class I stations may be divided into two groups and, hereafter, for the purpose of convenience, the two groups of Class I stations will be termed Class I–A or I–B in accordance with the assignment to channels allocated by § 73.25 (a) or (b).

(i) The Class I stations in Group I–A are those assigned to the channels allocated by § 73.25(a), on which, except to the extent provided by that section and by § 73.22, duplicate nighttime operation is not permitted. The power of these stations shall not be less than 50 kilowatts. The Class I stations in this group are afforded protection as follows:

Daytime: To the 0.1 mv/m groundwave contour from stations on the same channel, and to the 0.5 mv/m groundwave contour from stations on adjacent channels.

Nighttime: To the 0.5 mv/m, 50 percent skywave contour from stations on the same channel, and to the 0.5 mv/m groundwave contour from stations on adjacent channels.

(ii) The Class I stations in group I–B are those assigned to the channels allocated by §73.25(b), on which duplicate operation is permitted, that is, other Class I or Class II stations operating unlimited time may be assigned to such channels. During nighttime hours of operation a Class I station of this group is protected to the 500 uv/m 50 percent skywave contour and during daytime hours of operation to the 100 uv/m groundwave contour from stations on the same channel. Protection is given to the 500 uv/m groundwave contour from stations on adjacent channels for both day and nighttime operation. The operating powers of Class I stations on these frequencies shall be not less than 10 kw nor more than 50 kw.

(2) Class II stations are secondary stations which operate on clear channels with powers not less than 0.25 kw nor more than 50 kw, except that Class II–A stations shall not operate nighttime with less than 10 kw. Class II stations are required to use a directional antenna or other means to avoid causing interference within the normally protected service areas of Class I stations or other Class II stations (for special rules and standards concerning Class II–A stations, see § 73.22). These stations normally render primary service only, the area of which depends on the geographical location, power, and frequency. This may be relatively large but is limited by and subject to such interference as may be received from Class I stations. However, it is recommended that Class II stations be so located that the interference received from other stations will not limit the service area to greater than the 2.5 mv/m groundwave contour nighttime and 0.5 mv/m groundwave contour daytime, which are the values for the mutual protection of this class of stations with other stations of the same class (except that Class II–A stations are normally protected to their 0.5 mv/m groundwave contour daytime, and nighttime to the limit imposed by the co-channel Class I–A station).

(3) Class III stations operate on regional channels and normally render primary service to the larger cities and the rural area contiguous thereto, and are subdivided into two classes:

(i) Class III–A stations which operate with powers not less than 1 kw or more than 5 kw are normally protected to the 2500 uv/m groundwave contour nighttime and the 500 uv/m groundwave contour daytime.

(ii) Class III–B stations which operate with powers not less than 0.5 kw, or more than 1 kw nighttime and 5 kw daytime are normally protected to the 4000 uv/m groundwave contour nighttime and 500 uv/m groundwave contour daytime.

NOTE: In NARBA and the U.S./Mexican Agreement, no distinction is made between Class III–A and Class III–B stations.

(4) Class IV stations operate on local channels, normally rendering primary service only to a city or town and the suburban or rural areas contiguous thereto, with powers not less than 250 watts, nor more than 250 watts nighttime and 1 kilowatt daytime (for restrictions on daytime power of local stations located near the Mexican border or in an area within the State of Florida, see § 73.21(e)). Such stations are normally protected to the 0.5 mv/m contour daytime. On local channels the separation required for the daytime protection shall also determine the nighttime

separation. Where directional antennas are employed daytime by Class IV stations operating with more than 250 watts power, the separations required shall in no case be less than those necessary to afford protection, assuming nondirectional operation with 250 watts. In no case will 250 watts nighttime operation be authorized to a station unable to operate nondirectionally at 250 watts in the daytime. The actual nighttime limitation will be calculated.

NOTE: The following approximate method may be used. It is based on the assumption of 0.25 wavelength antenna height and 88 mv/m at one mile effective field for 250 watts power, using the 10% skywave field intensity curve of Figure 2 of § 73.190. Zones defined by circles of various radii specified below are drawn about the desired station and the interfering 10% skywave signal from each station in a given zone is considered to be the value tabulated below. The effective interfering 10% skywave signal is taken to be the RSS value of all signals originating within these zones. (Stations beyond 500 miles are not considered.)

Zone	Inner radius	Outer radius	10 percent skywave signal (mv/m)
A		60	0.10
B	60	80	.12
C	80	100	.14
D	100	250	.16
E	250	350	.14
F	350	450	.12
G	450	500	.10

Where the power of the interfering station is not 250 watts, the 10% skywave signal should be adjusted by the square root of the ratio of the power to 250 watts.

[§ 73.182(a)(4), as amended eff. 7-11-66; III(64)-13]

(b) The class of any station is determined by the channel assignment, the power, and the field intensity contour to which it renders service free of interference from other stations as determined by these standards. No station will be permitted to change to a class normally protected to a contour of less intensity than the contour to which the station actually renders interference-free service. Any station of a class normally protected to a contour of less intensity than that to which the station actually renders interference-free service, will be automatically reclassified according to the class normally protected, the minimum consistent with its power and channel assignment. Likewise, any station to which the interference is reduced so that service is rendered to a contour normally protected for a higher class will be automatically changed to that class if consistent with its power and channel assignment.

(c) [Reserved]

(d) When a station is already limited by interference from other stations to a contour of higher value than that normally protected for its class, this contour shall be the established standard for such station with respect to interference from all other stations.

(e) The several classes of broadcast stations have in general three service areas; namely, primary, secondary, and intermittent service areas. (See § 73.11 for the definitions of primary, secondary, and intermittent service areas.) Class I stations render service to all three service areas. Class II stations render service to a primary area but the secondary and intermittent service areas may be materially limited or destroyed due to interference from other stations depending on the station assignments involved. Class III and IV stations usually have only primary service areas as interference from other stations generally prevents any secondary service and may limit the intermittent service area. However, complete intermittent service may be obtained in many cases depending on the station assignments involved.

(f) The signals necessary to render primary service to different types of service areas are as follows:

Area	*Field intensity groundwave*[1]
City business or factory areas	10 to 50 mv/m.
City residential areas	2 to 10 mv/m.
Rural—all areas during winter or northern areas during summer	0.1 to 0.5 mv/m.
Rural—southern areas during summer	0.25 to 1.0 mv/m.

[1] See § 73.184 for curves showing distance to various groundwave field intensity contours for different frequency and ground conductivities and § 73.183.

All these values are based on an absence of objectionable fading, either in changing intensity or selective fading, the usual noise level in the area, and an absence of limiting interference from other broadcast stations. The values apply both day and night but generally fading or interference from other stations limits the primary service at night in all rural areas to higher values of field intensity than the values given. The Commission will authorize a directive antenna for a Class IV station for daytime operation only with power in excess of 250 watts. In computing the degrees of protection which such antenna will afford, the radiation produced by this antenna shall be assumed to be no less, in any direction, than that which would result from non-directional operation, utilizing a single element of the directional array, with 250 watts.

NOTE: Standards have not been established for interference from atmospherics or manmade electric noise as no uniform method of measuring noise or static has been established. In any individual case objectionable interference from any source, except other broadcast signals, may be determined by comparing the actual noise interference reproduced during reception of a desired broadcast signal to the degree of interference that would be caused by another broadcast signal within 20 cycles of the desired signal and having a carrier ratio of 20 to 1 with both signals modulated 100 percent on peaks of usual programs. Standards of noise measurements and interference ratio for noise are now being studied.

[§ 73.182(f) as amended eff. 7-11-66; III(64)-13]

(g) In determining the population of the primary service area, it may be considered that the following signals are satisfactory to overcome man-made noise in towns of the population given.

Population:	*Field intensity groundwave*
Up to 2,500	0.5 mv/m
2,500 to 10,000	2.0 mv/m
10,000 and up	Values given in paragraph (f) of this section

These values are subject to wide variations in individual areas and especial attention must be given to interference from other stations. The values are not considered satisfactory in any case for service to the city in which the main studio of the station is located. The values in paragraph (f) of this section shall apply except as individual consideration may determine.

(h) All classes of broadcast stations have primary service areas subject to limitation by fading and noise, and interference from other stations to the contours set out for each class of station.

(i) Secondary service is delivered in the areas where the skywave for 50 percent or more of the time has a field intensity of 500 uv/m or greater. (The secondary service area of a Class I-A station should be considered as having this limit only for determination of service in comparison with other stations.) It is not considered that satisfactory secondary service can be rendered to cities unless the skywave approaches in value the groundwave required for primary service. The secondary service is necessarily subject to some interference and extensive fading whereas the primary service area of a station is subject to no objectionable interference or fading. Class I stations only are assigned on the basis of rendering secondary service.

NOTE: Standards have not been established for objectionable fading as such standards would necessarily depend on the receiver charcteristics which have been changed considerably in this regard during the last several years. Selective fading causing audio distortion and the signal fading below the noise level are the objectionable characteristics of fading on modern design receivers. The AVC circuits in the better designed modern receivers in general maintain the audio output sufficiently constant to be satisfactory during most fading.

(j) The intermittent service is rendered by the groundwave and begins at the outer boundary of the primary service area and extends to the value of signal where it may be considered as having no further service value. This may be down to only a few microvolts in certain areas and up to several millivolts in other areas of high noise level, interference from other stations, or objectionable fading at night. The intermittent service area may vary widely from day to night and generally varies from time to time as the name implies. Only Class I stations are assigned for protection from interference from other stations into the intermittent service area.

(k) Section 73.23 provides that the several classes of broadcast stations may be licensed to operate unlimited time, limited time, daytime, sharing time, and specified hours, with full explanation given in the section (see § 73.38 for restriction on limited time authorizations on or after November 30, 1959).

(l) Section 73.24 sets out the general requirements for obtaining an increase in facilities of a licensed station and for a new station. Section 73.24(b) concerns the matter of interference that may be caused by a new assignment or increase in facilities of an existing assignment.

(m) [Reserved]

(n) [Reserved]

(o) Objectionable interference from another broadcast station is the degree of interference produced when, at a specified field intensity contour with respect to the desired station, the field intensity of an undesired station (or the root-sum-square value of field intensities of two or more stations on the same frequency) exceeds for ten (10) percent or more of the time the values set forth in these standards. (The secondary service area of a Class I-A station should be considered as having this limit only for determination of service in comparison with other stations.)

(1) With respect to the root-sum-square values of interfering field intensities referred to in this section,

except in the case of Class IV stations on local channels, calculation is accomplished by considering the signals in order of decreasing magnitude, adding the squares of the values and extracting the square root of the sum, excluding those signals which are less than 50% of the RSS value of the higher signals already included.

(2) The RSS value will not be considered to be increased when a new interfering signal is added which is less than 50% of the RSS value of the interference from existing stations, and which at the same time is not greater than the smallest signal included in the RSS value of interference from existing stations.

(3) It is recognized that application of the above "50% exclusion" method of calculating the RSS interference may result in some cases in anomalies wherein the addition of a new interfering signal or the increase in value of an existing interfering signal will cause the exclusion of a previously included signal and may cause a decrease in the caluclated RSS value of interference. In order to provide the Commission with more realistic information regarding gains and losses in service (as a basis for determination of the relative merits of a proposed operation) the following alternate method of calculating the proposed RSS values of interference will be employed wherever applicable.

(4) In the cases where it is proposed to add a new interfering signal which is not less than 50% of the RSS value of interference from existing stations or which is greater than the smallest signal already included to obtain this RSS value, the RSS limitation after addition of the new signal shall be calculated without excluding any signal previously included. Similarly, in cases where it is proposed to increase the value of one of the existing interfering signals which has been included in the RSS value, the RSS limitation after the increase shall be calculated without excluding the interference from any source previously included.

(5) If the new or increased signal proposed in such cases is ultimately authorized, the RSS values of interference to other stations affected will thereafter be calculated by the "50% exclusion" method without regard to this alternate method of calculation.

(6) Examples of RSS interference calculations:

(i) Existing interferences:

Station No. 1—1.0 mv/m.
Station No. 2—0.60 mv/m.
Station No. 3—0.59 mv/m.
Station No. 4—0.58 mv/m.

The RSS value from Nos. 1, 2 and 3 is 1.31 mv/m: therefore interference from No. 4 is excluded for it is less than 50% of 1.31 mv/m.

(ii) Station A receives interference from:

Station No. 1—1.0 mv/m.
Station No. 2—0.60 mv/m.
Station No. 3—0.59 mv/m.

It is proposed to add a new limitation—0.68 mv/m. This is more than 50% of 1.31 mv/m, the RSS value of Nos. 1, 2 and 3. The RSS value of Station No. 1 and of the proposed station would be 1.21 mv/m which is more than twice as large as the limitation from Station No. 2 or 3. However, under the above provision the new signal and the three existing interferences are nevertheless calculated for purposes of comparative studies, resulting in an RSS value of 1.47 mv/m. However, if the proposed station is ultimately authorized, only No. 1 and the new signal are included in all subsequent calculations for the reason that Nos. 2 and 3 are less than 50% of 1.21 mv/m, the RSS value of the new signal and No. 1.

(iii) Station A receives interference from:

Station No. 1—1.0 mv/m.
Station No. 2—0.60 mv/m.
Station No. 3—0.59 mv/m.

No. 1 proposes to increase the limitation it imposes on Station A to 1.21 mv/m. Although the limitations from stations Nos. 2 and 3 are less than 50% of the 1.21 mv/m limitation, under the above provision they are nevertheless included for comparative studies, and the RSS limitation is calculated to be 1.47 mv/m. However, if the increase proposed by Station No. 1 is authorized, the RSS value then calculated is 1.21 mv/m because Stations Nos. 2 and 3 are excluded in view of the fact that the limitations they impose are less than 50% of 1.21 mv/m.

(p) Objectionable interference from a station on the same channel shall be considered to exist to a station when, at the field intensity contour specified in paragraph (v) of this section with respect to the class to which the station belongs, the field intensity of an interfering station (or the root-sum-square value of the field intensities of two or more interfering stations) operating on the same channel, exceeds for ten (10) percent or more of the time the

value of the permissible interfering signal set forth opposite such class in paragraph (v) of this section.

(q) Objectionable interference from a station on an adjacent channel shall be considered to exist to a station when, at the normally protected contour of a desired station, the field intensity of the groundwave of an undesired station operating on an adjacent channel (or the root-sum-square value of the field intensities of two or more such undesired stations operating on the same adjacent channel) exceeds a value specified in paragraph (w) of this section.

(r) For the purpose of estimating the coverage and the interfering effects of stations in the absence of field intensity measurements, use shall be made of Figure 8 of § 73.190 which describes the estimated effective field for one kilowatt power input of simple vertical omnidirectional antennas of various heights with ground systems of at least 120 one-quarter wavelength radials. Certain approximations, based on the curve or other appropriate theory, may be made when other than such antennas and ground systems are employed, but in any event the effective field to be employed shall not be less than given in the following:

Class of station:	*Effective field*
I	225 mv/m
II and III	175 mv/m
IV	150 mv/m

In case a directional antenna is employed, the interfering signal of a broadcasting station will vary in different directions, being greater than the above values in certain directions and less in others, depending upon the design and adjustment of the directional antenna system. To determine the interference in any direction the measured or calculated radiated field (unabsorbed field intensity at 1 mile from the array) must be used in conjunction with the appropriate propagation curves. (See § 73.185 for further discussion and solution of a typical directional antenna case.)

(s) The existence or absence of objectionable groundwave interference from stations on the same or adjacent channels shall be determined by actual measurements made according to the method described in § 73.186, or, in the absence of such measurements, by reference to the propagation curves of § 73.184. The existence or absence of objectionable interference due to skywave propagation shall be determined by reference to the appropriate propagation curves in Figure 1a or Figure 2 of § 73.190.

NOTE: In the case of applications tendered on or before September 29, 1965, for new or changed facilities on the clear channels listed in § 73.25(b), Figure 1 of § 73.190 shall be used instead of Figure 1a.

(t) In computing the fifty percent and ten percent skywave field intensity values of a station on a I–A or I–B clear channel, use shall be made of the appropriate curve set forth in Figure 1a of § 73.190, entitled "Skywave Signals for 10% and 50% of the time." In computing the ten percent skywave field intensity values of a station on any other channel, use shall be made of the appropriate curve set forth in Figure 2 of § 73.190, entitled "10 percent Skywave Signal Range." (In the case of Class IV stations on local channels, simplifying assumptions may be made. See note to § 73.182(a)(4).) The pertinent vertical angle shall be determined by use of Figure 6a of § 73.190, entitled "Angles of Departure vs. Transmission Range", for stations on all channels.

NOTE: In the case of applications tendered on or before September 29, 1965, for new or changed facilities on the clear channels listed in § 73.25(b), Figure 1 of § 73.190, entitled "Average Skywave Field Intensity", shall be used instead of Figure 1a, and Figure 6 of § 73.190, entitled "Variation with Distance of Two Important Parameters in the Theory of Skywave Propagation", shall be used instead of Figure 6a.

[*§ 73.182(s) & (t) as amended eff. 11–8–65; III (64)–10*]

(u) The distance to any specified groundwave field intensity contour for any frequency may be determined from the appropriate curves in § 73.184 entitled "Ground Wave Field Intensity vs. Distance."

(v) Protected service contours and permissible interference signals for broadcast stations are as follows (for Class I and Class II–A stations, see paragraph (a) of this section):

Class of station	Class of channel used	Permissible power	Signal intensity contour of area protected from objectionable interference [1]		Permissible interfering signal on same channel [2]	
			Day [3]	Night	Day [3]	Night [4]
I-A	Clear	50 kw	SC 100 uv/m AC 500 uv/m	SC 500 uv/m (50% skywave)[7] AC 500 uv/m [3]	5 uv/m	25 uv/m.[7]
I-B	do	10 kw to 50 kw	SC 100 uv/m AC 500 uv/m	SC 500 uv/m (50% skywave) AC 500 uv/m [3]	5 uv/m	25 uv/m.
II-A	do	0.25 kw to 50 kw (daytime) 10 kw to 50 kw (nighttime)	500 uv/m	500 uv/m [3]	25 uv/m	Do.
II-B and II-D	do	0.25 kw to 50 kw	500 uv/m	2500 uv/m [3 5]	do	125 uv/m.
III-A	Regional	1 kw to 5 kw	do	2500 uv/m [3]	do	Do.
III-B	do	0.5 to 1 kw (night), and 5 kw (day).	do	4000 uv/m [3]	do	200 uv/m.
IV	Local	0.25 kw (night), and 0.25 to 1 kw (day).	do	Not prescribed [6]	do	Not prescribed.[6]

[1] When a station is already limited by interference from other stations to a contour of higher value than that normally protected for its class, this contour shall be the established standard for such station with respect to interference from all other stations.
[2] For adjacent channel, see paragraph (w) of this section.
[3] Groundwave.
[4] Skywave field intensity for 10 percent or more of the time.
[5] These values are with respect to interference from all stations except Class I-B, which stations may cause interference to a field intensity contour of higher value. However, it is recommended that Class II stations be so located that the interference received from Class I-B stations will not exceed these values. If the Class II stations are limited by Class I-B stations to higher values, then such values shall be the established standard with respect to protection from all other stations.
[6] See paragraph (a)(4) of this section.
[7] Class I-A stations on channels reserved for the exclusive use of one station during nighttime hours are protected from co-channel interference on that basis. On the frequency 770 kc/s, two Class I stations may be assigned.
SC = Same channel. AC = Adjacent channel.

[§ 73.182(v) *Table as amended eff. 7-11-66; III(64)-13*]

(w) The following table is to be used for determining the minimum ratio of the field intensity of a desired to an undesired signal for interference free service. In the case of a desired groundwave signal interferred with by two or more skywave signals on the same frequency, the RSS value of the latter is used. From the table, it is apparent that in many cases stations operating on channels 10 and 20 kilocycles apart may be operated with antenna systems side by side or otherwise in proximity without any indications of interference if the interference is defined only in terms of permissible ratios listed in this paragraph. As a practical matter, serious interference problems may arise when two or more stations with the same general service area are operated on channels 10, 20, and 30 kilocycles apart.

Frequency separation of desired to undesired signals—	Desired groundwave to—		Desired 50 percent skywave to undesired 10 percent skywave
	Undesired groundwave	Undesired 10 percent skywave	
0 kc/s	20:1	20:1	20:1
10 kc/s	1:1	1:5	(1)

[1] The secondary service area of a Class I station is not protected from adjacent channel interference. However, if it is desired to make a determination of the area in which adjacent channel groundwave interference (10 kc/s removed) to skywave service exists, it may be considered as the area where the ratio of the desired 50 percent skywave of the Class I station to the undesired groundwave of a station 10 kc removed is 1 to 4.

[§ 73.182(w) *table as amended eff. 8-13-64; III(64)-2*]

(x) Two stations, one with a frequency twice that of the other, should not be assigned in the same groundwave service area unless special precautions are taken to avoid interference from the second harmonic of the lower frequency. In selecting a frequency, consideration should be given to the fact that occasionally the frequency assignment of two stations in the same area may bear such a relation to the intermediate frequency of some broadcast receivers as to cause so-called "image" interference. However, since this can usually be rectified by readjustment of the intermediate frequency of such receivers, the Commission in general will not take this kind of interference into consideration in allocation problems.

(y) Two stations operating with synchronized carriers and carrying the identical program will have their groundwave service subject to some distortion in areas where the signals from the two stations are of comparable intensity. For the purpose of estimating coverage of such stations areas in which the signal ratio is between 1 to 2 and 2 to 1 will not be considered as having satisfactory service.

NOTE: Two stations are considered to be operated synchronously when the carriers are maintained within one-fifth of a cycle per second of each other and they transmit identical programs.

§ 73.183 Groundwave signals.

(a) Interference that may be caused by a proposed assignment or an existing assignment during daytime should be determined, when possible, by measurements on the frequency involved or on another frequency over the same terrain and by means of the curves in § 73.184 entitled "Ground Wave Field Intensity versus Distance."

(b) In determining interference based upon field intensity measurements, it is necessary to do the following: First, establish the outer boundary of the protected service area of the desired station in the direction of the station that may cause interference to it. Second, at this boundary, measure the inter-

fering signal from the undesired station. The ratio of the desired to the undesired signal given in § 73.182(w) should be applied to the measured signals and if the required ratio is observed, no objectionable interference is foreseen. When measurements of both the desired and undesired stations are made in one area to determine the point where objectionable interference from groundwave signals occur or to establish other pertinent contours, several measurements of each station shall be made within a few miles of this point or contour. The effective field of the antennas in the pertinent directions of the stations must be established and all measurements must be made in accordance with § 73.186.

NOTE: International agreement in the matter of standards for good engineering practice concerning determination of ground conductivity by field intensity measurements has not been arrived at as contemplated by NARBA, and the United States has no established procedures for reciprocal consideration of such measurements with any country except Canada. Therefore, groundwave field intensity measurements will not be accepted or considered for the purpose of establishing that interference to a station in a foreign country other than Canada, or that signal intensity at the border thereof, would be less than indicated by the application of the ground conductivity maps and engineering standards contained in this part and applicable international agreements. Satisfactory groundwave measurements offered for the purpose of demonstrating values of conductivity other than those shown by Figure M3 in problems involving protection of Canadian stations or the Canadian border will be considered only if, after review thereof, the appropriate agency of the Canadian government notifies the Commission that they are acceptable for such purpose.

(c) In all cases where measurements taken in accordance with the requirements are not available, the groundwave intensity must be determined by means of the pertinent map of ground conductivity and the groundwave curves of field intensity versus distance. The conductivity of a given terrain may be determined by measurements of any broadcast signal traversing the terrain involved. Figure M3 shows the conductivity throughout the United States by general areas of reasonably uniform conductivity. When it is clear that only one conductivity value is involved, Figure R3 of § 73.190, which is a replica of Figure M3 and contained in these standards, may be used; in all other situations Figure M3 must be employed. It is recognized that in areas of limited size or over a particular path, the conductivity may vary widely from the values given; therefore, these maps are to be used only when accurate and acceptable measurements have not been made. (For determinations of interference and service requiring a knowledge of ground conductivities in Mexico, Appendix H to the North American Regional Broadcasting Agreement, Washington, D.C., 1950, may be used. Similarly, for values of ground conductivities in Canada, a map issued by the Telecommunications and Electronics Branch, Department of Transport, Ottawa, Ontario, entitled "Provisional Ground Conductivity Map" and dated June 1, 1960, may be used. Where different conductivities appear in the maps of two countries on opposite sides of the border, such differences are to be considered as real, even if they are not explained by geophysical cleavages. A uniform ground conductivity of 10 millimhos per meter may be assumed for Cuba.)

NOTE 1: Figure R3 in § 73.109 is a replica of Figure M3. Figure M3, which is incorporated in these Standards by reference, was derived by indicating ground conductivity values in the United States on the United States Albers equal area projection map (based on standard parallels 29½° and 45½°; North American datum; scale 1/2,500,000). Figure M3, consisting of two sections, an eastern and a western half, may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.

NOTE 2: Copies of "Provisional Ground Conductivity Map" may be obtained by addressing the Director, Telecommunications and Electronics Branch, Department of Transport, Ottawa, Ontario, Canada. Single copies are priced at $5.00 (one copy consists of two sheets). Remittance should be made by check or money order payable to the Receiver General of Canada.

(d) Example of determining interference by the graphs in § 73.184:

It is desired to find whether objectionable interference exists between a 5 kw Class III station on 990 kc/s and a 1 kw Class III station on 1000 kc/s, the stations being separated by 130 miles; both stations use nondirectional antennas having such height as to produce an effective field for 1 kw of 175 mv/m. (See § 73.185 in case of use of directional antennas.) The conductivity at each station and of the intervening terrain is determined as 6 mmhos/m. The protection to Class III stations during daytime is to the 500 uv/m contour. The distance to the 500 uv/m groundwave contour of the 1 kw station is determined by the use of the appropriate curve in §73.184, Graph 12. Since the curve is plotted for 100 mv/m at a mile, to find the distance to the 500 uv/m contour of the 1 kw station, it is necessary to determine the distance to the 285 uv/m contour ($\frac{100\times500}{175}=285$). From the appropriate curve, the estimated radius of the service area for the desired station is found to be 39.5 miles. Subtracting this distance from the distance between the two stations leaves 90.5 miles for the interfering signal to travel. From the above curve it is found that the signal from the 5 kw station at this distance would be 158 uv/m. Since a one to one ratio applies for stations separated by 10 kc/s, the undesired signal at that point can have a value up to 500 uv/m without objectionable interference. If the undesired signal had been found to be greater than 500 uv/m, then objectionable interference would exist. For other channel separations, the appropriate ratio of desired to undesired signal should be used.

(e) Where a signal traverses a path over which different conductivities exist, the distance to a particular groundwave field intensity contour shall be determined by the use of the equivalent distance method. Reasonably accurate results may be expected in determining field intensities at a distance from the antenna by application of the equivalent distance method when the unattenuated field of the antenna, the various ground conductivities and the location of discontinuities are known. This method considers a wave to be propagated across a given conductivity according to the curve for a homogeneous earth of that conductivity. When the wave crosses from a region of one conductivity into a region of a second conductivity, the equivalent distance of the receiving point from the transmitter changes abruptly

but the field intensity does not. From a point just inside the second region the transmitter appears to be at that distance where, on the curve for a homogeneous earth of the second conductivity, the field intensity equals the value that occurred just across the boundary in the first region. Thus the equivalent distance from the receiving point to the transmitter may be either greater or less than the actual distance. An imaginary transmitter is considered to exist at that equivalent distance. This technique is not intended to be used as a means of evaluating unattenuated field or ground conductivity by the analysis of measured data. The method to be employed for such determinations is set out in § 73.186.

(f) An example of the use of the equivalent distance method follows:

It is desired to determine the distance to the 0.5 mv/m and 0.025 mv/m contours of a station on a frequency of 1000 kc with an inverse distance field of 100 mv/m at one mile being radiated over a path having a conductivity of 10 mmhos/m for a distance of 15 miles, 5 mmhos/m for the next 20 miles and 15 mmhos/m thereafter. By the use of the appropriate curves in § 73.184, Graph 12, it is seen that at a distance of 15 miles on the curve for 10 mmhos/m the field is 3.45 mv/m. The equivalent distance to this field intensity for a conductivity of 5 mmhos/m is 11 miles. Continuing on the propagation curve for the second conductivity, the 0.5 mv/m contour is encountered at a distance of 27.9 miles from the imaginary transmitter. Since the imaginary transmitter was 4 miles nearer (15 — 11 miles) to the 0.5 mv/m contour, the distance from the contour to the actual transmitter is 31.9 miles (27.9+4 miles). The distance to the 0.025 mv/m contour is determined by continuing on the propagation curve for the second conductivity to a distance of 31 miles (11+20 miles), at which point the field is read to be 0.39 mv/m. At this point the conductivity changes to 15 mmhos/m and from the curve relating to that conductivity, the equivalent distance is determined to be 58 miles—27 miles more distant than would obtain had a conductivity of 5 mmhos/m prevailed. Using the curve representing the conductivity of 15 mmhos/m the 0.025 mv/m contour is determined to be at an equivalent distance of 172 miles. Since the imaginary transmitter was considered to be 4 miles closer at the first boundary and 27 miles farther at the second boundary, the net effect is to consider the imaginary transmitter 23 miles (27—4 miles) more distant than the actual transmitter; thus the actual distance to the 0.025 mv/m contour is determined to be 149 miles (172—23 miles).

§ 73.184 Groundwave field intensity charts.

(a) Graphs 1 to 19A show the computed values of groundwave field intensity as a function of the distance from the transmitting antenna. The groundwave field intensity is here considered to be that part of the vertical component of the electric field received on the ground which has not been reflected from the ionosphere nor the troposphere. These 20 charts were computed for 20 different frequencies, a dielectric constant of the ground equal to 15 for land and 80 for sea water (referred to air as unity) and for the ground conductivities (expressed in mmhos/m) given on the curves. The curves show the variation of the groundwave field intensity with distance to be expected for transmission from a short vertical antenna at the surface of a uniformly conducting spherical earth with the ground constants shown on the curves; the curves are for an antenna power and efficiency such that the inverse distance field is 100 mv/m at 1 mile. The curves are valid at distances large compared to the dimensions of the antenna for other than short vertical antennas.

(b) The inverse distance field (100 mv/m divided by the distance in miles) corresponds to the groundwave field intensity to be expected from an antenna with the same radiation efficiency when it is located over a perfectly conducting earth. To determine the value of the groundwave field intensity corresponding to a value of inverse distance field other than 100 mv/m at 1 mile, simply multiply the field intensity as given on these charts by the desired value of inverse distance field at 1 mile divided by 100; for example, to determine the groundwave field intensity for a station with an inverse distance field of 1700 mv/m at 1 mile, simply multiply the values given on the charts by 17. The value of the inverse distance field to be used for a particular antenna depends upon the power input to the antenna, the nature of the ground in the neighborhood of the antenna, and the geometry of the antenna. For methods of calculating the interrelations between these variables and the inverse distance field, see "The Propagation of Radio Waves Over the Surface of the Earth and in the Upper Atmosphere," Part II, by Mr. K. A. Norton, Proc. I. R. E., Vol. 25, September 1937, pp. 1203–1236.

(c) At sufficiently short distances (say less than 35 miles), such that the curvature of the earth does not introduce an additional attenuation of the waves, the graphs were computed by means of the plane earth formulas given in the paper, "The Propagation of Radio Waves Over the Surface of the Earth and in the Upper Atmosphere," Part I, by Mr. K. A. Norton, Proc. I. R. E., Vol. 24, October 1936, pp. 1367–1387. At larger distances the additional attenuation of the waves which is introduced by the effect of the curvature of the earth was introduced by the methods outlined in the papers, "The Diffraction of Electromagnetic Waves from an Electrical Point Source round a Finitely Conducting Sphere, with Applications to Radiotelegraphy and the Theory of the Rainbow," by Balth van der Pol and H. Bremmer, Part I, Phil. Mag., Vol. 24, p. 141, July 1937, Part II, Phil. Mag., Vol. 24, p. 82, Suppl., November 1937, "Ergebnisse einer Theorie ueber die Fortpflanzung elektron magnetischer Wellen ueber eine Kugel endlicher Leitfahigkeit," by Balth van der Pol and H. Bremmer, Hochfrequenztechnik und Elektroakustik, Band 51, Heft 6, June 1938, "Further Note on the Propagation of Radio Waves over a Finitely Conducting Spherical Earth," by Balth van der Pol and H. Bremmer, Phil. Mag., Vol. 27, p. 261, March 1939. In order to allow for the refraction of the radio waves in the lower atmosphere due to the variation of the dielectric constant of the air with height above the earth, a radius of the earth equal to ⅓ the actual radius was used in the computations for the effect

of the earth's curvature in the manner suggested by C. R. Burrows, "Radio Propagation over Spherical Earth," Proc. I.R.E., May 1935; i. e., the distance corresponding to a given value of attenuation due to the curvature of the earth in the absence of air refraction was multiplied by the factor $(4/3)^{2/3}=1.21$. The amount of this refraction varies from day to day and from season to season, depending on the air mass conditions in the lower atmosphere. If k denotes the ratio between the equivalent radius of the earth and the true radius, the following table gives the values of k for several typical air masses encountered in the United States.

Air mass type	k	
	Summer	Winter
Tropical Gulf—T_c	1.53	1.43
Polar Continental—P_c	1.31	1.25
Superior—S	1.25	1.25
Average	1.33	

It is clear from this table that the use of the average value of $k=4/3$ is justified in obtaining a single correction for the systematic effects of atmospheric refraction.

(d) Provided the value of the dielectric constant is near 15, the curves of Graphs 1 to 19A may be compared with experimental data to determine the appropriate values of the ground conductivity and of the inverse distance field intensity at 1 mile. This is accomplished simply by plotting the measured fields on transparent log-log graph paper similar to that used for Graphs 1 to 19A and superimposing this chart over the graph corresponding to the frequency involved. The log-log graph sheet is then shifted vertically until the best fit is obtained with one of the curves on the graph; the intersection of the inverse distance line on the graph with the 1-mile abscissa on the chart determines the inverse distance field intensity at 1 mile. For other values of dielectric constant, the following procedure may be used for a determination of the dielectric constant of the ground, conductivity of the ground and the inverse distance field intensity at 1 mile. Graph 20 gives the relative values of groundwave field intensity over a plane earth as a function of the numerical distance p and phase angle b. On graph paper with coordinates similar to those of Graph 20, plot the measured values of field intensity as ordinates versus the corresponding distances from the antenna expressed in miles as abscissae. The data should be plotted only for distances greater than one wavelength (or, when this is greater, five times the vertical height of the antenna in the case of a single element, i.e., nondirectional antenna or 10 times the spacing between the elements of a directional antenna) and for distances less than $50/f_{Mc/s}^{1/3}$ miles (i.e., 50 miles at 1 Mc/s). Then, using a light box, place the sheet with the data plotted on it over the sheet with the curves of Graph 20 and shift the data sheet vertically and horizontally (making sure that the vertical lines on both sheets are parallel) until the best fit with the data is obtained with one of the curves on Gragh 20. When the two sheets are properly lined up, the value of the field intensity corresponding to the intersection of the inverse distance line of Graph 20 with the 1 mile abscissa on the data sheet is the inverse distance field intensity at 1 mile, and the values of the numerical distance at 1 mile, p_1, and of b are also determined. Knowing the values of b and p_1 (the numerical distance at 1 mile), we may substitute in the following approximate formulas to determine the appropriate values of the ground conductivity and dielectric constant.

$$x \simeq \frac{\pi}{p} \cdot (R/\lambda)_1 \cos b \qquad (1)$$

$(R/\lambda)_1$ = Number of wavelengths in 1 mile.

$$\sigma_{e.\ m.\ u.} = \frac{x f_{mc}}{17.9731} \cdot 10^{-14} \qquad (2)$$

$\sigma_{e.\ m.\ u.}$ = Conductivity of the ground expressed in electromagnetic units.

f_{mc} = frequency expressed in megacycles.

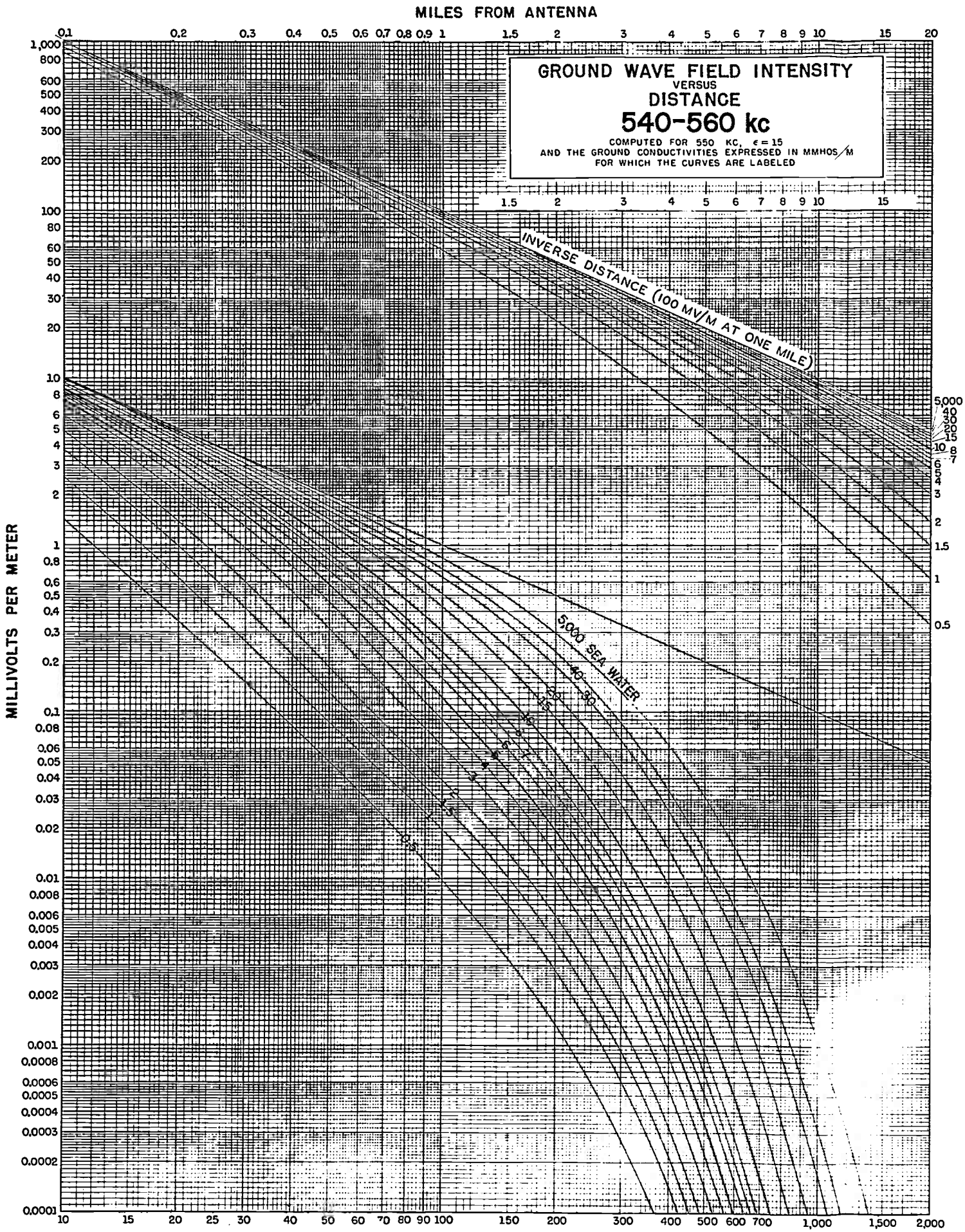
$$\epsilon \cong x \tan b - 1 \qquad (3)$$

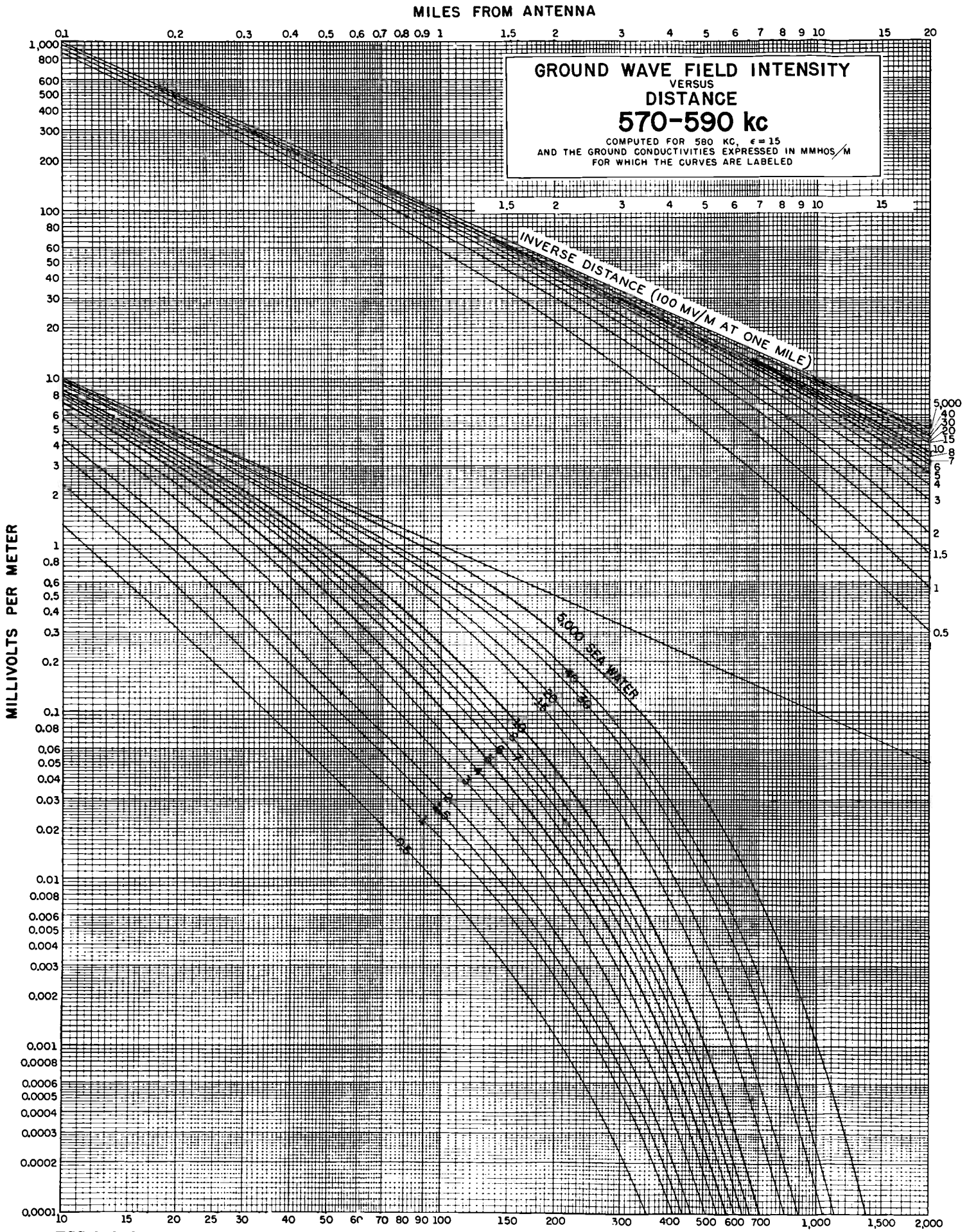
ϵ = dielectric constant of the ground referred to air as unity.

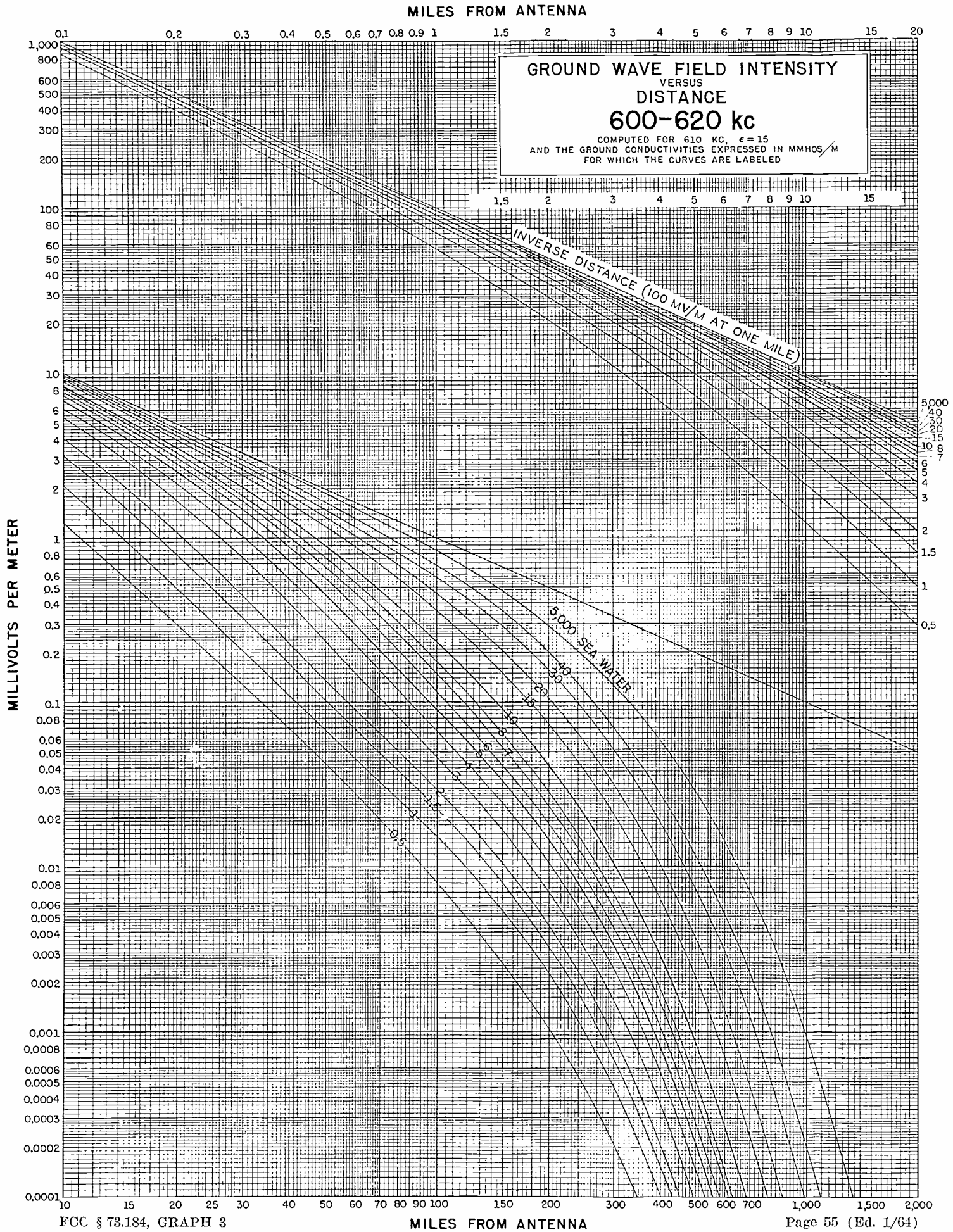
First solve for x by substituting the known values of p_1, $(R/\lambda)_1$, and cos b in equation (1). Equation (2) may then be solved for σ and equation (3) for ϵ). At distances greater than $50/f_{Mc/s}^{1/3}$ miles the curves of Graph 20 do not give the correct relative values of field intensity since the curvature of the earth weakens the field more rapidly than these plane earth curves would indicate. Thus, no attempt should be made to fit experimental data to these curves at the larger distances.

(e) At sufficiently short distances (say less than 35 miles at broadcast frequencies), such that the curvature of the earth does not introduce an additional attenuation of the waves, the curves of Graph 20 may be used for determining the groundwave field intensity for transmitting and receiving antennas at the surface of the earth for any radiated power, frequency, or set of ground constants in the following manner: First, lay off the straight inverse distance line corresponding to the power radiated on transparent log-log graph paper similar to that of Graph 20, labelling the ordinates of the chart in terms of field intensity, and the abscissae in terms of distance. Next, by means of the formulas given on Graph 20, calculate the value of the numerical distance, p, at 1 mile, and the value of b. Then superimpose the log-log chart over Graph 20, shifting it vertically until the inverse distance lines on both charts coincide and shifting it horizontally until the numerical distance at 1 mile on Graph 20 coincides with 1 mile on the log-log graph paper. The curve of Graph 20 corresponding to the calculated value of b is then traced on the log-log graph paper giving the field intensity versus distance in miles.

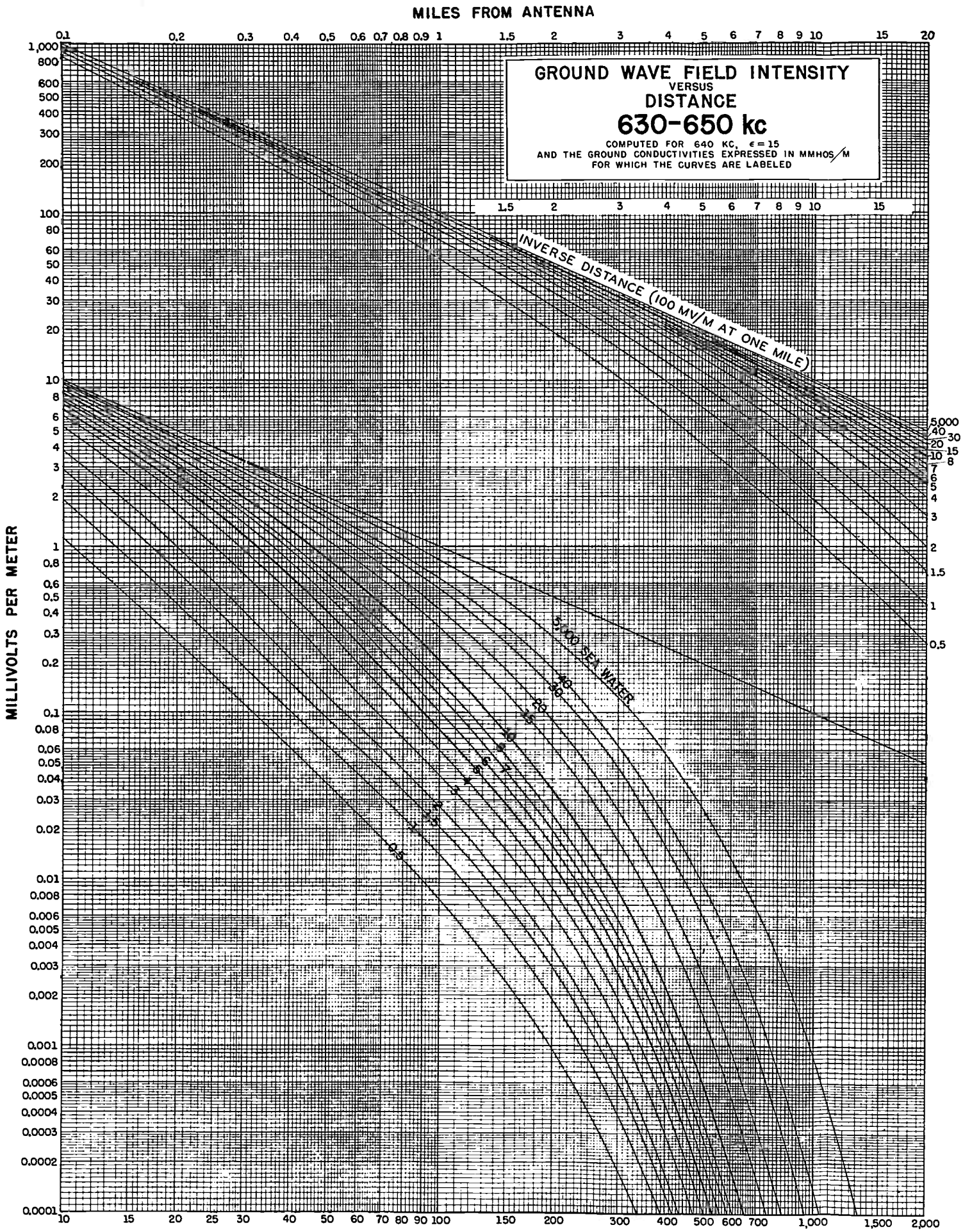
(f) This paragraph consists of the following Graphs 1 to 19, 19A, and 20, and a "slider for use with graphs."


MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
540-560 kc
COMPUTED FOR 550 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
40
30
20
15
10
8
7
6
5
4
3
2
1.5
1
0.5
MILLIVOLTS PER METER
MILES FROM ANTENNA

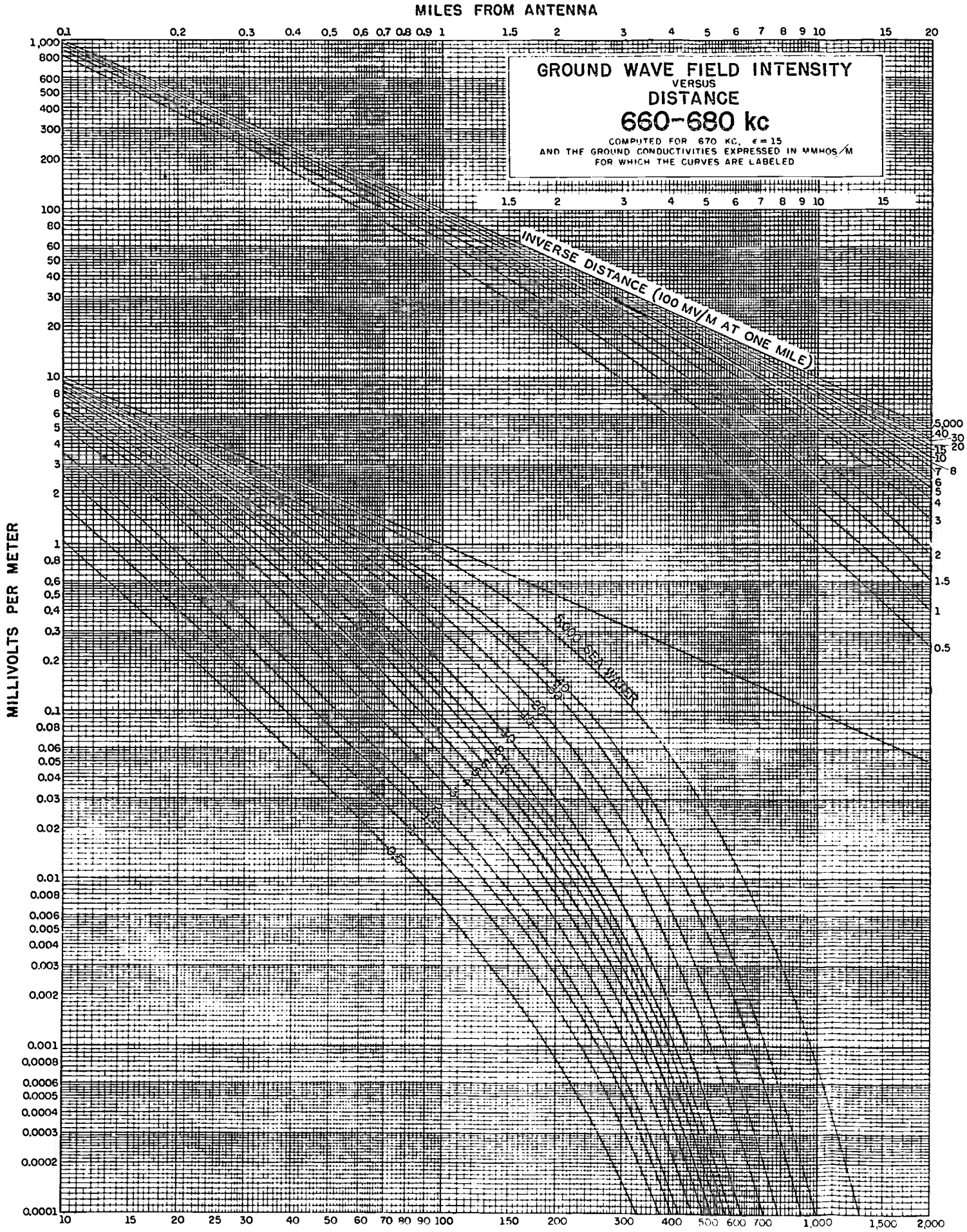

MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
570-590 kc
COMPUTED FOR 580 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
MILLIVOLTS PER METER
MILES FROM ANTENNA


MILES FROM ANTENNA
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.5 2 3 4 5 6 7 8 9 10 15 20
1,000 800 600 500 400 300 200 100 80 60 50 40 30 20 10 8 6 5 4 3 2 1 0.8 0.6 0.5 0.4 0.3 0.2 0.1 0.08 0.06 0.05 0.04 0.03 0.02 0.01 0.008 0.006 0.005 0.004 0.003 0.002 0.001 0.0008 0.0006 0.0005 0.0004 0.0003 0.0002 0.0001
MILLIVOLTS PER METER
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
600-620 kc
COMPUTED FOR 610 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
1.5 2 3 4 5 6 7 8 9 10 15
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 40 30 20 15 10 8 7 6 5 4 3 2 1.5 1 0.5
5,000 SEA WATER
40
30
20
15
10
8
7
6
5
4
3
2
1.5
1
0.5
10 15 20 25 30 40 50 60 70 80 90 100 150 200 300 400 500 600 700 1,000 1,500 2,000
MILES FROM ANTENNA

720-802

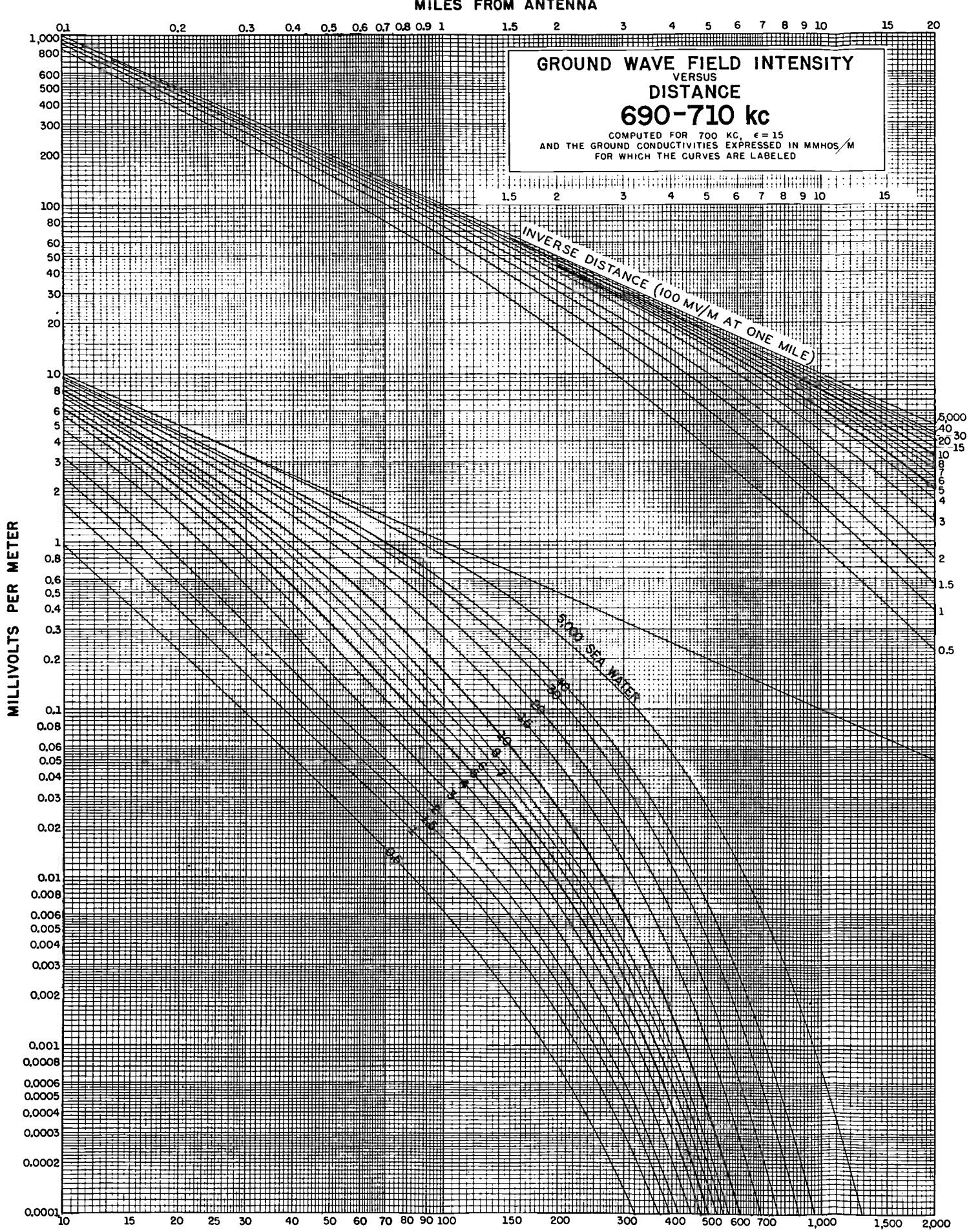

MILES FROM ANTENNA
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.5 2 3 4 5 6 7 8 9 10 15 20
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
630-650 kc
COMPUTED FOR 640 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
1.5 2 3 4 5 6 7 8 9 10 15
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
40
30
20
15
10
7
5
3
2
1
0.5
MILLIVOLTS PER METER
1,000 800 600 500 400 300 200 100 80 60 50 40 30 20 10 8 6 5 4 3 2 1 0.8 0.6 0.5 0.4 0.3 0.2 0.1 0.08 0.06 0.05 0.04 0.03 0.02 0.01 0.008 0.006 0.005 0.004 0.003 0.002 0.001 0.0008 0.0006 0.0005 0.0004 0.0003 0.0002 0.0001
5,000 40 30 20 15 10 8 7 6 5 4 3 2 1.5 1 0.5
10 15 20 25 30 40 50 60 70 80 90 100 150 200 300 400 500 600 700 1,000 1,500 2,000
MILES FROM ANTENNA

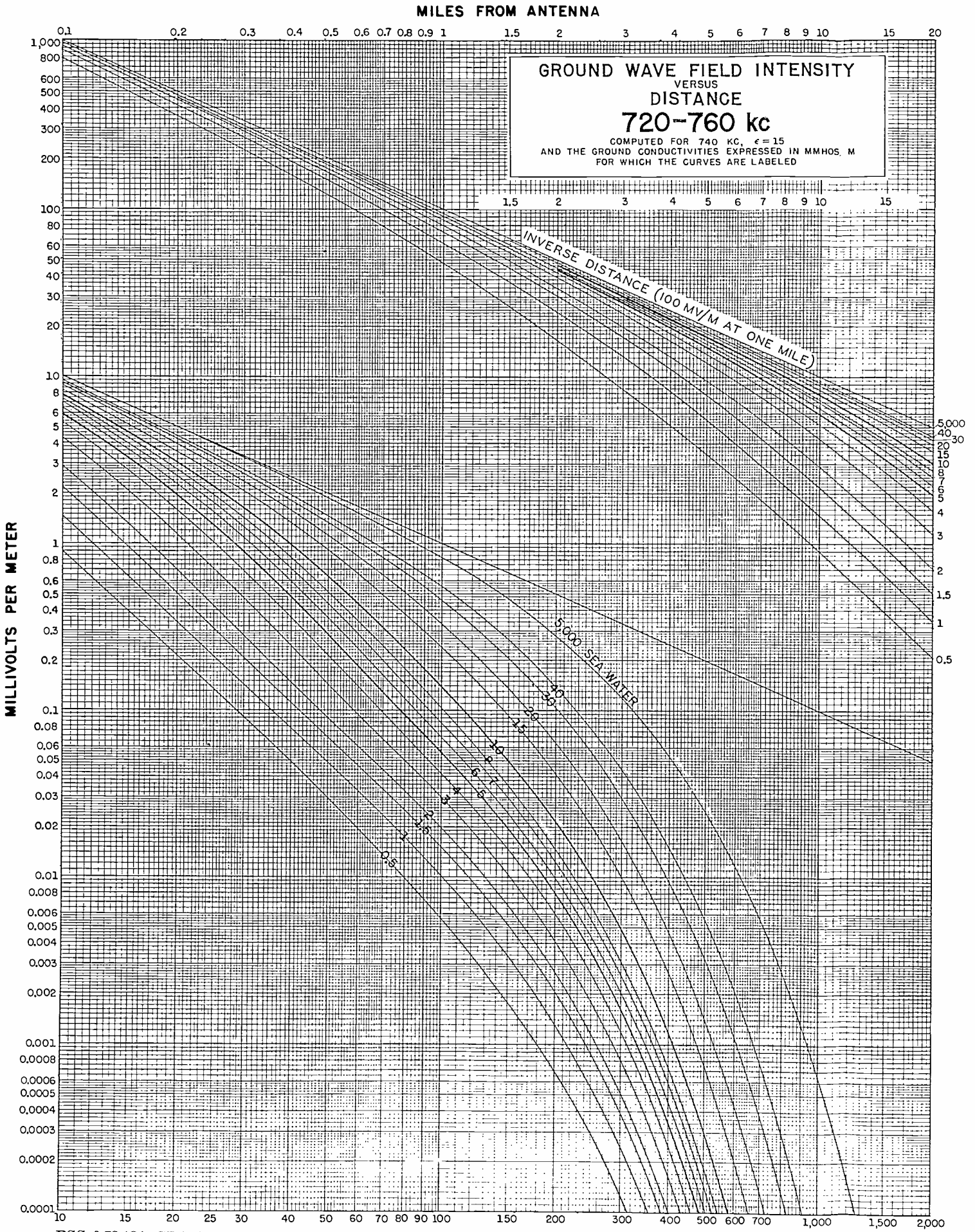
720-80. 54



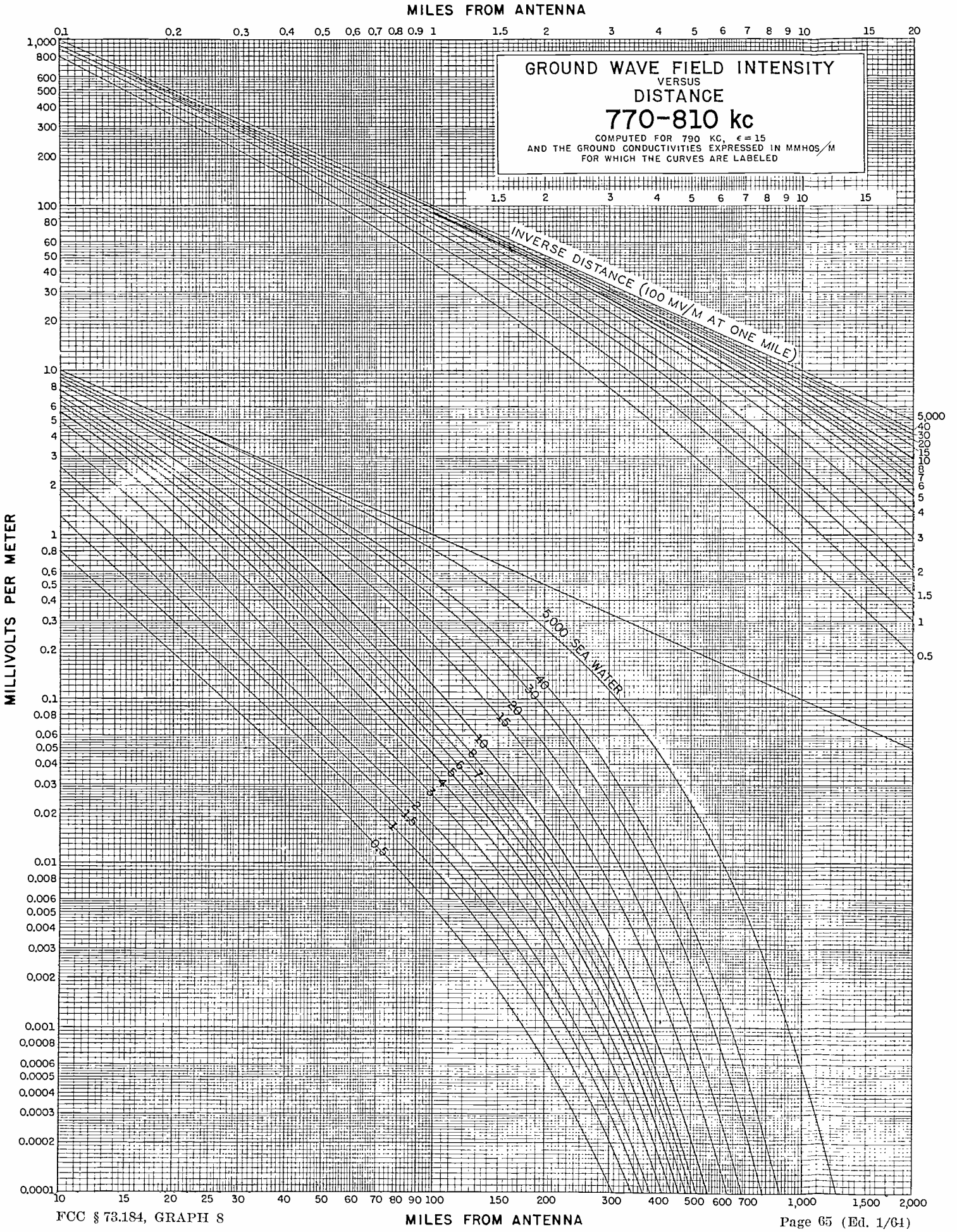
FCC § 73.184, GRAPH 5

720-80 (64)


MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
690-710 kc
COMPUTED FOR 700 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5000 SEA WATER
MILLIVOLTS PER METER
MILES FROM ANTENNA

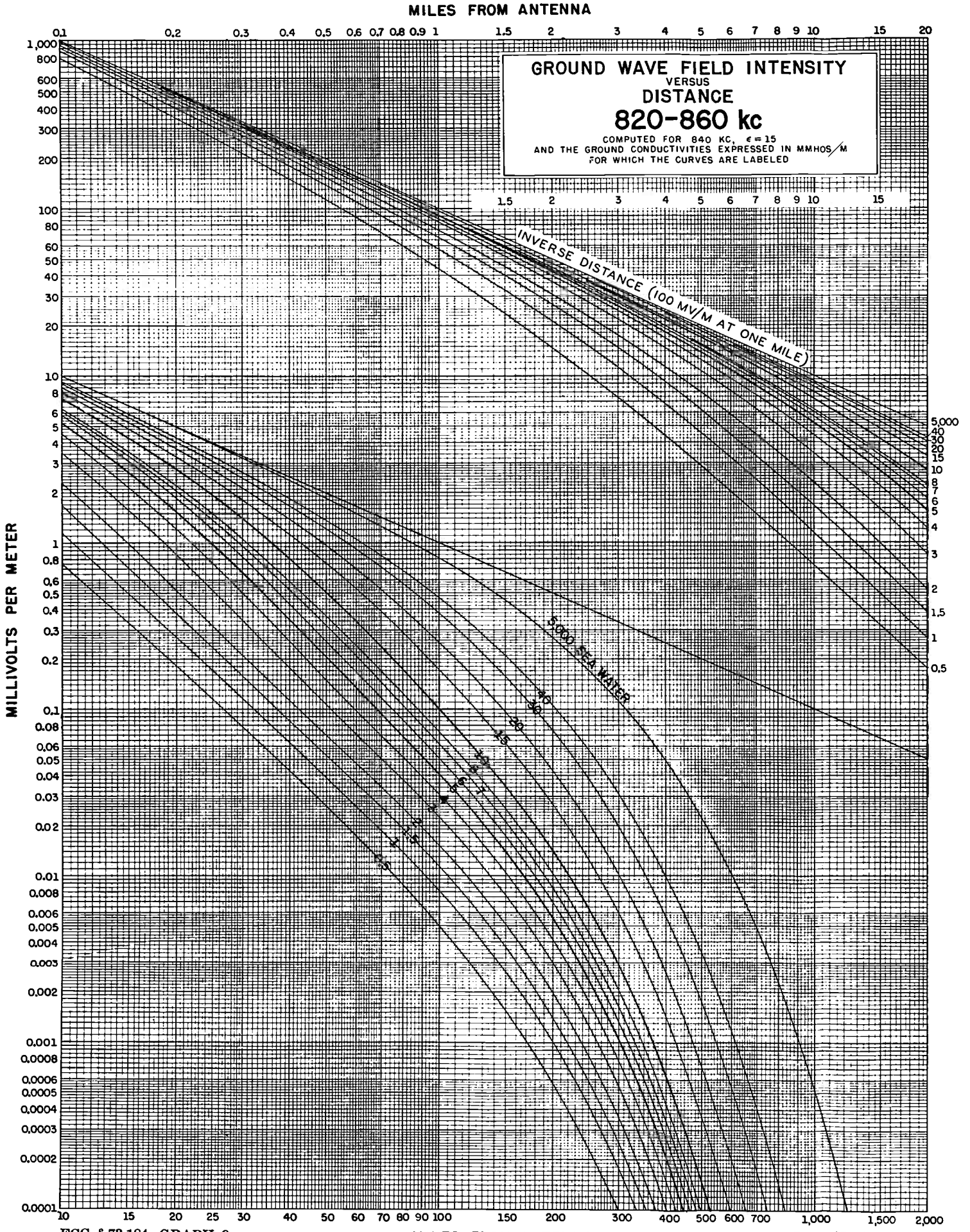

MILES FROM ANTENNA
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.5 2 3 4 5 6 7 8 9 10 15 20
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
720-760 kc
COMPUTED FOR 740 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS. M
FOR WHICH THE CURVES ARE LABELED
1.5 2 3 4 5 6 7 8 9 10 15
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
40
30
20
15
10
7
5
4
3
2
1
0.5
MILLIVOLTS PER METER
1,000 800 600 500 400 300 200 100 80 60 50 40 30 20 10 8 6 5 4 3 2 1 0.8 0.6 0.5 0.4 0.3 0.2 0.1 0.08 0.06 0.05 0.04 0.03 0.02 0.01 0.008 0.006 0.005 0.004 0.003 0.002 0.001 0.0008 0.0006 0.0005 0.0004 0.0003 0.0002 0.0001
5,000 40 30 20 15 10 8 7 6 5 4 3 2 1.5 1 0.5
10 15 20 25 30 40 50 60 70 80 90 100 150 200 300 400 500 600 700 1,000 1,500 2,000
MILES FROM ANTENNA

720-81 #4

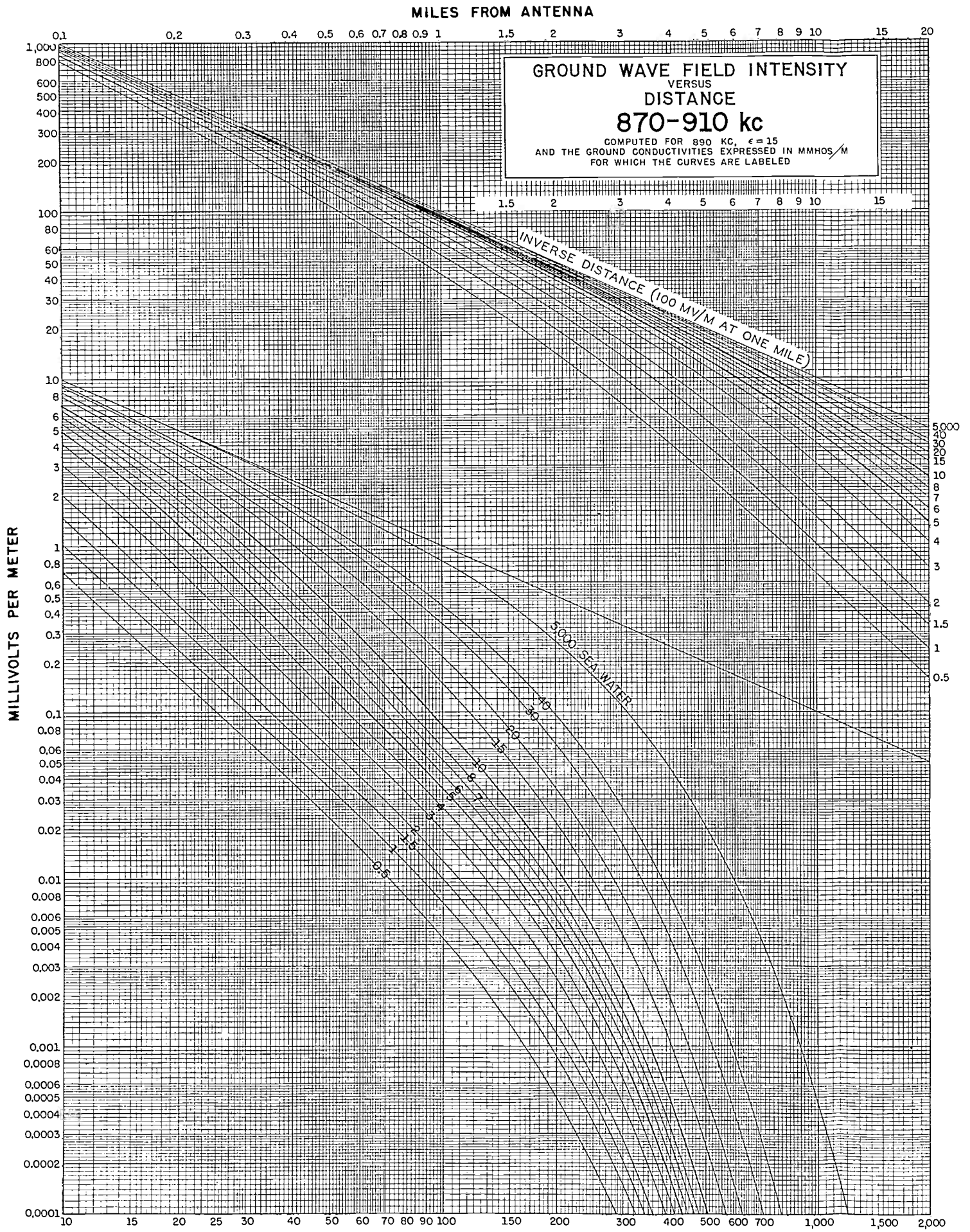


720-80. 64

FCC § 73.184, GRAPH 8

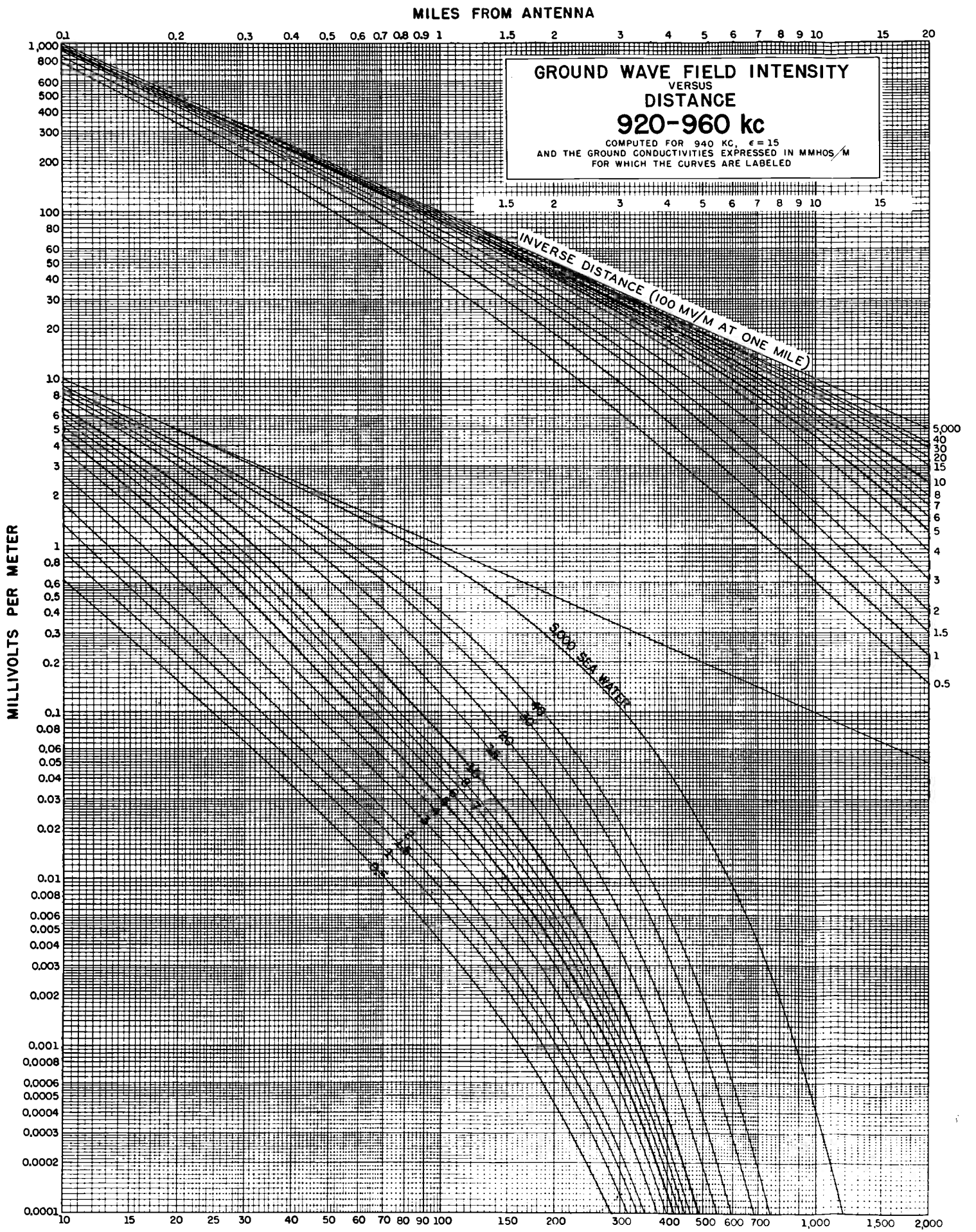

MILES FROM ANTENNA
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.5 2 3 4 5 6 7 8 9 10 15 20
1,000 800 600 500 400 300 200 100 80 60 50 40 30 20 10 8 6 5 4 3 2 1 0.8 0.6 0.5 0.4 0.3 0.2 0.1 0.08 0.06 0.05 0.04 0.03 0.02 0.01 0.008 0.006 0.005 0.004 0.003 0.002 0.001 0.0008 0.0006 0.0005 0.0004 0.0003 0.0002 0.0001
MILLIVOLTS PER METER
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
820-860 kc
COMPUTED FOR 840 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
1.5 2 3 4 5 6 7 8 9 10 15
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 40 30 20 15 10 8 7 6 5 4 3 2 1.5 1 0.5
5,000 SEA WATER
40
30
20
15
10
8
7
6
5
4
3
2
1
0.5
10 15 20 25 30 40 50 60 70 80 90 100 150 200 300 400 500 600 700 1,000 1,500 2,000
MILES FROM ANTENNA

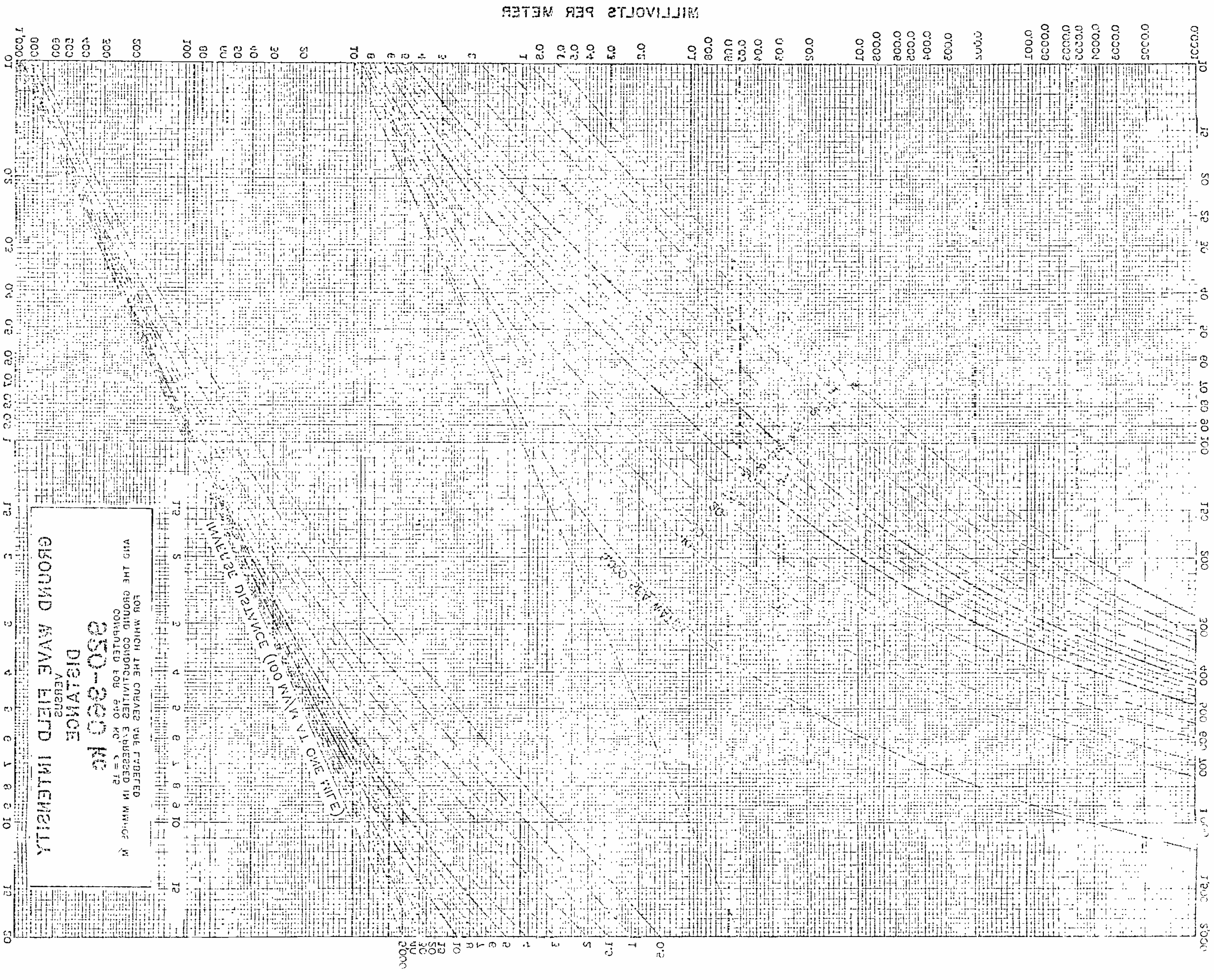
720-802 O

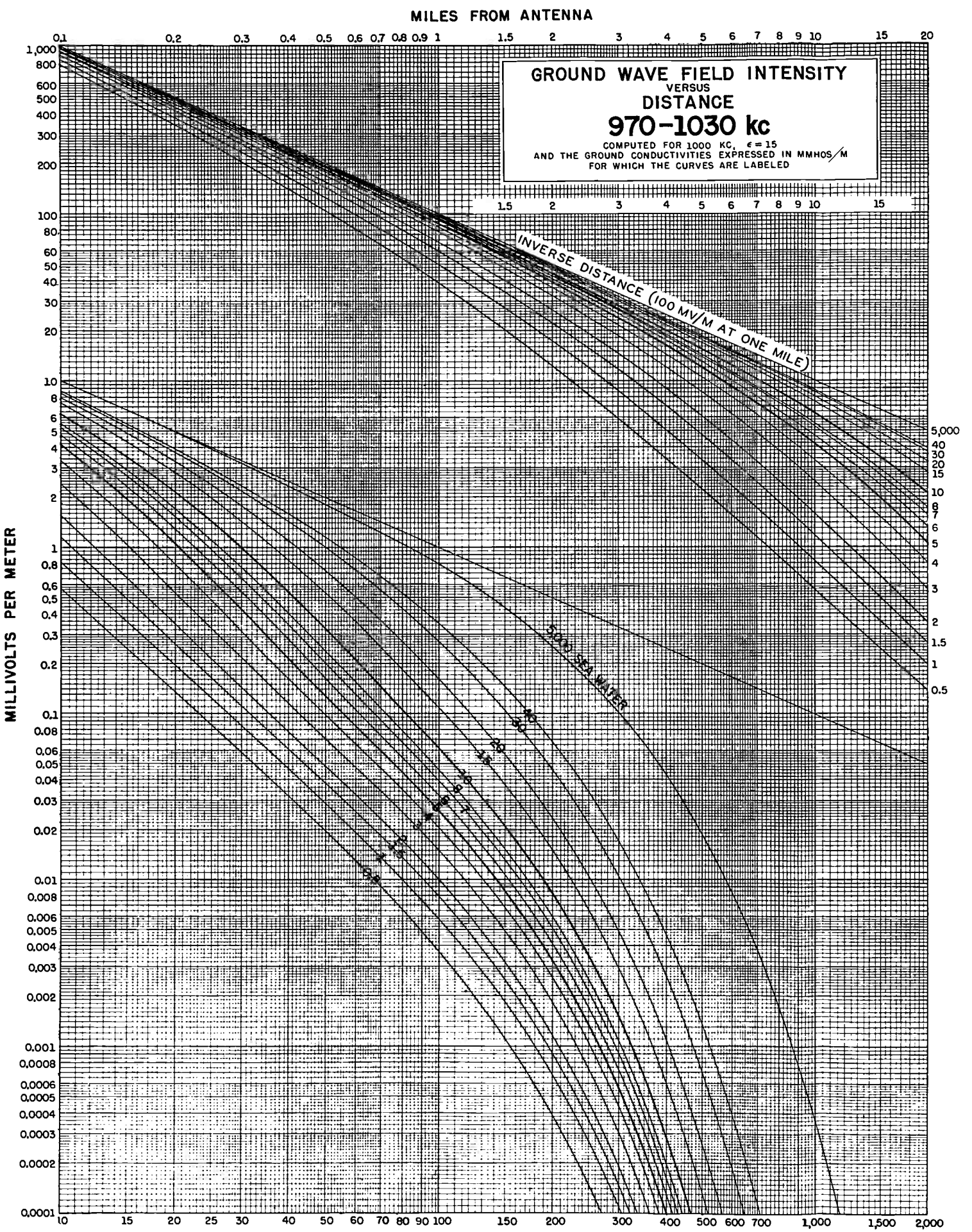

MILES FROM ANTENNA
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.5 2 3 4 5 6 7 8 9 10 15 20
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
870-910 kc
COMPUTED FOR 890 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
1.5 2 3 4 5 6 7 8 9 10 15
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
40
30
20
15
10
7
6
5
4
3
2
1.5
1
0.5
MILLIVOLTS PER METER
1,000 800 600 500 400 300 200 100 80 60 50 40 30 20 10 8 6 5 4 3 2 1 0.8 0.6 0.5 0.4 0.3 0.2 0.1 0.08 0.06 0.05 0.04 0.03 0.02 0.01 0.008 0.006 0.005 0.004 0.003 0.002 0.001 0.0008 0.0006 0.0005 0.0004 0.0003 0.0002 0.0001
5,000 40 30 20 15 10 8 7 6 5 4 3 2 1.5 1 0.5
10 15 20 25 30 40 50 60 70 80 90 100 150 200 300 400 500 600 700 1,000 1,500 2,000
MILES FROM ANTENNA

720-802

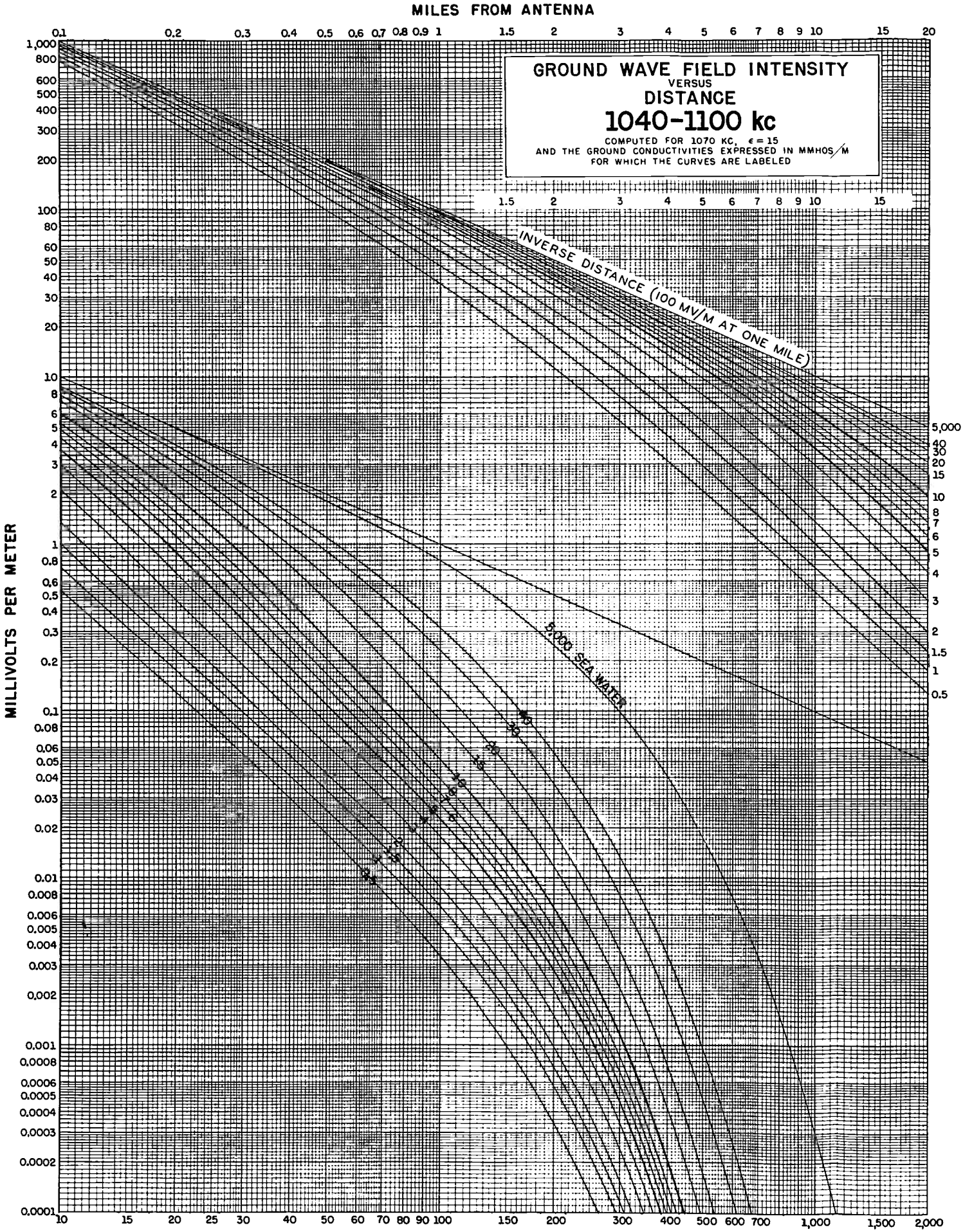
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
870-920 Kc
MILES FROM ANTENNA
MILLIVOLTS PER METER

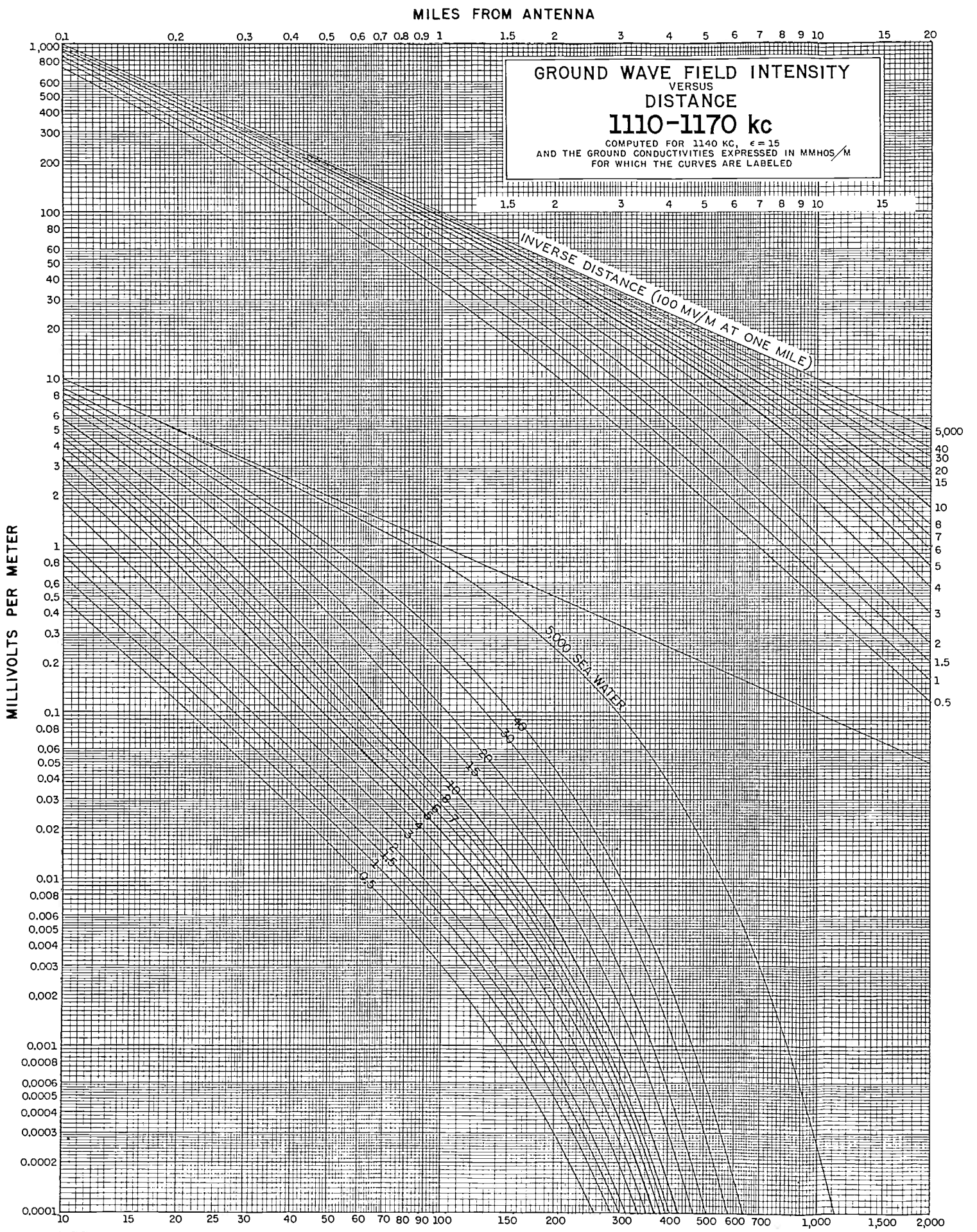

MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
920-960 kc
COMPUTED FOR 940 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5000 SEA WATER
MILLIVOLTS PER METER
MILES FROM ANTENNA

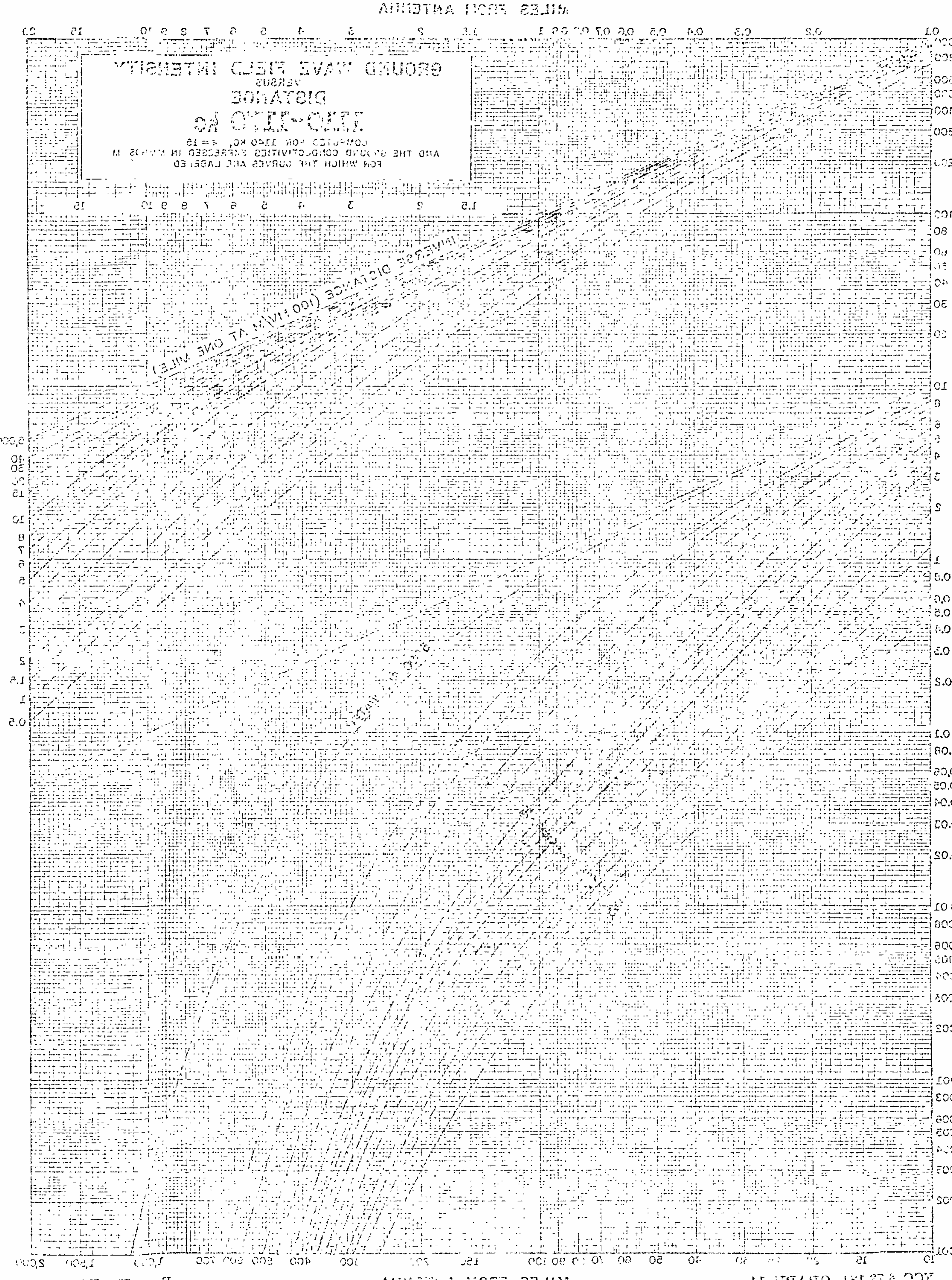

GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
FOR WHICH THE CURVES ARE LABELED
MILLIVOLTS PER METER
MILES FROM ANTENNA
INVERSE DISTANCE (100 MV/M AT ONE MILE)

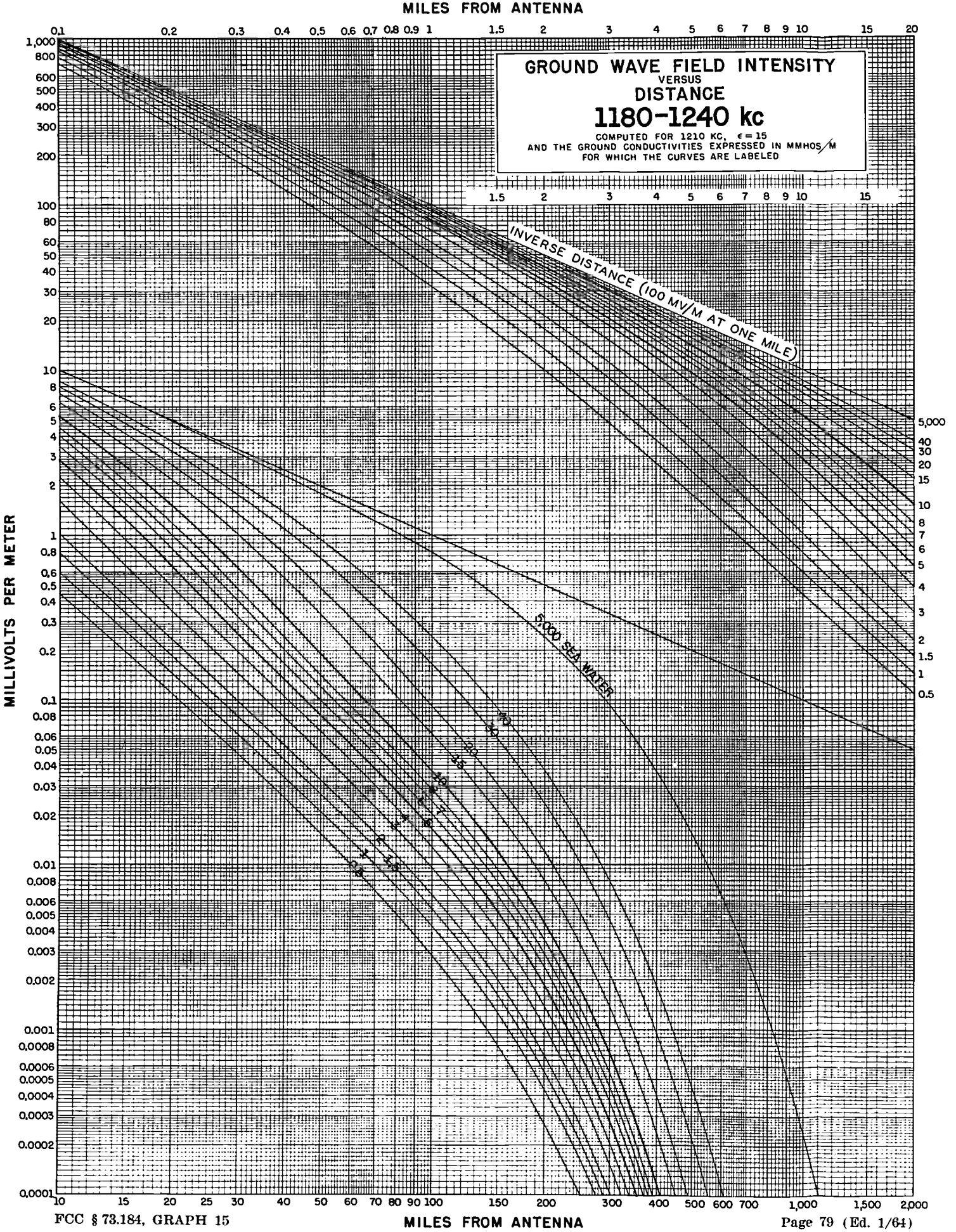

MILES FROM ANTENNA
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.5 2 3 4 5 6 7 8 9 10 15 20
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
970–1030 kc
COMPUTED FOR 1000 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
1.5 2 3 4 5 6 7 8 9 10 15
INVERSE DISTANCE (100 MV/M AT ONE MILE)
MILLIVOLTS PER METER
1,000 800 600 500 400 300 200 100 80 60 50 40 30 20 10 8 6 5 4 3 2 1 0.8 0.6 0.5 0.4 0.3 0.2 0.1 0.08 0.06 0.05 0.04 0.03 0.02 0.01 0.008 0.006 0.005 0.004 0.003 0.002 0.001 0.0008 0.0006 0.0005 0.0004 0.0003 0.0002 0.0001
5,000 40 30 20 15 10 8 7 6 5 4 3 2 1.5 1 0.5
5000 SEA WATER
40
30
20
15
10
8
7
6
5
4
3
2
1
0.5
10 15 20 25 30 40 50 60 70 80 90 100 150 200 300 400 500 600 700 1,000 1,500 2,000
MILES FROM ANTENNA

720–802 ~ 64

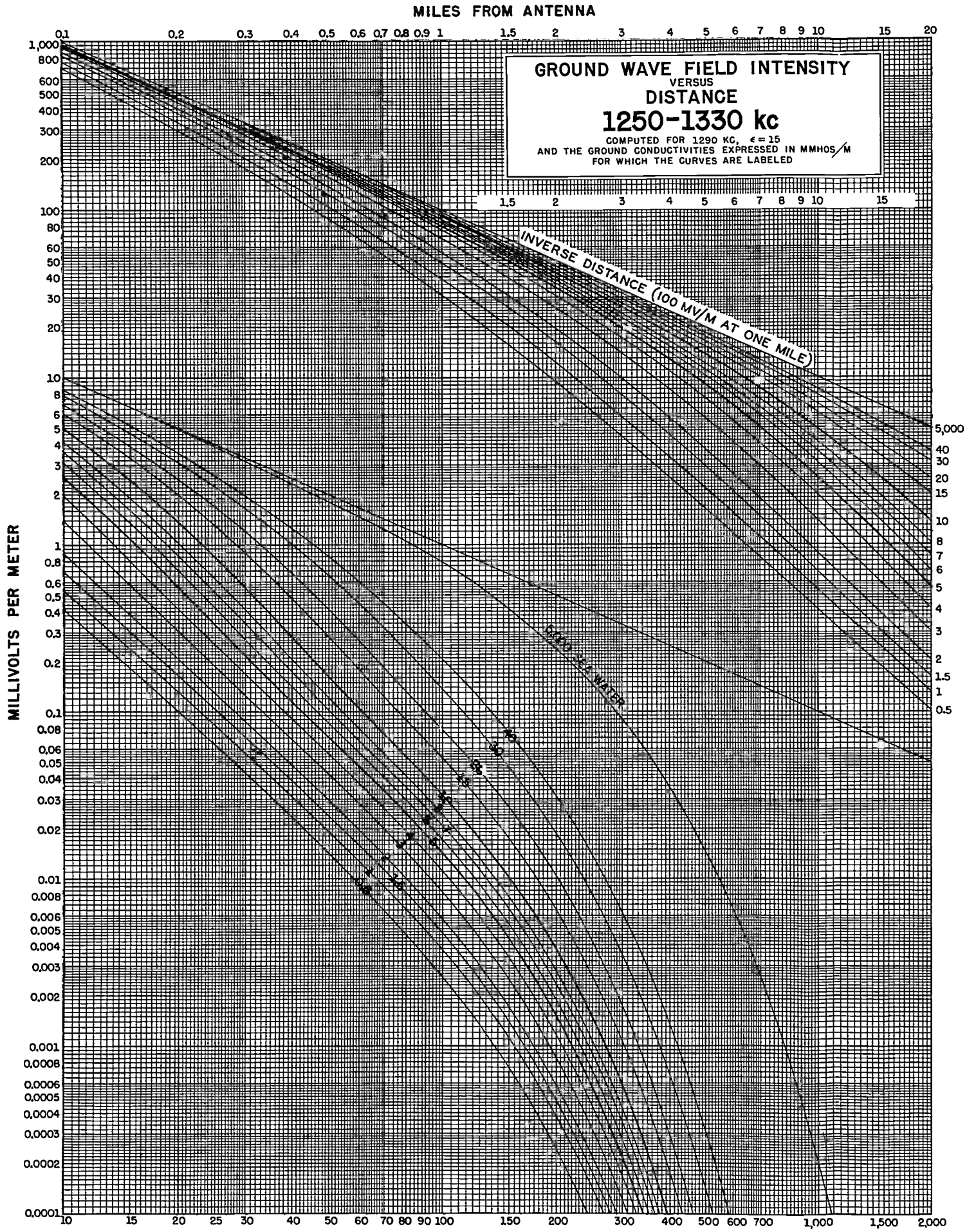

MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1040-1100 kc
COMPUTED FOR 1070 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
MILLIVOLTS PER METER
MILES FROM ANTENNA


MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1110-1170 kc
COMPUTED FOR 1140 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5000 SEA WATER
MILLIVOLTS PER METER
MILES FROM ANTENNA

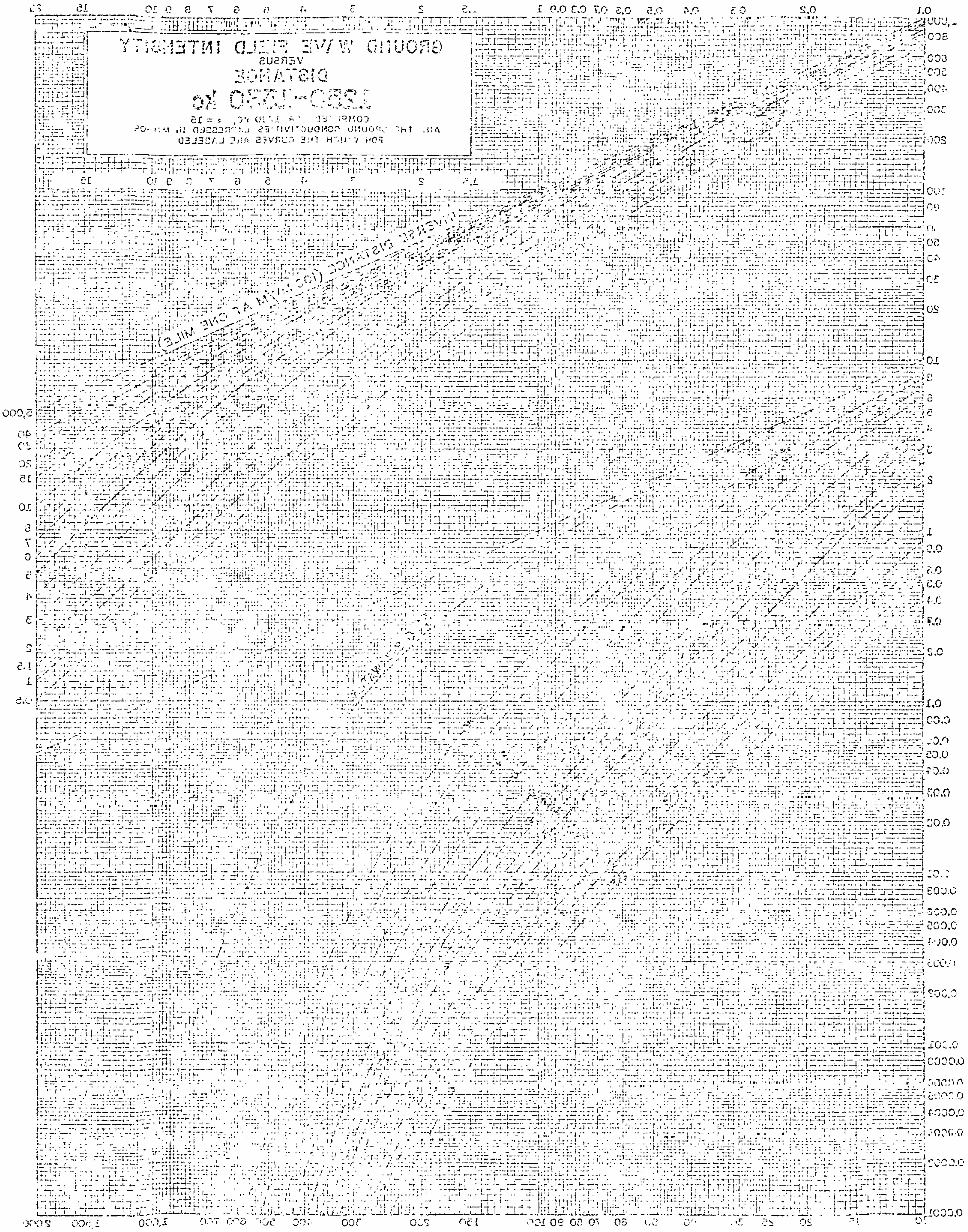

GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1110-1170 kc
INVERSE DISTANCE FIELD (100 MV/M AT ONE MILE)
MILES FROM ANTENNA
MILLIVOLTS PER METER

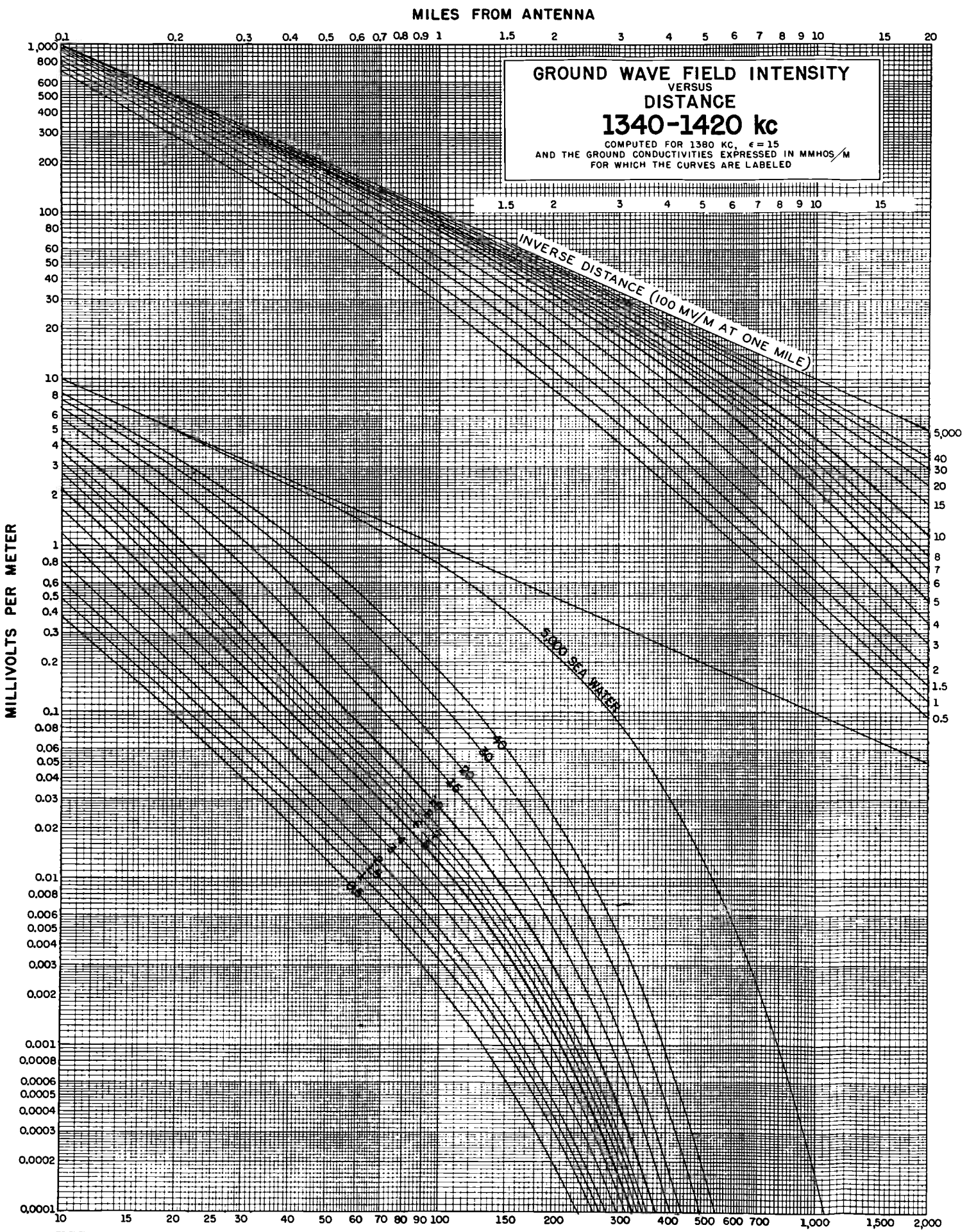

MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1180-1240 kc
COMPUTED FOR 1210 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
MILLIVOLTS PER METER
MILES FROM ANTENNA

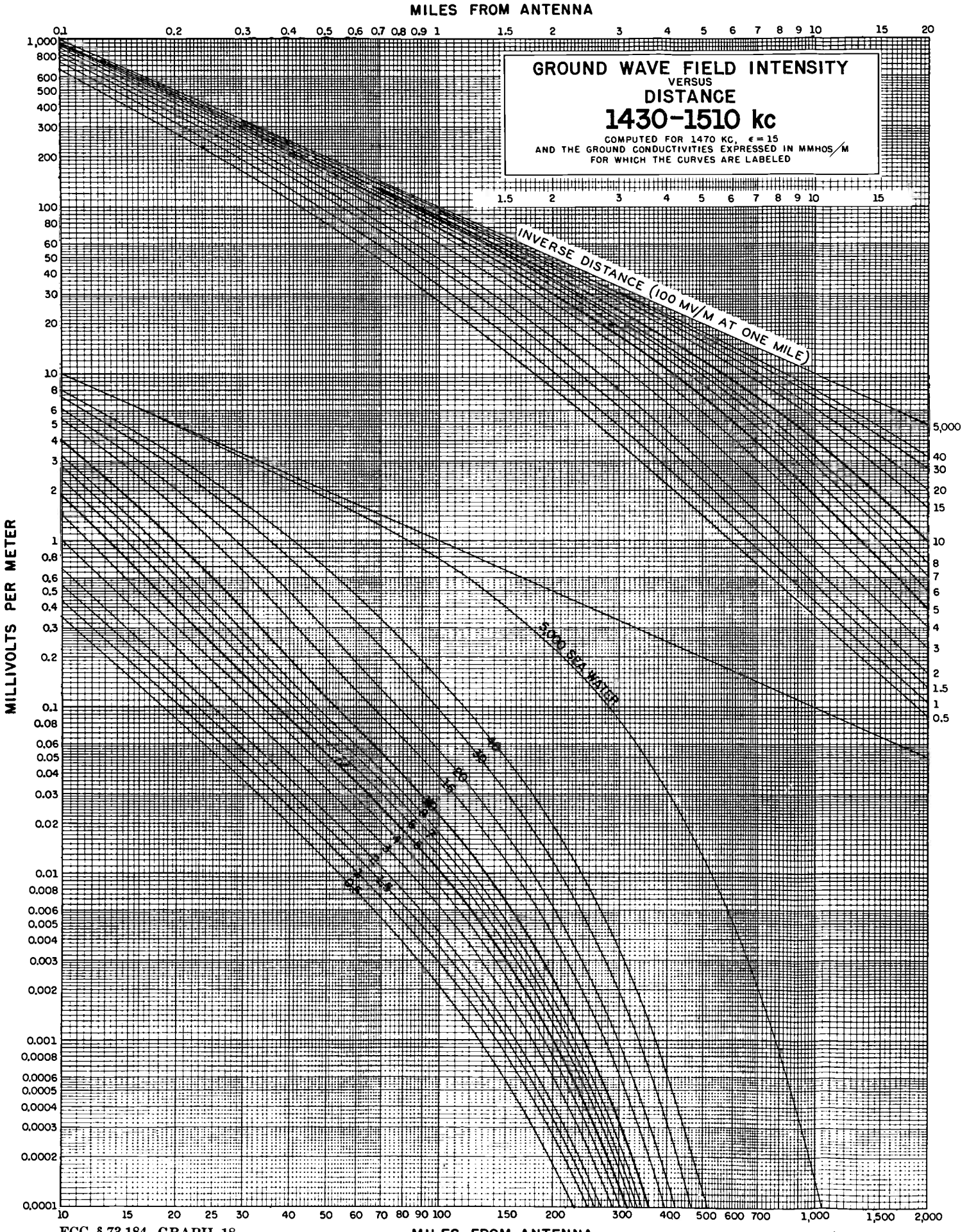
720-804


MILES FROM ANTENNA
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.5 2 3 4 5 6 7 8 9 10 15 20
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1250-1330 kc
COMPUTED FOR 1290 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
1.5 2 3 4 5 6 7 8 9 10 15
INVERSE DISTANCE (100 MV/M AT ONE MILE)
MILLIVOLTS PER METER
1,000 800 600 500 400 300 200 100 80 60 50 40 30 20 10 8 6 5 4 3 2 1 0.8 0.6 0.5 0.4 0.3 0.2 0.1 0.08 0.06 0.05 0.04 0.03 0.02 0.01 0.008 0.006 0.005 0.004 0.003 0.002 0.001 0.0008 0.0006 0.0005 0.0004 0.0003 0.0002 0.0001
5,000 40 30 20 15 10 8 7 6 5 4 3 2 1.5 1 0.5
SEA WATER
10 15 20 25 30 40 50 60 70 80 90 100 150 200 300 400 500 600 700 1,000 1,500 2,000
MILES FROM ANTENNA

720-802 ~ 64

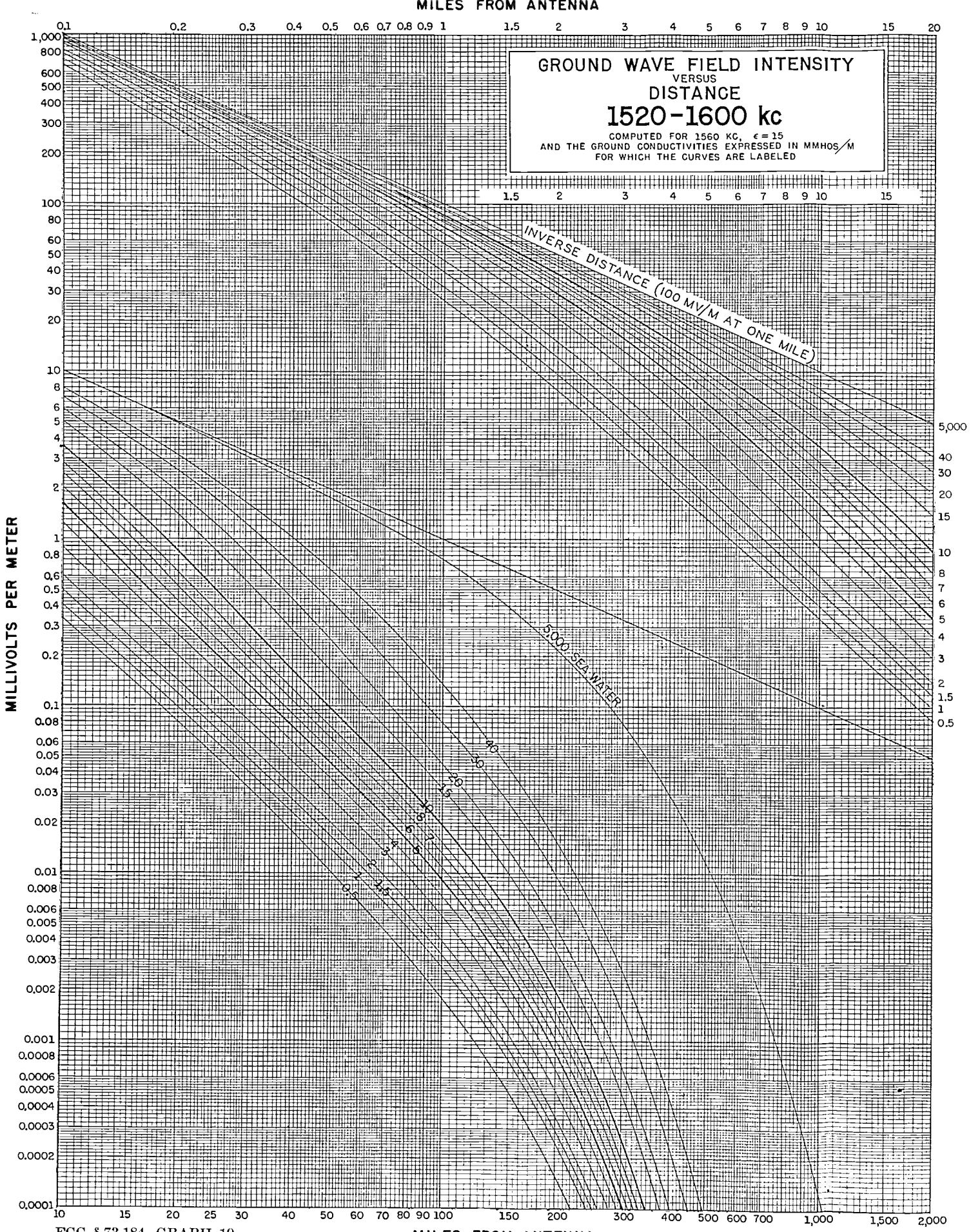

MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
INVERSE DISTANCE
MILLIVOLTS PER METER
MILES FROM ANTENNA


MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1340-1420 kc
COMPUTED FOR 1380 KC, ε = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
MILLIVOLTS PER METER
MILES FROM ANTENNA

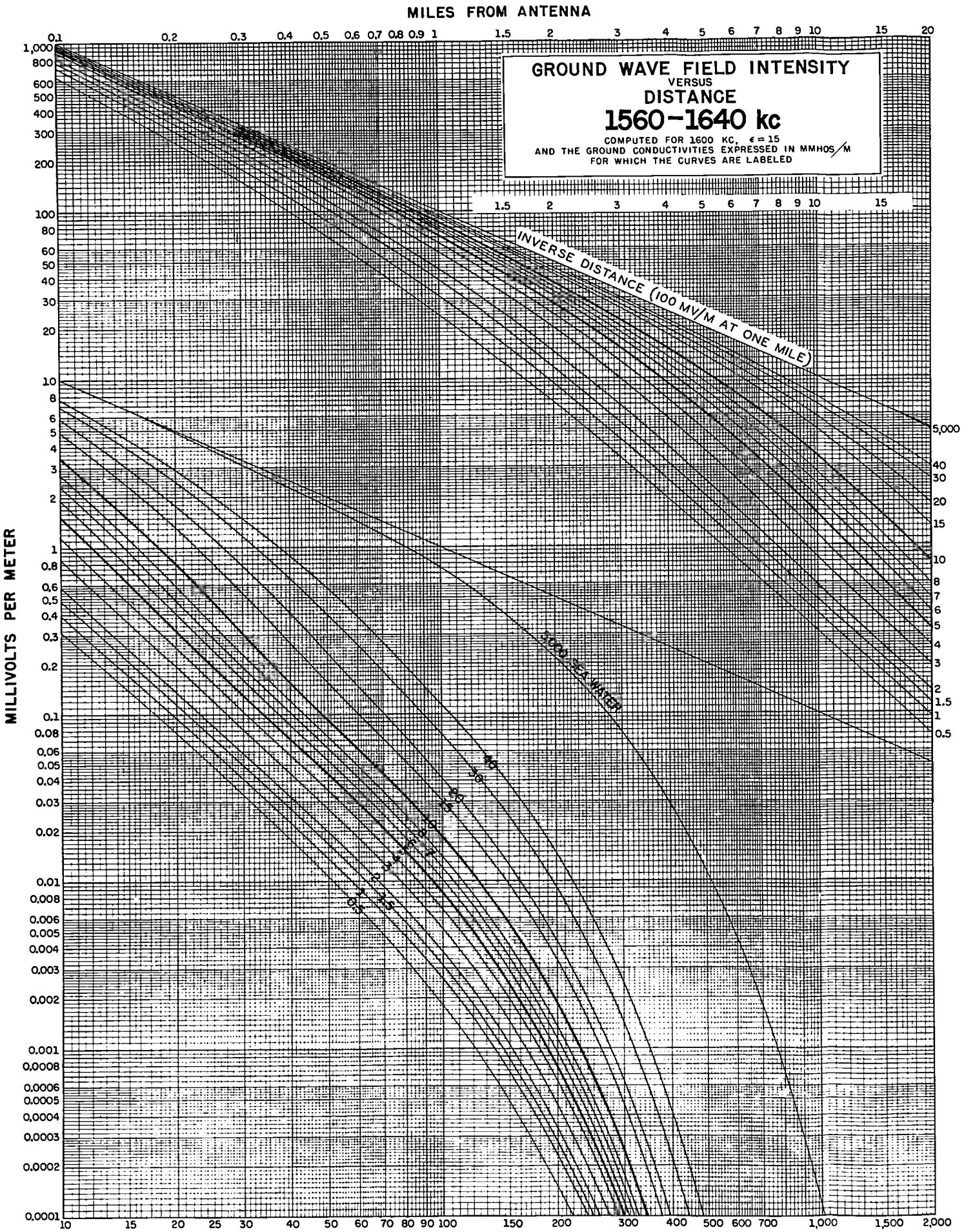


720-802 - 64

FCC § 73.184, GRAPH 18


MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1520-1600 kc
COMPUTED FOR 1560 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5,000 SEA WATER
40
30
20
15
10
7
5
4
3
2
1.5
1
0.5
MILLIVOLTS PER METER
MILES FROM ANTENNA

GROUND WAVE FIELD INTENSITY
DISTANCE
1550-1600 Kc
MILES FROM ANTENNA
MILLIVOLTS PER METER


MILES FROM ANTENNA
GROUND WAVE FIELD INTENSITY
VERSUS
DISTANCE
1560–1640 kc
COMPUTED FOR 1600 KC, ϵ = 15
AND THE GROUND CONDUCTIVITIES EXPRESSED IN MMHOS/M
FOR WHICH THE CURVES ARE LABELED
INVERSE DISTANCE (100 MV/M AT ONE MILE)
5000 (SEA WATER)
MILLIVOLTS PER METER
MILES FROM ANTENNA

720-802 O- 64

GROUND WAVE FIELD INTENSITY VERSUS NUMERICAL DISTANCE OVER A PLANE EARTH

$$p = \frac{\pi}{x}\frac{R}{\lambda}\frac{\cos^2 b''}{\cos b'} \cong \frac{\pi}{x}\frac{R}{\lambda}\cos b$$

$$b = 2b'' - b' \cong \tan^{-1}\frac{\epsilon+1}{x}$$

} Vertical Polarization.

$$p = \pi\frac{R}{\lambda}\frac{x}{\cos b'}$$

$$b = 180° - b'$$

} Horizontal Polarization.

$$x = \frac{1.79731\cdot 10^{15}\,\sigma_{e.m.u.}}{fmc}$$

$\frac{R}{\lambda}$ = distance expressed in wavelengths.

σ = ground conductivity expressed in mmhos/m.

f = frequency expressed in megacycles.

ϵ = dielectric constant of the ground referred to air as unity.

$$\tan b'' = \frac{\epsilon}{x}$$

$$\tan b' = \frac{\epsilon - 1}{x}$$

INVERSE DISTANCE (1/p)

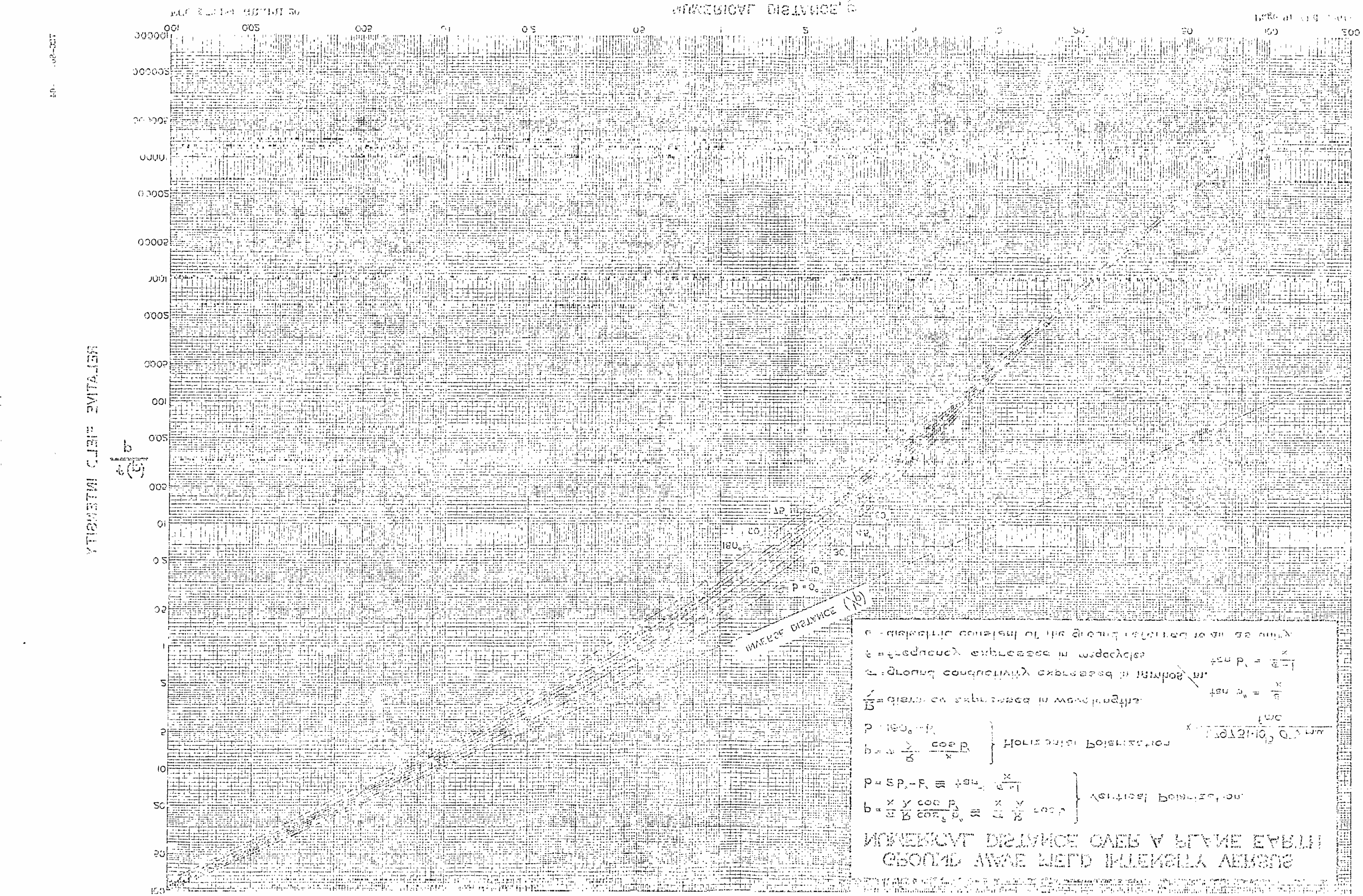
b = 0°, 15°, 30°, 45°, 60°, 75°, 90°, 180°

RELATIVE FIELD INTENSITY $\frac{f(p)}{p}$

100, 50, 20, 10, 5, 2, 1, 0.5, 0.2, 0.1, 0.05, 0.02, 0.01, 0.005, 0.002, 0.001, 0.0005, 0.0002, 0.0001, 0.00005, 0.00002, 0.00001

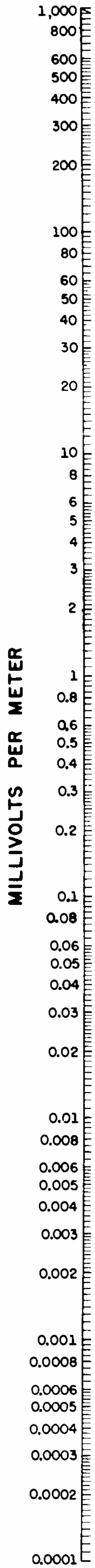
0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200

NUMERICAL DISTANCE, p

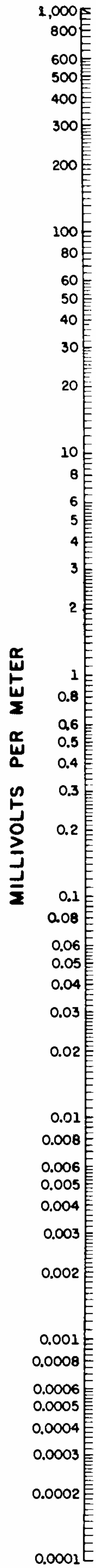


GROUND WAVE FIELD INTENSITY VERSUS
NUMERICAL DISTANCE OVER A PLANE EARTH
Vertical Polarization
Horizontal Polarization
$p = \frac{\pi R}{\lambda x}\cos b$
P = NUMERICAL DISTANCE
INVERSE DISTANCE
RELATIVE FIELD INTENSITY
NUMERICAL DISTANCE p

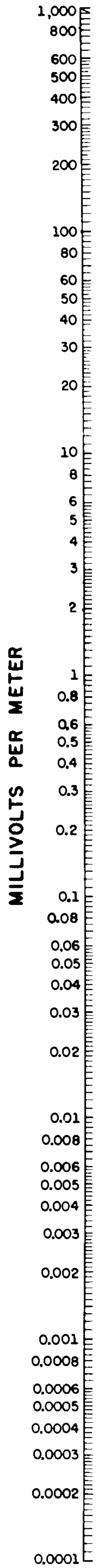
[Slider for use with Graphs 1–19A and 20, Pages 51 through 91]



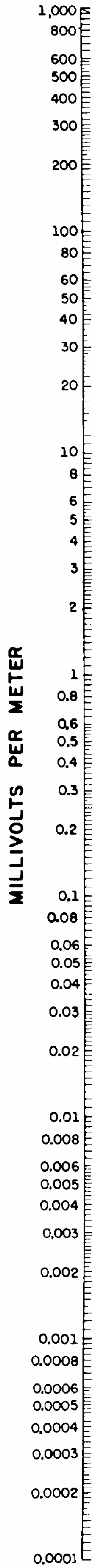
(SLIDER FOR USE WITH GRAPHS 1–19A AND 20)



(SLIDER FOR USE WITH GRAPHS 1–19A AND 20)

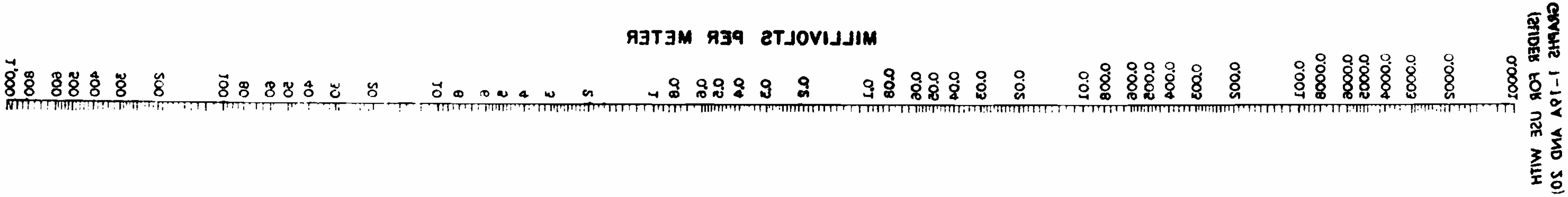


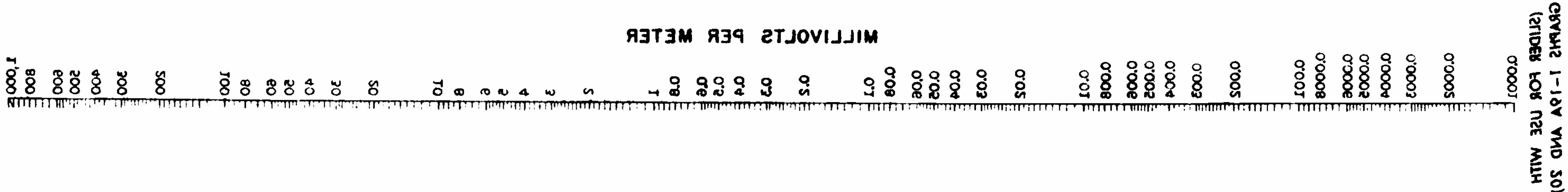
(SLIDER FOR USE WITH GRAPHS 1–19A AND 20)

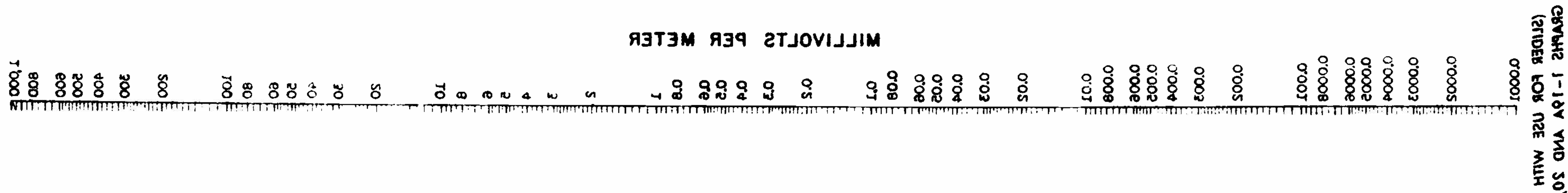


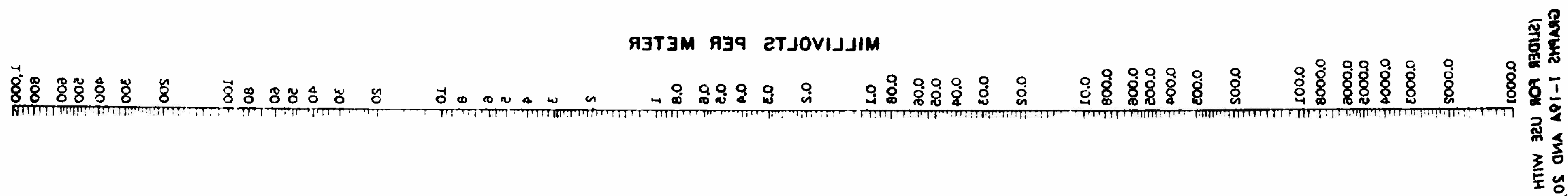
(SLIDER FOR USE WITH GRAPHS 1–19A AND 20)

720-802 O—


MILLIVOLTS PER METER
0.0001 0.0002 0.0003 0.0004 0.0005 0.0006 0.0008 0.001 0.002 0.003 0.004 0.005 0.006 0.008 0.01 0.02 0.03 0.04 0.05 0.06 0.08 0.1 0.2 0.3 0.4 0.5 0.6 0.8 1 2 3 4 5 6 8 10 20 30 40 50 60 80 100 200 300 400 500 600 800 1,000
(SLIDER FOR USE WITH GRAPHS 1-19A AND 20)


MILLIVOLTS PER METER
0.0001 0.0002 0.0003 0.0004 0.0005 0.0006 0.0008 0.001 0.002 0.003 0.004 0.005 0.006 0.008 0.01 0.02 0.03 0.04 0.05 0.06 0.08 0.1 0.2 0.3 0.4 0.5 0.6 0.8 1 2 3 4 5 6 8 10 20 30 40 50 60 80 100 200 300 400 500 600 800 1,000
(SLIDER FOR USE WITH GRAPHS 1-19A AND 20)


MILLIVOLTS PER METER
0.0001 0.0002 0.0003 0.0004 0.0005 0.0006 0.0008 0.001 0.002 0.003 0.004 0.005 0.006 0.008 0.01 0.02 0.03 0.04 0.05 0.06 0.08 0.1 0.2 0.3 0.4 0.5 0.6 0.8 1 2 3 4 5 6 8 10 20 30 40 50 60 80 100 200 300 400 500 600 800 1,000
(SLIDER FOR USE WITH GRAPHS 1-19A AND 20)


MILLIVOLTS PER METER
0.0001 0.0002 0.0003 0.0004 0.0005 0.0006 0.0008 0.001 0.002 0.003 0.004 0.005 0.006 0.008 0.01 0.02 0.03 0.04 0.05 0.06 0.08 0.1 0.2 0.3 0.4 0.5 0.6 0.8 1 2 3 4 5 6 8 10 20 30 40 50 60 80 100 200 300 400 500 600 800 1,000
(SLIDER FOR USE WITH GRAPHS 1-19A AND 20)

§ 73.185 Computation of interfering signal from a directional antenna.

(a) In case of an an antenna directional in the horizontal plane, the groundwave interference shall be computed from the calculated horizontal pattern by determining the vectors toward the service area of the station to be protected and applying these values to the groundwave curves set out in § 73.183.

(b) For signals from stations operating on clear channels, skywave interference shall be determined from Figures 1a and 6a of § 73.190.

(c) For signals from stations operating on regional and local channels, skywave interference is determined from Figures 2 and 6a of § 73.190. (Certain simplifying assumptions may be made in the case of Class IV stations on local channels. See note to § 73.182(a)(4).)

(d) Figure 6a of § 73.190, entitled "Angles of Departure vs. Transmission Range" is to be used in determining the angles in the vertical pattern of the antenna of an interfering station to be considered as pertinent to transmission by one reflection. To provide for variation in the pertinent vertical angle due to variations of ionosphere height and ionosphere scattering, the curves 4 and 5 indicate the upper and lower angles within which the radiated field is to be considered. The maximum value of field intensity occurring between these angles shall be used to determine the multiplying factor to apply to the 10% skywave field intensity value read from Figure 1a or Figure 2 of § 73.190. The multiplying factor is found by dividing the maximum radiation between the pertinent angles by 100 mv/m. (Curves 2 and 3 are considered to represent the variation due to the variation of the effective height of the E-layer while Curves 4 and 5 extend the range of pertinent angles to include a factor which allows for scattering. The dotted lines are included for information only.)

(e) Example of the use of skywave curves for stations operating on clear channels: Assume a Class II station with which interference may be expected is located at a distance of 450 miles from a proposed Class II station. The critical angles of radiation as determined from Figure 6a of § 73.190 are 9.6° and 16.3°. If the vertical pattern of the antenna of the proposed station, in the direction of the other station, is such that between the angles of 9.6° and 16.3° above the horizon the maximum radiation is 160 mv/m at one mile, the value of the 10% field, as read from Figure 1a of § 73.190, is multiplied by 1.6 to determine the interfering field intensity at the location in question.

(f) For stations operating on regional and local channels, interfering skywave field intensities shall be determined in accordance with the procedure specified in (d) of this section and illustrated in (e) of this section, except that Figure 2 of § 73.190 is used in place of Figure 1a of § 73.190. In using Figure 2 of § 73.190, one additional parameter must be considered, i.e., the variation of received field with the latitude of the path.

(g) Figure 2 of § 73.190, "10% Skywave Signal Range Chart", shows the signal as a function of the latitude of the transmission path, which is defined as the geographic latitude of the mid-point between the transmitter and receiver. When using Figure 2 of § 73.190, latitude 35° should be used in case the mid-point of the path lies below 35° North and latitude 50° should be used in case the mid-point of the path lies above 50° North.

(h) In the case of non-directional vertical antennas, the vertical distribution of relative fields for several heights, assuming sinusoidal distribution of current along the antenna, is shown in Figure 5 of § 73.190. In the case of directional antennas the vertical pattern in the great circle direction toward the point of reception in question must first be calculated. In cases where the radiation in the vertical plan, in the pertinent azimuth, contains a large lobe at a higher angle than the pertinent angle for one reflection, the method of calculating interference will not be restricted to that just described, but each such case will be considered on the basis of the best knowledge available.

(i) Example of the use of skywave curves for stations operating on regional and local channels: It is desired to determine the amount of interference to a Class III station at Portland, Oregon, caused by another Class III station at Los Angeles, California. The Los Angeles station is radiating a signal of 560 mv/m at one mile, in the horizontal plane, in the great

circle direction of Portland, using a 0.5 wavelength antenna. The distance is 825 miles. From Figure 6a of § 73.190, the upper and lower pertinent angles are 7° and 3.5° and, from Figure 5 of § 73.190, the maximum radiation within these angles is 99% of the horizontal radiation or 554 mv/m at one mile. The mid-point latitude of the transmission path is 39.8° N and, from Figure 2 of § 73.190, the 10% skywave field at 825 miles is 0.050 mv/m for 100 mv/m radiated. Multiplying by 554/100 to adjust this value to the actual radiation gives 0.277 mv/m as to the interfering signal intensity. At 20 to 1 ratio, the limitation to the Portland station is to the 5.5 mv/m contour.

(j) When the distance is large, more than one reflection may be involved and due consideration must be given each appropriate vector in the vertical pattern, as well as the constants of the earth where reflection takes place between the transmitting station and the service area to which interference may be caused.

NOTE: In applying the provisions of this section to applications tendered on or before September 29, 1965, for new or changed facilities on the clear channels listed in § 73.25 (b), Figure 1 of § 73.190, entitled "Average Skywave Field Intensity", shall be used instead of Figure 1a, and Figure 6 of § 73.190, entitled "Variation with Distance of Two Important Parameters in the Theory of Skywave Propagation" shall be used instead of Figure 6a. In determining skywave interference from an antenna with a vertical pattern different from that on which Figure 1 of § 73.190 is predicated, it is necessary to compare the appropriate vectors in the vertical plane. The skywave curves shown in Figure 1 of § 73.190 are based on antenna systems having height of 0.311 wavelength (112°) and producing a vertical pattern as shown in Figure 5 of § 73.190. A non-directional antenna system, as well as a directional antenna system having vertical patterns other than essentially the same as shown, must be converted to the pattern of a 0.311 wavelength antenna having the same field intensity at the critical angle as does the pattern of the antenna involved.

[*§ 73.185 as amended eff. 11–8–65; III(64)–10*]

§ 73.186 Field intensity measurements in allocation; establishment of effective field at one mile.

(a) Section 73.45 provides that certain minimum field intensities are acceptable in lieu of the required minimum physical vertical heights of the antennas proper. Also, in other allocation problems, it is necessary to determine the effective field at 1 mile. The following requirements shall govern the taking and submission of data on the field intensity produced:

(1) Beginning as near to the antenna as possible without including the induction field and to provide for the fact that a broadcast antenna not being a point source of radiation (not less than one wave length or 5 times the vertical height in the case of a single element, i.e., nondirectional antenna or 10 times the spacing between the elements of a directional antenna), measurements shall be made on eight or more radials, at intervals of approximately one-tenth mile up to 2 miles from the antenna, at intervals of approximately one-half mile from 2 miles to 6 miles from the antenna, at intervals of approximately 2 miles from 6 miles to 15 or 20 miles from the antenna, and a few additional measurements if needed at greater distances from the antenna. Where the antenna is rurally located and unobstructed measurements can be made, these shall be as many as 18 or 20 measurements on each radial. However, where the antenna is located in a city where unobstructed measurements are difficult to make, measurements shall be made on each radial at as many unobstructed locations as possible, even though the intervals are considerably less than stated above, particularly within 2 miles of the antenna. In cases where it is not possible to obtain accurate measurements at the closer distances (even out to 5 or 6 miles due to the character of the intervening terrain), the measurements at greater distances should be made at closer intervals. (It is suggested that "wave tilt" measurements may be made to determine and compare locations for taking field intensity measurements, particularly to determine that there are no abrupt changes in ground conductivity or that reflected waves are not causing abnormal intensities.)

(2) The data required by subparagraph (1) of this paragraph should be plotted for each radial in accordance with either of the two methods set forth below:

(i) Using log-log coordinate paper, plot field intensities as ordinate and distance as abscissa.

(ii) Using semi-log coordinate paper, plot field intensity times distance as ordinate on the log scale and distance as abscissa on the linear scale.

(3) However, regardless of which of the methods in subparagraph (2) of this paragraph is employed, the proper curve to be drawn through the points plotted shall be determined by comparison with the curves in § 73.184 as follows: Place the sheet on which the actual points have been plotted over the appropriate Graph in § 73.184, hold to the light if necessary and adjust until the curve most closely matching the points is found. This curve should then be drawn on the sheet on which the points were plotted, together with the inverse distance curve corresponding to that curve. The field at 1 mile for the radial concerned shall be the ordinate on the inverse distance curve at 1 mile.

(4) When all radials have been analyzed in accordance with subparagraph (3) of this paragraph, a curve shall be plotted on polar coordinate paper from the fields obtained, which gives the inverse distance field pattern at 1 mile. The radius of a circle, the area of which is equal to the area bounded by this pattern, is the effective field. (See § 73.14.)

(5) While making the field intensity survey, the output power of the station shall be maintained at the licensed power as determined by the direct method. To do this, it is necessary to determine accurately the total antenna resistance (the resistance variation method, the substitution method or bridge method is acceptable) and to measure the antenna current by means of an ammeter of acceptable accuracy. (See §§ 73.39 and 73.54.)

(b) Complete data taken in conjunction with the field intensity measurements shall be submitted to the Commission in affidavit form including the following:

(1) Tabulation by number of each point of measurement to agree with the map required in (2) below and the field intensity meter reading, the attenuation constant, the field intensity (E), the distance from the antenna (D) and the product of the field intensity and distance (ED) (if data for each radial are plotted on semi-logarithmic paper, see above) for each point of measurement.

(2) Map showing each point of measurement numbered to agree with tabulation required above.

(3) Description of method used to take field intensity measurements.

(4) The family of theoretical curves used in determining the curve for each radial properly identified by conductivity and dielectric constants.

(5) The curves drawn for each radial and the field intensity pattern.

(6) Antenna resistance measurement:

(i) Antenna resistance at operating frequency.

(ii) Description of method employed.

(iii) Tabulation of complete data.

(iv) Curve showing antenna resistance versus frequency.

(7) Antenna current or currents maintained during field intensity measurements.

(8) Description, accuracy, date, and by whom each instrument was last calibrated.

(9) Name, address, and qualifications of the engineer making the measurements.

(10) Any other pertinent information.

§ 73.187 Limitation on daytime radiation.

(a) (1) Except as otherwise provided in subparagraphs (2) and (3) of this paragraph, no authorization will be granted for Class II facilities if the proposed facilities would radiate, during the 2 hours after local sunrise and the 2 hours before local sunset, toward any point on the 0.1 mv/m contour of a co-channel U.S. Class I station, at or below the pertinent vertical angle determined from curve 4 of figure 6a of § 73.190, values in excess of those obtained as provided in paragraph (b) of this section.

[*§ 73.187(a)(1) as amended eff. 11–8–65; III(64)–10*]

(2) The limitation set forth in subparagraph (1) of this paragraph shall not apply in the following cases:

(i) Any Class II facilities authorized before November 30, 1959; or

(ii) For Class II stations authorized before November 30, 1959, subsequent changes of facilities which do not involve a change in frequency, an increase in radiation toward any point on the 0.1 mv/m contour of a co-channel U.S. Class I station, or the move of transmitter site materially closer to the 0.1 mv/m contour of such Class I stations.

(3) If a Class II station authorized before November 30, 1959, is authorized to increase its daytime radiation in any direction toward the 0.1 mv/m contour of a co-channel U.S. Class I station (without a change in frequency or a move of transmitter site materially closer to such contour), it may not, during the two hours after local sunrise or the two hours before local sunset, radiate in such directions a value exceeding the higher of:

(i) The value radiated in such directions with facilities last authorized before November 30, 1959, or

(ii) The limitation specified in subparagraph (1) of this paragraph.

(b) To obtain the maximum permissible radiation for a Class II station on a given frequency ($f_{kc/s}$) from 640 kc/s through 990 kc/s, multiply the radiation value obtained for the given distance and azimuth from the 500 kc/s chart (Figure 9 of § 73.190) by the appropriate interpolation factor shown in the K_{500} column of paragraph (c) of this section; and multiply the radiation value obtained for the given distance and azimuth from the 1000 kc/s chart (Figure 10 of § 73.190) by the appropriate interpolation factor shown in the K_{1000} column of paragraph (c) of this section. Add the two products thus obtained; the result is the maximum radiation value applicable to the Class II station in the pertinent directions. For frequencies from 1010 kc/s to 1580 kc/s, obtain in a similar manner the proper radiation values from the 1000 kc/s and 1600 kc/s charts (Figures 10 and 11 of § 73.190), multiply each of these values by the appropriate interpolation factor in the K'_{1000} and K'_{1600} columns in paragraph (c) of this section, and add the products.

(c) Interpolation factors.

(1) Frequencies below 1000 kc/s.

$f_{kc/s}$	K_{500}	K_{1000}
640	0.720	0.280
650	0.700	0.300
660	0.680	0.320
670	0.660	0.340
680	0.640	0.360
690	0.620	0.380
700	0.600	0.400
710	0.580	0.420
720	0.560	0.440
730	0.540	0.460
740	0.520	0.480
750	0.500	0.500
760	0.480	0.520
770	0.460	0.540
780	0.440	0.560
800	0.400	0.600
810	0.380	0.620
820	0.360	0.640
830	0.340	0.660
840	0.320	0.680
850	0.300	0.700
860	0.280	0.720
870	0.260	0.740
880	0.240	0.760
890	0.220	0.780
900	0.200	0.800
940	0.120	0.880
990	0.020	0.980

(2) Frequencies above 1000 kc/s.

$f'_{kc/s}$	K'_{1000}	K'_{1600}
1010	0.983	0.017
1020	0.967	0.033
1030	0.950	0.050
1040	0.933	0.067
1050	0.917	0.083
1060	0.900	0.100
1070	0.883	0.117
1080	0.867	0.133
1090	0.850	0.150
1100	0.833	0.167
1110	0.817	0.183
1120	0.800	0.200
1130	0.783	0.217
1140	0.767	0.233
1160	0.733	0.267
1170	0.717	0.283
1180	0.700	0.300
1190	0.683	0.317
1200	0.667	0.333
1210	0.650	0.350
1220	0.633	0.367
1500	0.167	0.833
1510	0.150	0.850
1520	0.133	0.867
1530	0.117	0.883
1540	0.100	0.900
1550	0.083	0.917
1560	0.067	0.933
1570	0.050	0.950
1580	0.033	0.967

§ 73.188 Location of transmitters.

(a) The four primary objectives to be obtained in the selection of a site for a transmitter of a broadcast station are as follows:

(1) To serve adequately the center of population in which the studio is located and to give maximum coverage to adjacent areas.

(2) To cause and experience minimum interference to and from other stations.

(3) To present a minimum hazard to air navigation consistent with objectives (1) and (2).

(4) To fulfill certain other requirements given in the following paragraphs of this section.

(b) The site selected should meet the following conditions:

(1) A minimum field intensity of 25 to 50 mv/m will be obtained over the business or factory areas of the city.

(2) A minimum field intensity of 5 to 10 mv/m will be obtained over the most distant residential section.

(3) The absorption of the signal is the minimum for any obtainable sites in the area. As a guide in this respect the absorption of the signals from other stations in that area should be followed, as well as the results of tests on other sites.

(4) The population within the blanket contour does not exceed that specified by § 73.24(g).

(c) In selecting a site in the center of a city it is usually necessary to place the radiating system on the top of a building. This building should be large enough to permit the installation of a satisfactory ground and/or counterpoise system. Great care must be taken to avoid selecting a building surrounded by taller buildings or where any nearby building higher than the antenna is located in the direction which it is desired to serve. Such a building will tend to cast "radio shadows" which may materially reduce the coverage of the station in that direction. Irrespective of the height of surrounding buildings, the building on which the antenna is located should not have height of approximately one-quarter wavelength. A study of antenna systems located on buildings tends to indicate that where the building is approximately a quarter wavelength in height, the efficiency of radiation may be materially reduced.

(d) Particular attention must be given to avoiding cross-modulation. In this connection, attention is invited to the fact that it has been found very unsatisfactory to locate broadcast stations so that high signal intensities occur in areas with overhead electric power or telephone distribution systems and sections where the wiring and plumbing are old or improperly installed. These areas are usually found in the older sections of a city. These conditions give rise to cross-modulation interference due to the nonlinear conductivity characteristics of contacts between wiring, plumbing, or other conductors. This type of interference is independent of the selectivity characteristics of the receiver and normally can be eliminated only by correction of the condition causing the interference. Cross-modulation tends to increase with frequency and in some areas it has been found impossible to eliminate all sources of cross-modulation, resulting in an unsatisfactory condition for both licensee and listeners. The Commission will not authorize (1) new stations, (2) a major change of facilities of existing stations, (3) a change in transmitter location of an existing station, or (4) auxiliary transmitters, for use with other than the authorized antenna system of the main

transmitter, if such new stations, physical facilities of existing stations after a major change, transmitters or auxiliary transmitters would be located in such areas or would ultilize a roof-top antenna and the operating power would be in excess of 1000 watts.

(e) If it is determined that a site should be selected removed from the city, there are several general conditions to be followed in determining the exact site. Three maps should be given consideration if available:

(1) Map of the density of population and number of people by sections in the area. (See Bureau of Census series P–D and H–E available from Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.)

(2) Geographical contour map with contour intervals of 20 to 50 feet.

(3) Map showing the type, nature and depth of the soil in the area with special reference to the condition of the moisture throughout the year.

From these maps a site should be selected with a minimum number of intervening hills between it and the center of the city. In general, because of ground conditions, it is better to select a site in a low area rather than on top of a hill, and the only condition under which a site on top of a hill should be selected is that it is only possible by this means to avoid a substantial number of hills, between the site and the center of a city with the resulting radio shadows. If a site is to be selected to serve a city which is on a general sloping area, it is generally better to select a site below the city than above the city.

(f) If a compromise must be made between probable radio shadows from intervening hills and locating the transmitter on top of a hill, it is generally better to compromise in favor of the low area, where an efficient radiating system may be installed which will more than compensate for losses due to shadows being caused by the hills, if not too numerous or too high. Several transmitters have been located on tops of hills, but so far as data has been supplied not a single installation has given superior efficiency of propagation and coverage.

(g) The ideal location of a broadcast transmitter is in a low area of marshy or "crawfishy" soil or area which is damp the maximum percentage of time and from which a clear view over the entire center of population may be had and the tall buildings in the business section of the city would cast a shadow across the minimum residential area.

(h) The type and condition of the soil or earth immediately around a site is very important. Important, to an equal extent, is the soil or earth between the site and the principal area to be served. Sandy soil is considered the worst type, with glacial deposits and mineral-ore areas next. Alluvial, marshy areas and salt-water bogs have been found to have the least absorption of the signal. One is fortunate to have available such an area and, if not available, the next best condition must be selected.

(i) Figure M3 (See Note to § 73.183(c)) and Figure R3 of § 73.190 indicate effective conductivity values in the United States, and are to be used for determining the extent of broadcast station coverage when adequate field intensity measurements over the path in question are not available. Since the values specified are only for general areas and since conductivity values over particular paths may vary widely from those shown, caution must be exercised in using the maps for selection of a satisfactory transmitter site. Where the submission of field intensity measurements is deemed necessary or advisable, the Commission, in its discretion, may require an applicant for new or changed broadcast facilities to submit such data in support of its application.

(j) In general, broadcast transmitters operating with approximately the same power can be grouped in the same approximate area and thereby reduce the interference between them. If the city is of irregular shape, it is often possible to take advantage of this in selecting a suitable location that will give a maximum coverage. The maps giving the density of population will be a key to this. The map giving the elevation by contours will be a key to the obstructing hills between the site and city. The map of the soil conditions will assist in determining the efficiency of the radiating system that may be erected and the absorption of the signal encountered in the surrounding area.

(k) Another factor to be considered is the relation of the site to airports and airways. Procedures and standards with respect to the Commission's consideration of proposed antenna structures which will serve as a guide to persons intending to apply for radio station licenses are contained in Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures).

(l) In finally selecting the site, consideration must be given to the required space for erecting an efficient radiating system, including the ground or counterpoise. It is the general practice to use direct grounds consisting of a radial buried wire system. If the area is such that it is not possible to get such ground system in soil that remains moist throughout the year, it probably will be found better to erect a counterpoise. (Such a site should be selected only as a last resort.) It, like the antenna itself, must of course be designed properly for the operating frequency and other local conditions.

(m) While an experienced engineer can sometimes select a satisfactory site for a 100-watt station by inspection, it is necessary for a higher power station to make a field-intensity survey to determine that the site selected will be entirely satisfactory. There are several facts that cannot be determined by inspection

that make a survey very desirable for all locations removed from the city. Often two or more sites may be selected that appear to be of equal promise. It is only by means of field-intensity surveys taken with a transmitter at the different sites or from measurements on the signal of nearby stations traversing the terrain involved that the most desirable site can be determined. There are many factors regarding site efficiency that cannot be determined by any other method. When making the final selection of a site, the need for a field-intensity survey to establish the exact conditions cannot be stressed too strongly. The selection of a proper site for a broadcast station is an important engineering problem and can only be done properly by experienced radio engineers.

§ 73.189 Minimum antenna heights or field intensity requirements.

(a) Section 73.45 requires that all applicants for new, additional, or different broadcast facilities and all licensees requesting authority to move the transmitter of an existing station, shall specify a radiating system, the efficiency of which complies with the requirements of good engineering practice for the class and power of the station.

(b) The specifications deemed necessary to meet the requirements of good engineering practice at the present state of the art are set out in detail below.

(1) The licensee of a standard broadcast station requesting a change in power, time of operation, frequency, or transmitter location must also request authority to install a new antenna system or to make changes in the existing antenna system which will meet the minimum height requirements, or submit evidence that the present antenna system meets the minimum requirements with respect to field intensity, before favorable consideration will be given thereto. (See § 73.186.) In the event it is proposed to make substantial changes in an existing antenna system, the changes shall be such as to meet the minimum height requirements or will be permitted subject to the submission of field intensity measurements showing that it meets the minimum requirements with respect to effective field intensity.

(2) These minimum actual physical vertical heights of antennas permitted to be installed are shown by curves A, B, and C of Figure 7 of § 73.190 as follows:

(i) Class IV stations, 150 feet or a minimum effective field intensity of 150 mv/m for 1 kilowatt (75 mv/m for 250 watts). (This height applies to a Class IV station on a local channel only. In the case of a Class IV station assigned to a regional channel Curve A shall apply.)

(ii) Class II and III stations, or a minimum effective field intensity of 175 mv/m for 1 kilowatt.

(iii) Class I stations, or a minimum effective field intensity of 225 mv/m for 1 kilowatt.

(3) The heights given on the graph for the antenna apply regardless of whether the antenna is located on the ground on on a building. Except for the reduction of shadows, locating the antenna on a building does not necessarily increase the efficiency and where the height of the building is in the order of a quarter wave the efficiency may be materially reduced.

(4) To obtain the maximum efficiency of which any antenna is capable a good ground system must be employed (a counterpoise may be substituted under certain conditions).

(5) At the present development of the art, it is considered that where a vertical radiator is employed with its base on the ground, the ground system should consist of buried radial wires at least one-fourth wave length long. There should be as many of these radials evenly spaced as practicable and in no event less than 90. (120 radials of 0.35 to 0.4 of a wave length in length and spaced 3° is considered an excellent ground system and in case of high base voltage, a base screen of suitable dimensions should be employed.)

(6) It should be borne in mind that the above specifications are the minimums and where possible better antenna and ground systems should be installed.

(7) In case it is contended that the required antenna efficiency can be obtained with an antenna of height or ground system less than the minimum specified, a complete field intensity survey must be supplied to the Commission showing that the field intensity at a mile without absorption fulfills the minimum requirements. (See § 3.186.) This field survey must be made by a qualified engineer using equipment of acceptable accuracy.

(8) The main element or elements of a directional antenna system shall meet the above minimum requirements with respect to height or effective field intensity. No directional antenna system will be approved which is so designed that the effective field of the array is less than the minimum prescribed for the class of station concerned, or in case of a Class I station less than 90 percent of the ground wave field which would be obtained from a perfect antenna of the height specified by Figure 7 of § 73.190 for operation on frequencies below 1000 kilocycles, and in the case of a Class II or III station less than 90 percent of the ground wave field which would be obtained from a perfect antenna of the height specified by Figure 7 of § 73.190 for operation on frequencies below 750 kilocycles.

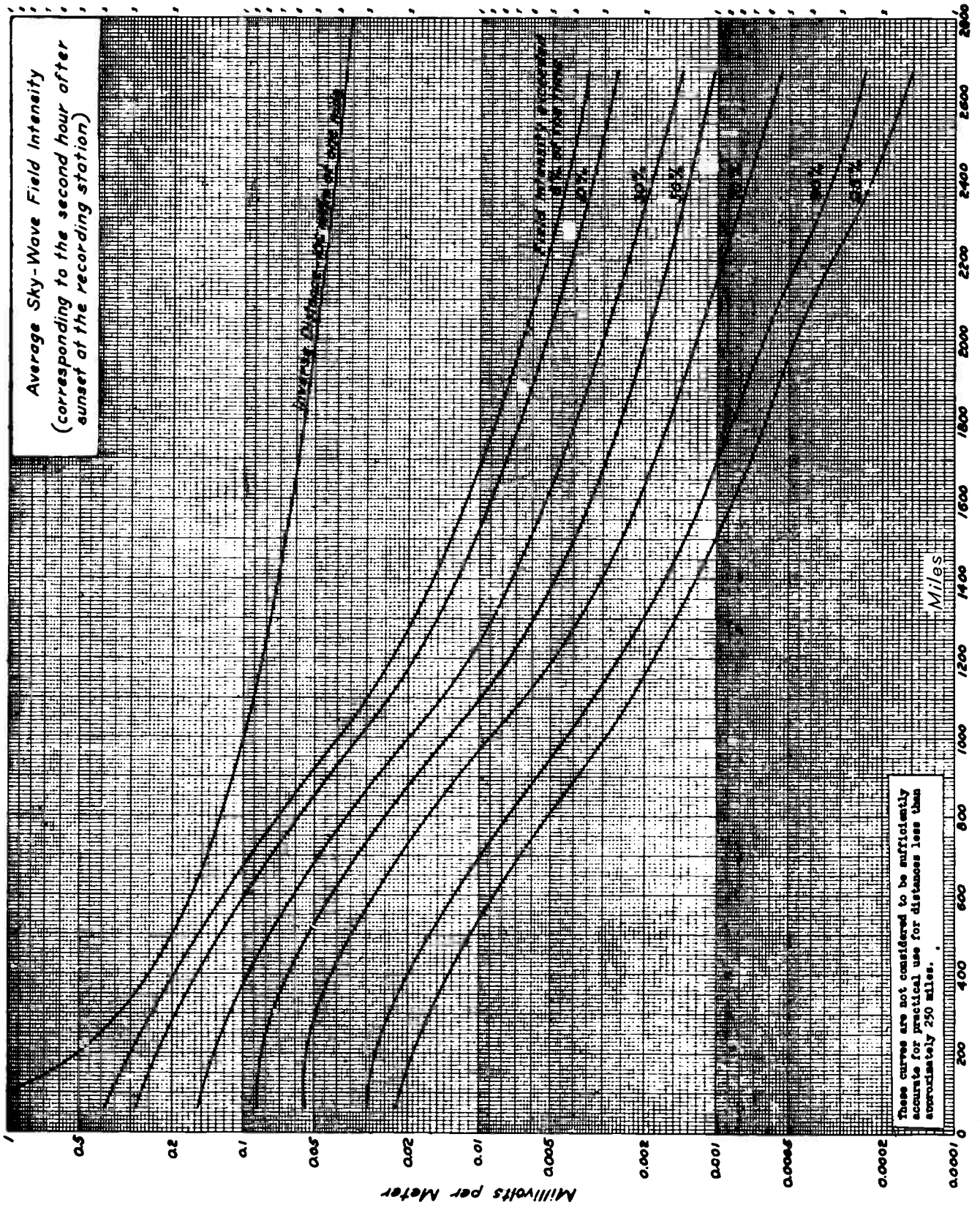
(9) Before any changes are made in the antenna system, it is necessary to submit full details to the Commission for approval. These data may be submitted by letter.

[*§ 73.189(b)(2)(i) as amended eff. 7–11–66; III(64)–13*]

§ 73.190 Engineering charts.

This section consists of the following figures: 1, 1a, 2, R3, 5, 6, 6a, 7, 8, 9, 10, 11 and 12.

[*§ 73.190 amended eff. 8–15–67; III(64)–18*]



FCC § 73.190 FIGURE 1

where the skywave for 50 percent or more of the time has a field intensity of 500 uv/m or greater. (The secondary service area of a Class I–A station should be considered as having this limit only for determination of service in comparison with other stations.) It is not considered that satisfactory secondary service can be rendered to cities unless the skywave approaches in value the groundwave required for primary service. The secondary service is necessarily subject to some interference and extensive fading whereas the primary service area of a station is subject to no objectionable interference or fading. Class I stations only are assigned on the basis of rendering secondary service.

NOTE: Standards have not been established for objectionable fading as such standards would necessarily depend on the receiver charcteristics which have been changed considerably in this regard during the last several years. Selective fading causing audio distortion and the signal fading below the noise level are the objectionable characteristics of fading on modern design receivers. The AVC circuits in the better designed modern receivers in general maintain the audio output sufficiently constant to be satisfactory during most fading.

(j) The intermittent service is rendered by the groundwave and begins at the outer boundary of the primary service area and extends to the value of signal where it may be considered as having no further service value. This may be down to only a few microvolts in certain areas and up to several millivolts in other areas of high noise level, interference from other stations, or objectionable fading at night. The intermittent service area may vary widely from day to night and generally varies from time to time as the name implies. Only Class I stations are assigned for protection from interference from other stations into the intermittent service area.

(k) Section 73.23 provides that the several classes of broadcast stations may be licensed to operate unlimited time, limited time, daytime, sharing time, and specified hours, with full explanation given in the section (see § 73.38 for restriction on limited time authorizations on or after November 30, 1959).

(l) Section 73.24 sets out the general requirements for obtaining an increase in facilities of a licensed station and for a new station. Section 73.24(b) concerns the matter of interference that may be caused by a new assignment or increase in facilities of an existing assignment.

(m) [Reserved]

(n) [Reserved]

(o) Objectionable interference from another broadcast station is the degree of interference produced when, at a specified field intensity contour with respect to the desired station, the field intensity of an undesired station (or the root-sum-square value of field intensities of two or more stations on the same frequency) exceeds for ten (10) percent or more of the time the values set forth in these standards. (The secondary service area of a Class I–A station should be considered as having this limit only for determination of service in comparison with other stations.)

(1) With respect to the root-sum-square values of interfering field intensities referred to in this section, except in the case of Class IV stations on local channels, calculation is accomplished by considering the signals in order of decreasing magnitude, adding the squares of the values and extracting the square root of the sum, excluding those signals which are less than 50% of the RSS value of the higher signals already included.

(2) The RSS value will not be considered to be increased when a new interfering signal is added which is less than 50% of the RSS value of the interference from existing stations, and which at the same time is not greater than the smallest signal included in the RSS value of interference from existing stations.

(3) It is recognized that application of the above "50% exclusion" method of calculating the RSS interference may result in some cases in anomalies wherein the addition of a new interfering signal or the increase in value of an existing interfering signal will cause the exclusion of a previously included signal and may cause a decrease in the caluclated RSS value of interference. In order to provide the Commission* with more realistic information regarding gains and losses in service (as a basis for determination of the relative merits of a proposed operation) the following alternate method of calculating the proposed RSS values of interference will be employed wherever applicable.

(4) In the cases where it is proposed to add a new interfering signal which is not less than 50% of the RSS value of interference from existing stations or which is greater than the smallest signal already included to obtain this RSS value, the RSS limitation after addition of the new signal shall be calculated without excluding any signal previously included. Similarly, in cases where it is proposed to increase the value of one of the existing interfering signals which has been included in the RSS value, the RSS limitation after the increase shall be calculated without excluding the interference from any source previously included.

(5) If the new or increased signal proposed in such cases is ultimately authorized, the RSS values of interference to other stations affected will thereafter be calculated by the "50% exclusion" method without regard to this alternate method of calculation.

(6) Examples of RSS interference calculations:

(i) Existing interferences:

Station No. 1—1.0 mv/m.
Station No. 2—0.60 mv/m.
Station No. 3—0.59 mv/m.
Station No. 4—0.58 mv/m.

The RSS value from Nos. 1, 2 and 3 is 1.31 mv/m: therefore interference from No. 4 is excluded for it is less than 50% of 1.31 mv/m.

(ii) Station A receives interference from:

Station No. 1—1.0 mv/m.
Station No. 2—0.60 mv/m.
Station No. 3—0.59 mv/m.

It is proposed to add a new limitation—0.68 mv/m. This is more than 50% of 1.31 mv/m, the RSS value of Nos. 1, 2 and 3. The RSS value of Station No. 1 and of the proposed station would be 1.21 mv/m which is more than twice as large as the limitation from Station No. 2 or 3. However, under the above provision the new signal and the three existing interferences are nevertheless calculated for purposes of comparative studies, resulting in an RSS value of 1.47 mv/m. However, if the proposed station is ultimately authorized, only No. 1 and the new signal are included in all subsequent calculations for the reason that Nos. 2 and 3 are less than 50% of 1.21 mv/m, the RSS value of the new signal and No. 1.

(iii) Station A receives interference from:

Station No. 1—1.0 mv/m.
Station No. 2—0.60 mv/m.
Station No. 3—0.59 mv/m.

No. 1 proposes to increase the limitation it imposes on Station A to 1.21 mv/m. Although the limitations from stations Nos. 2 and 3 are less than 50% of the 1.21 mv/m limitation, under the above provision they are nevertheless included for comparative studies, and the RSS limitation is calculated to be 1.47 mv/m. However, if the increase proposed by Station No. 1 is authorized, the RSS value then calculated is 1.21 mv/m because Stations Nos. 2 and 3 are excluded in view of the fact that the limitations they impose are less than 50% of 1.21 mv/m.

(p) Objectionable interference from a station on the same channel shall be considered to exist to a station when, at the field intensity contour specified in paragraph (v) of this section with respect to the class to which the station belongs, the field intensity of an interfering station (or the root-sum-square value of the field intensities of two or more interfering stations) operating on the same channel, exceeds for ten (10) percent or more of the time the value of the permissible interfering signal set forth opposite such class in paragraph (v) of this section.

(q) Objectionable interference from a station on an adjacent channel shall be considered to exist to a station when, at the normally protected contour of a desired station, the field intensity of the groundwave of an undesired station operating on an adjacent channel (or the root-sum-square value of the field intensities of two or more such undesired stations operating on the same adjacent channel) exceeds a value specified in paragraph (w) of this section.

(r) For the purpose of estimating the coverage and the interfering effects of stations in the absence of field intensity measurements, use shall be made of Figure 8 of § 73.190 which describes the estimated effective field for one kilowatt power input of simple vertical omnidirectional antennas of various heights with ground systems of at least 120 one-quarter wavelength radials. Certain approximations, based on the curve or other appropriate theory, may be made when other than such antennas and ground systems are employed, but in any event the effective field to be employed shall not be less than given in the following:

Class of station:	*Effective field*
I	225 mv/m
II and III	175 mv/m
IV	150 mv/m

In case a directional antenna is employed, the interfering signal of a broadcasting station will vary in different directions, being greater than the above values in certain directions and less in others, depending upon the design and adjustment of the directional antenna system. To determine the interference in any direction the measured or calculated radiated field (unabsorbed field intensity at 1 mile from the array) must be used in conjunction with the appropriate propagation curves. (See § 73.185 for further discussion and solution of a typical directional antenna case.)

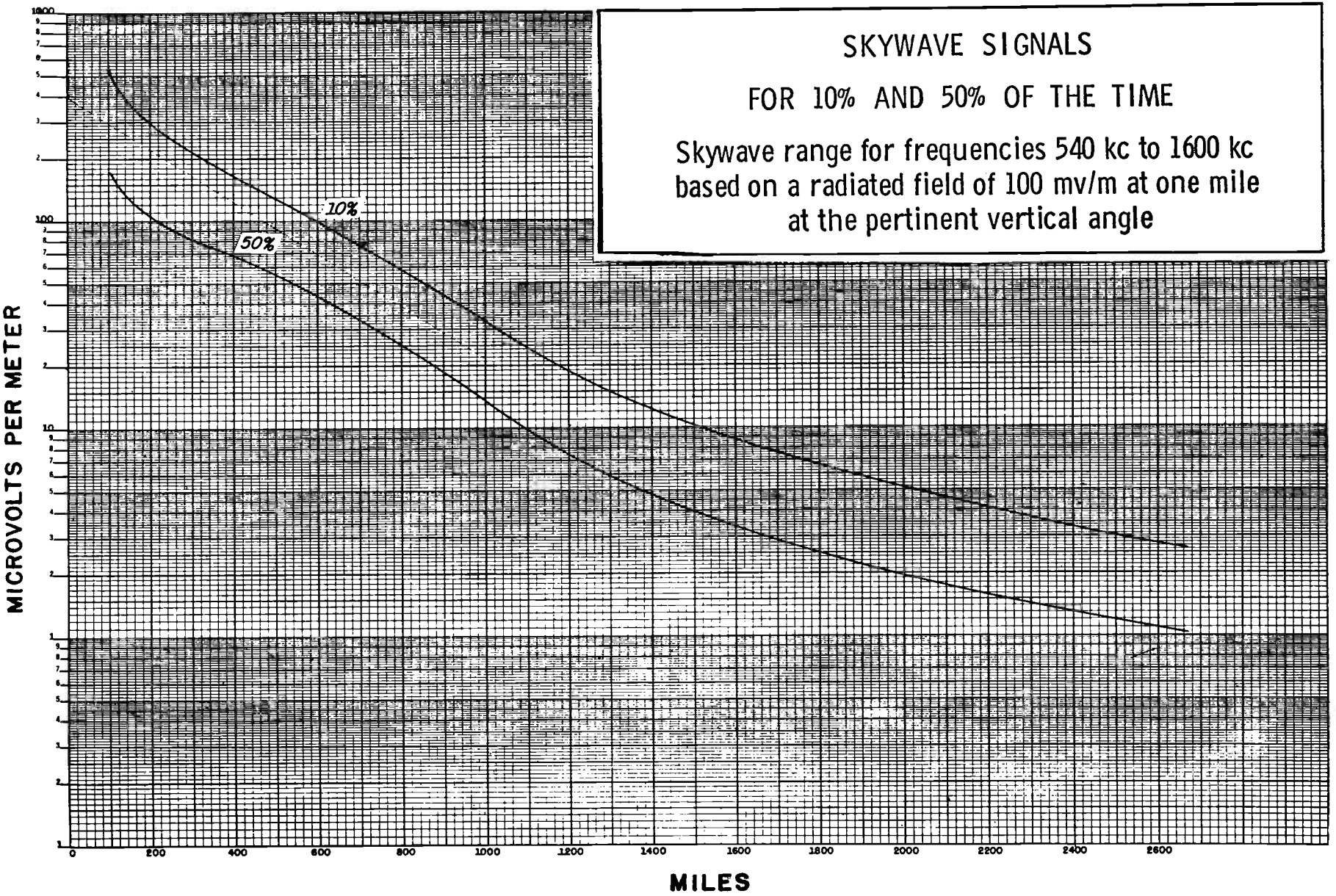
(s) The existence or absence of objectionable groundwave interference from stations on the same or adjacent channels shall be determined by actual measurements made according to the method hereinafter described, or, in the absence of such measurements, by reference to the propagation curves of § 73.184. The existence or absence of objectionable interference due to skywave propagation shall be determined by reference to the appropriate propagation curves in Figure 1 or Figure 1a or Figure 2 of § 73.190.

(t) In computing the fifty (50) percent and the ten (10) percent skywave field intensity values of a station operating on a clear channel specified in § 73.25 (a), use shall be made of the appropriate curve set forth in Figure 1a of § 73.190, "Skywave Signals for 10 percent and 50 percent of the Time." In computing the fifty (50) percent and ten (10) percent skywave field intensity values of a station operating on a clear channel specified in § 73.25 (b), use shall be made of the appropriate curve set forth in Figure 1 of § 73.190, entitled "Average Skywave Field Intensity (corresponding to the second hour after sunset at the recording station)." In computing the ten (10) percent skywave field intensity values of a regional channel station, use shall be made of the appropriate curve in Figure 2 of § 73.190, entitled "10 percent Skywave Signal Range." The curves in Figure 1 of § 73.190 are drawn for a radiated field of 100 mv/m at one mile in the horizontal plane from a 0.311 wavelength antenna. The curves in Figure 1a and Figure 2 of § 73.190 are drawn for a radiated field of 100 mv/m at one mile at the vertical angle pertinent to transmission by one reflection. In computations based on Figure 1, the pertinent vertical angle shall be determined by use of Figure 6 of § 73.190. In computations based on Figures 1a or 2 of § 73.190, the pertinent vertical angle shall be determined by use of Figure 6a of § 73.190.

SKYWAVE SIGNALS

FOR 10% AND 50% OF THE TIME

Skywave range for frequencies 540 kc to 1600 kc based on a radiated field of 100 mv/m at one mile at the pertinent vertical angle



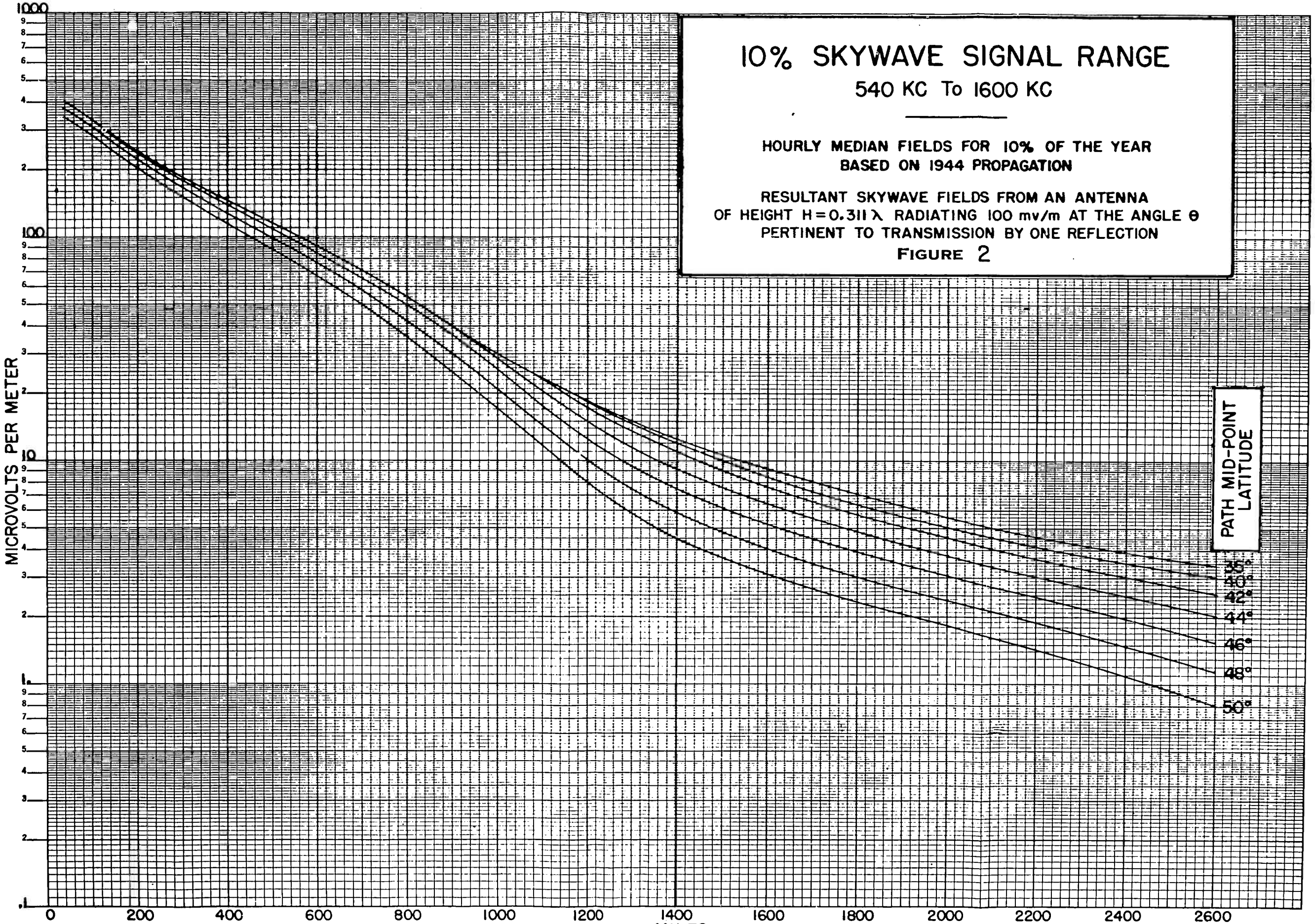
10% SKYWAVE SIGNAL RANGE

540 KC To 1600 KC

HOURLY MEDIAN FIELDS FOR 10% OF THE YEAR
BASED ON 1944 PROPAGATION

RESULTANT SKYWAVE FIELDS FROM AN ANTENNA
OF HEIGHT $H = 0.311\lambda$ RADIATING 100 mv/m AT THE ANGLE θ
PERTINENT TO TRANSMISSION BY ONE REFLECTION

FIGURE 2



NUMBERS ON MAP REPRESENT ESTIMATED EFFECTIVE GROUND CONDUCTIVITY IN MILLIMHOS PER METER

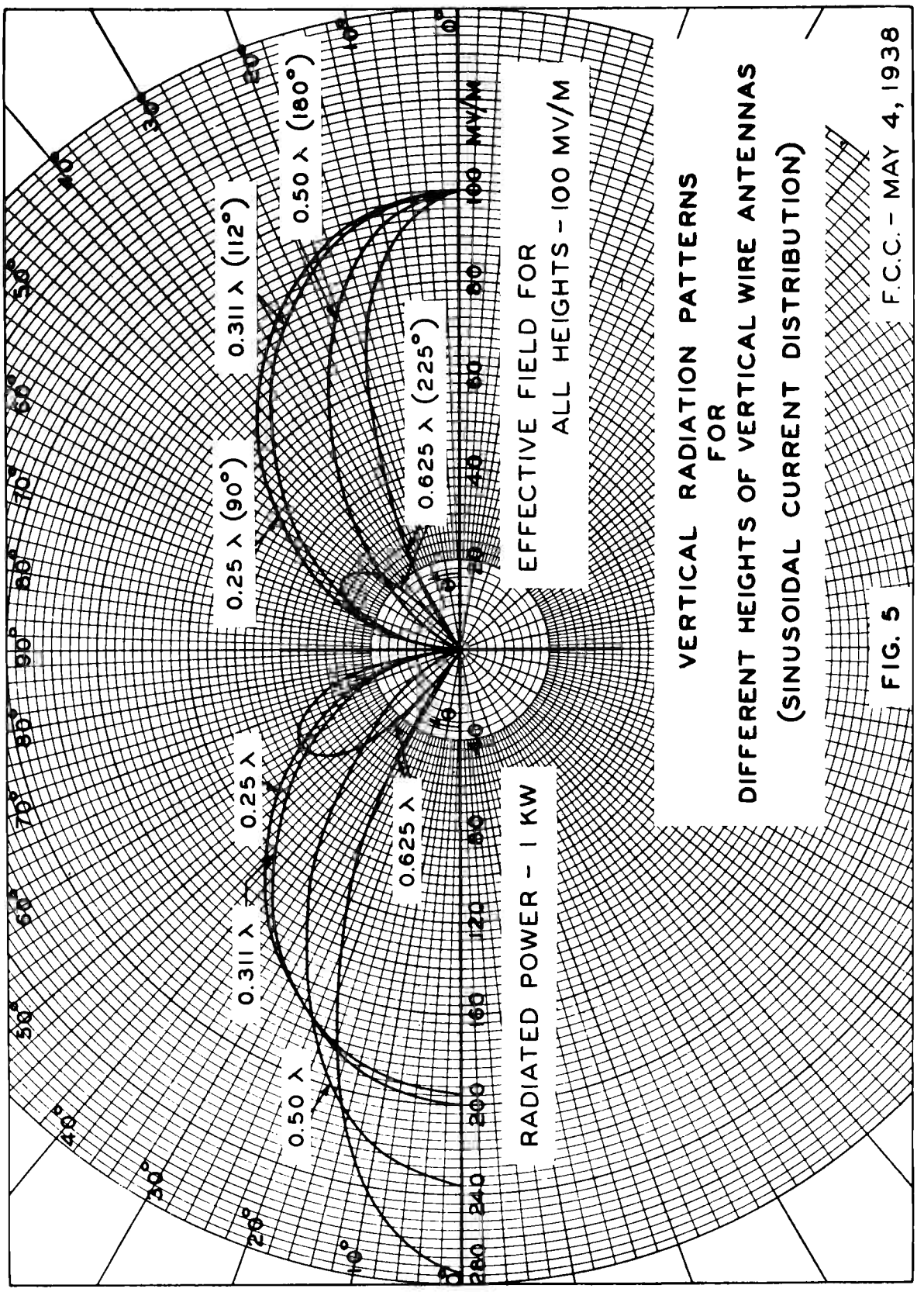
CONDUCTIVITY OF SEAWATER IS NOT SHOWN ON MAP BUT IS ASSUMED TO BE 5000 MILLIMHOS PER METER

0 50 100 150 200
SCALE IN MILES

ESTIMATED EFFECTIVE GROUND CONDUCTIVITY IN THE UNITED STATES

FIGURE R3

February 1954


VERTICAL RADIATION PATTERNS
FOR
DIFFERENT HEIGHTS OF VERTICAL WIRE ANTENNAS
(SINUSOIDAL CURRENT DISTRIBUTION)
FIG. 5
F.C.C. – MAY 4, 1938
EFFECTIVE FIELD FOR
ALL HEIGHTS – 100 MV/M
RADIATED POWER – 1 KW
0.25 λ (90°)
0.311 λ (112°)
0.50 λ (180°)
0.625 λ (225°)
0.25 λ
0.311 λ
0.50 λ
0.625 λ
MV/M

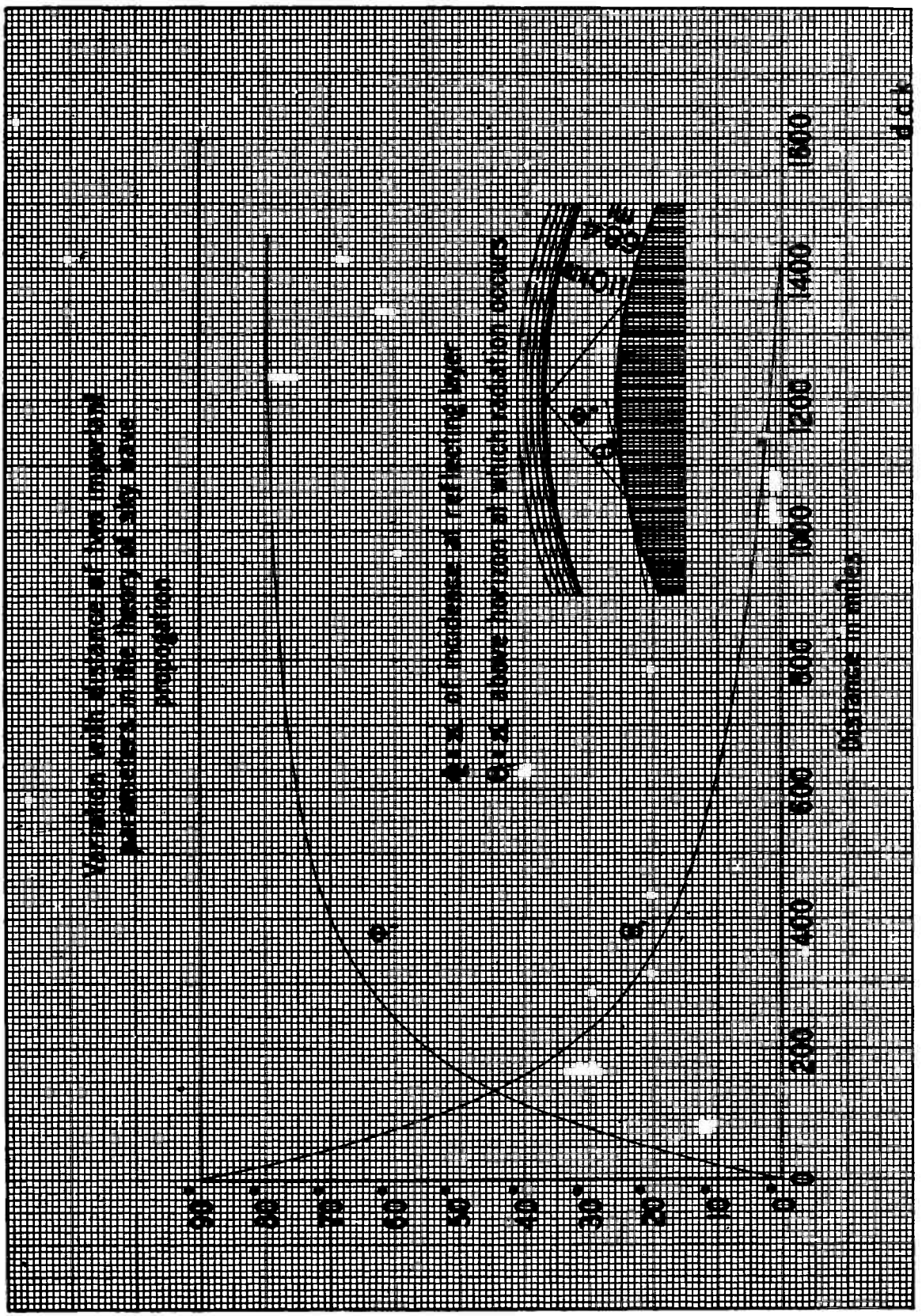
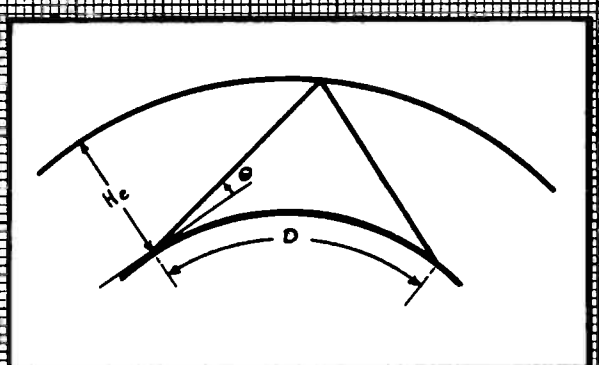


Fig. 6

ANGLES OF DEPARTURE VERSUS TRANSMISSION RANGE

1 θ for 1000 kc average H_e - For use in computing 50% signals
2 θ for 1000 kc maximum H_e
3 θ for 1000 kc minimum H_e
4 and 5 contain also an estimated correction for deviation from mid-point reflection - For use in computing 10% signals

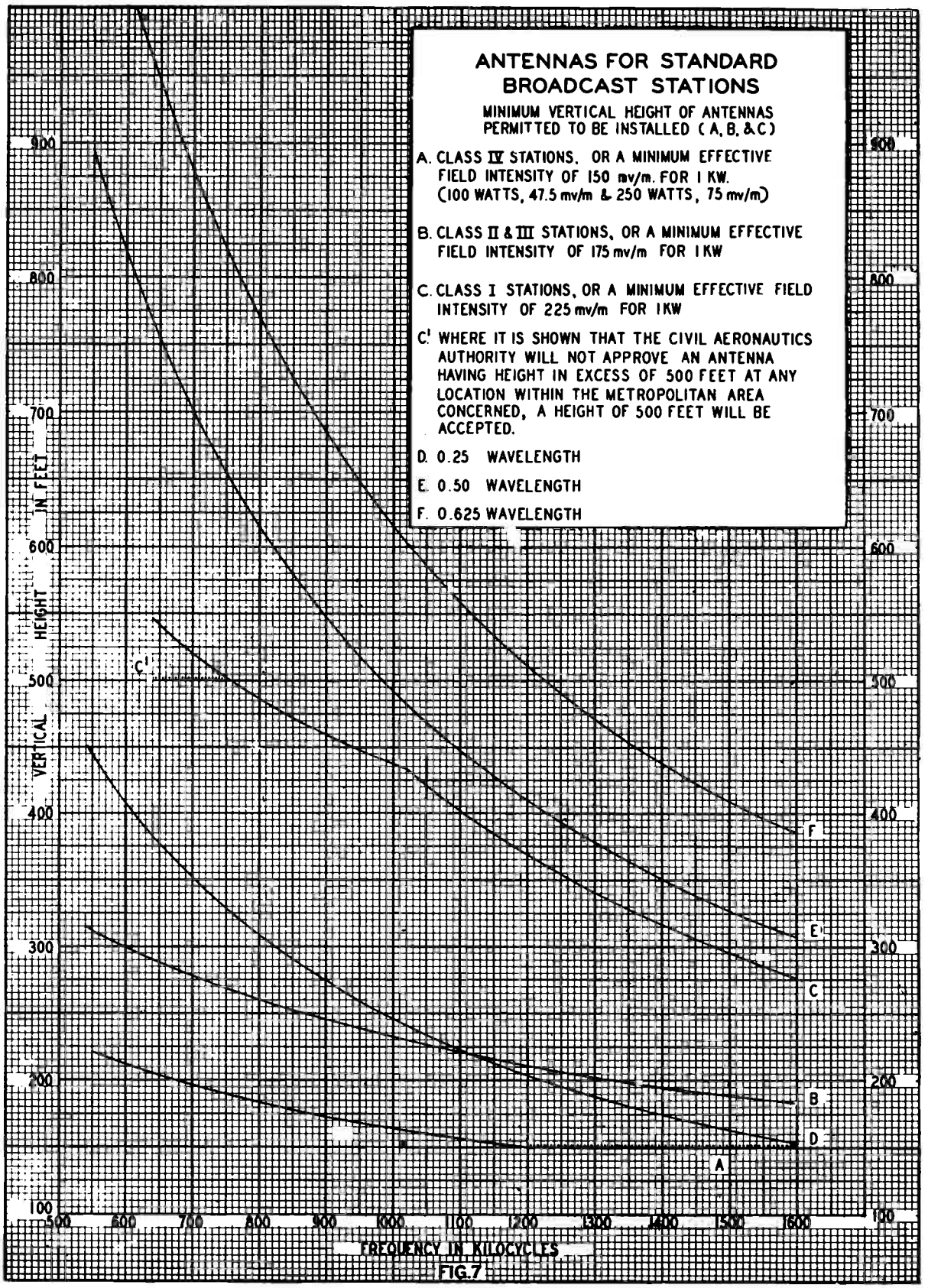


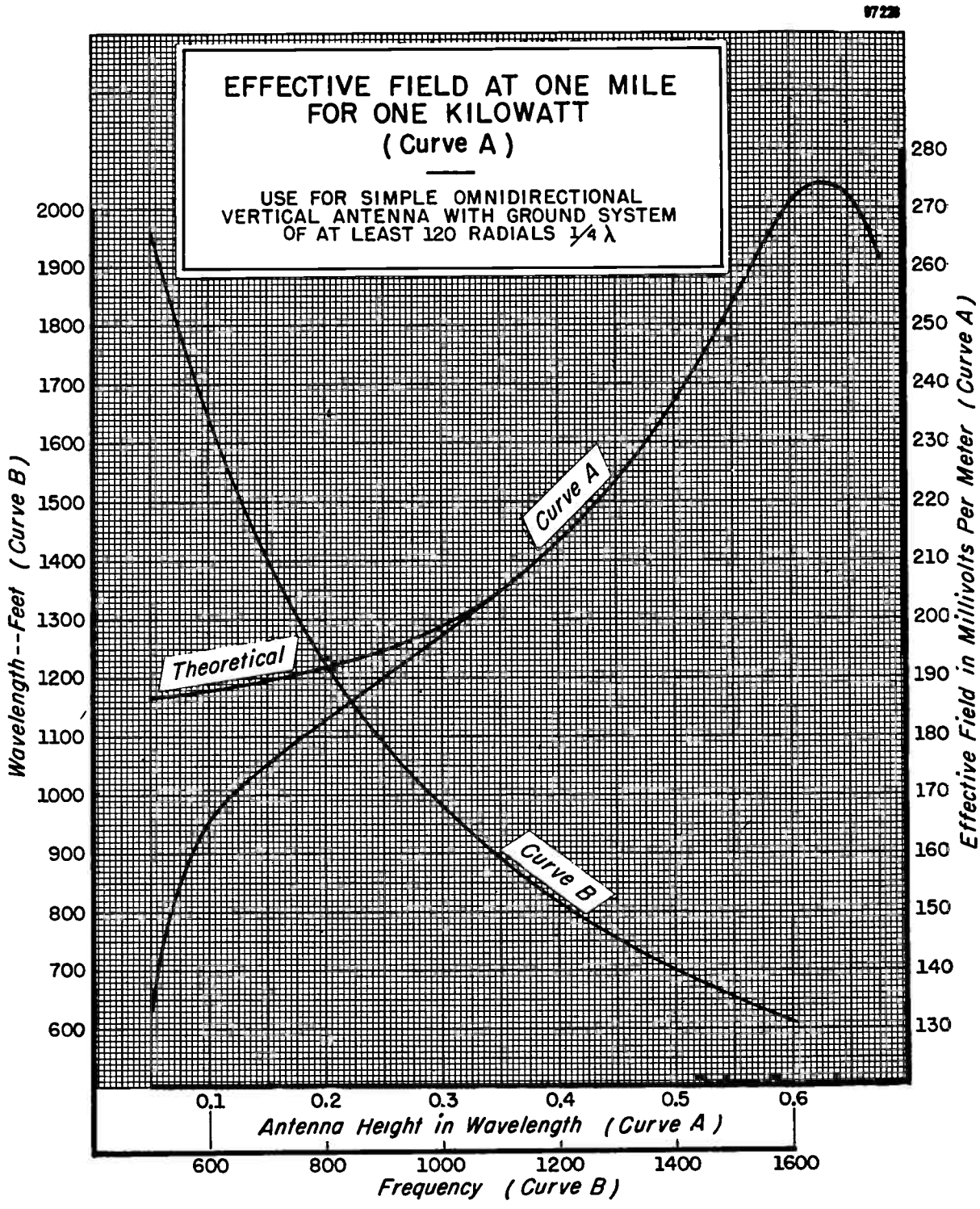
θ

90
80
70
60
50
40
30
20
10
0

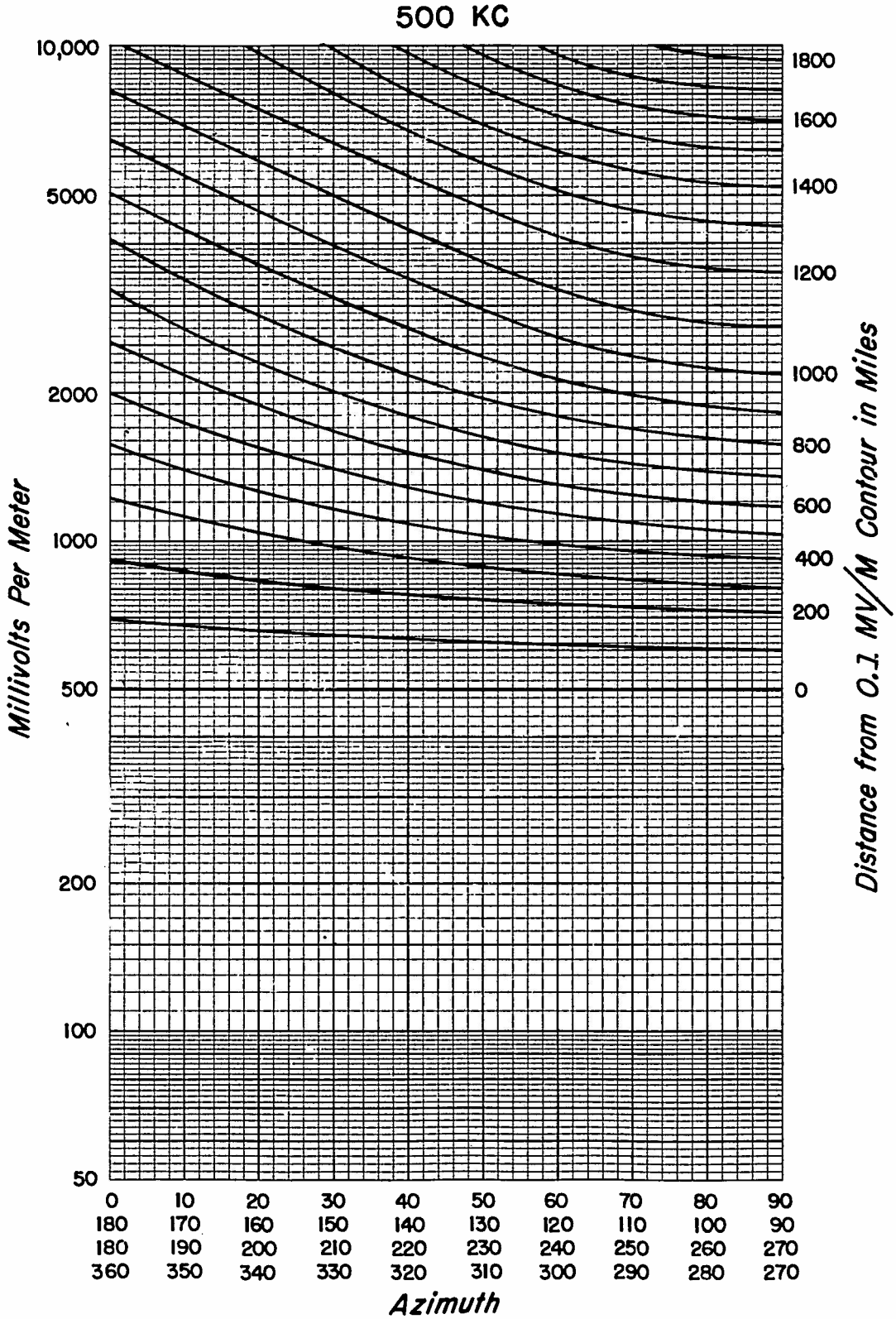
0 200 400 600 800 1000 1200 1400

FCC § 73.190 FIGURE 6a


ANTENNAS FOR STANDARD BROADCAST STATIONS
MINIMUM VERTICAL HEIGHT OF ANTENNAS PERMITTED TO BE INSTALLED (A, B, & C)
A. CLASS IV STATIONS. OR A MINIMUM EFFECTIVE FIELD INTENSITY OF 150 mv/m. FOR 1 KW. (100 WATTS, 47.5 mv/m & 250 WATTS, 75 mv/m)
B. CLASS II & III STATIONS, OR A MINIMUM EFFECTIVE FIELD INTENSITY OF 175 mv/m FOR 1 KW
C. CLASS I STATIONS, OR A MINIMUM EFFECTIVE FIELD INTENSITY OF 225 mv/m FOR 1 KW
C' WHERE IT IS SHOWN THAT THE CIVIL AERONAUTICS AUTHORITY WILL NOT APPROVE AN ANTENNA HAVING HEIGHT IN EXCESS OF 500 FEET AT ANY LOCATION WITHIN THE METROPOLITAN AREA CONCERNED, A HEIGHT OF 500 FEET WILL BE ACCEPTED.
D. 0.25 WAVELENGTH
E. 0.50 WAVELENGTH
F. 0.625 WAVELENGTH
VERTICAL HEIGHT IN FEET
900
800
700
600
500
400
300
200
100
C'
F
E
C
B
D
A
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
FREQUENCY IN KILOCYCLES
FIG.7

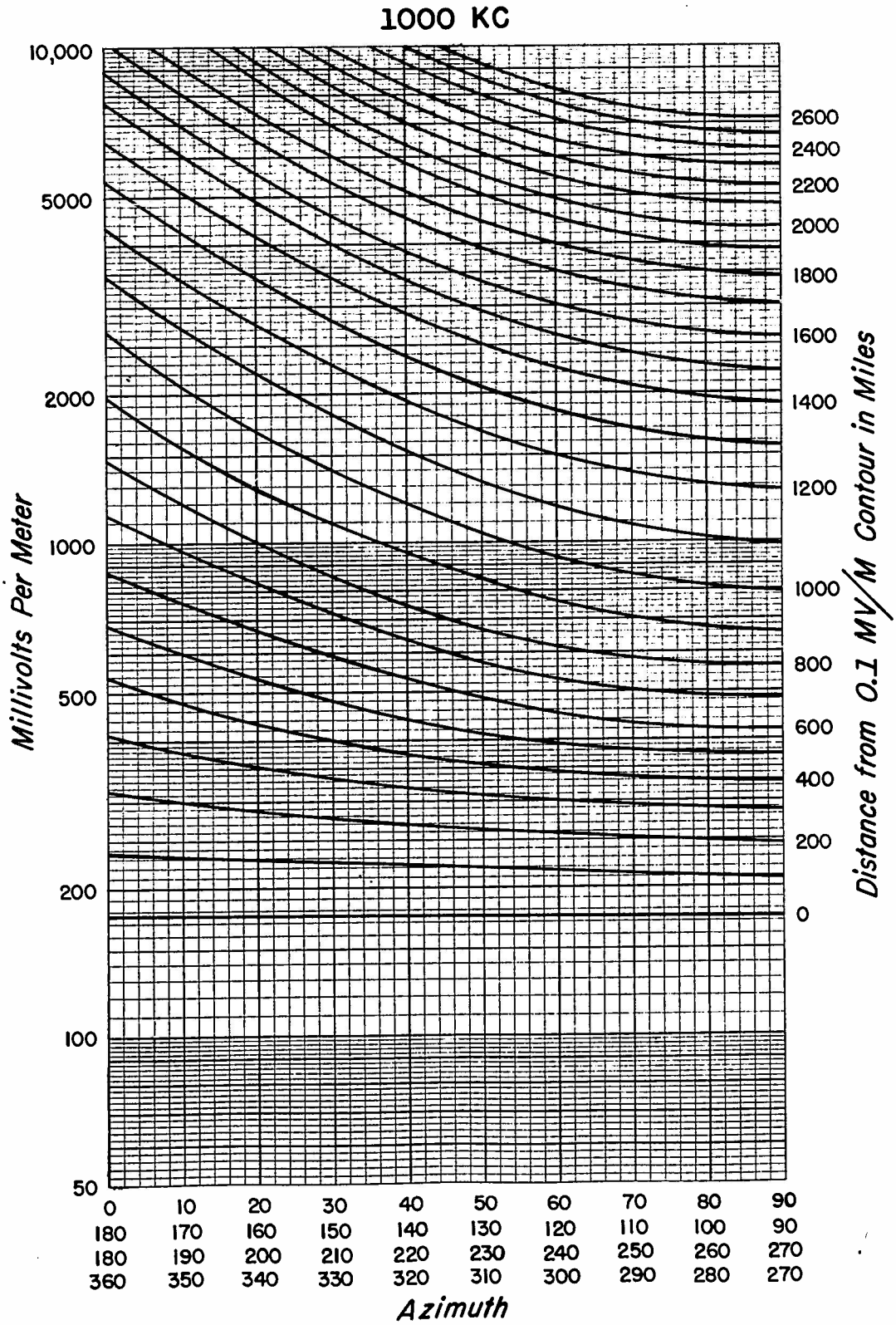

97228
EFFECTIVE FIELD AT ONE MILE
FOR ONE KILOWATT
(Curve A)
USE FOR SIMPLE OMNIDIRECTIONAL
VERTICAL ANTENNA WITH GROUND SYSTEM
OF AT LEAST 120 RADIALS 1/4 λ
Wavelength--Feet (Curve B)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
Effective Field in Millivolts Per Meter (Curve A)
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
Curve A
Theoretical
Curve B
0.1
0.2
0.3
0.4
0.5
0.6
Antenna Height in Wavelength (Curve A)
600
800
1000
1200
1400
1600
Frequency (Curve B)

PERMISSIBLE DAYTIME RADIATION
FOR CLASS II STATIONS



FCC § 73.190 FIGURE 9

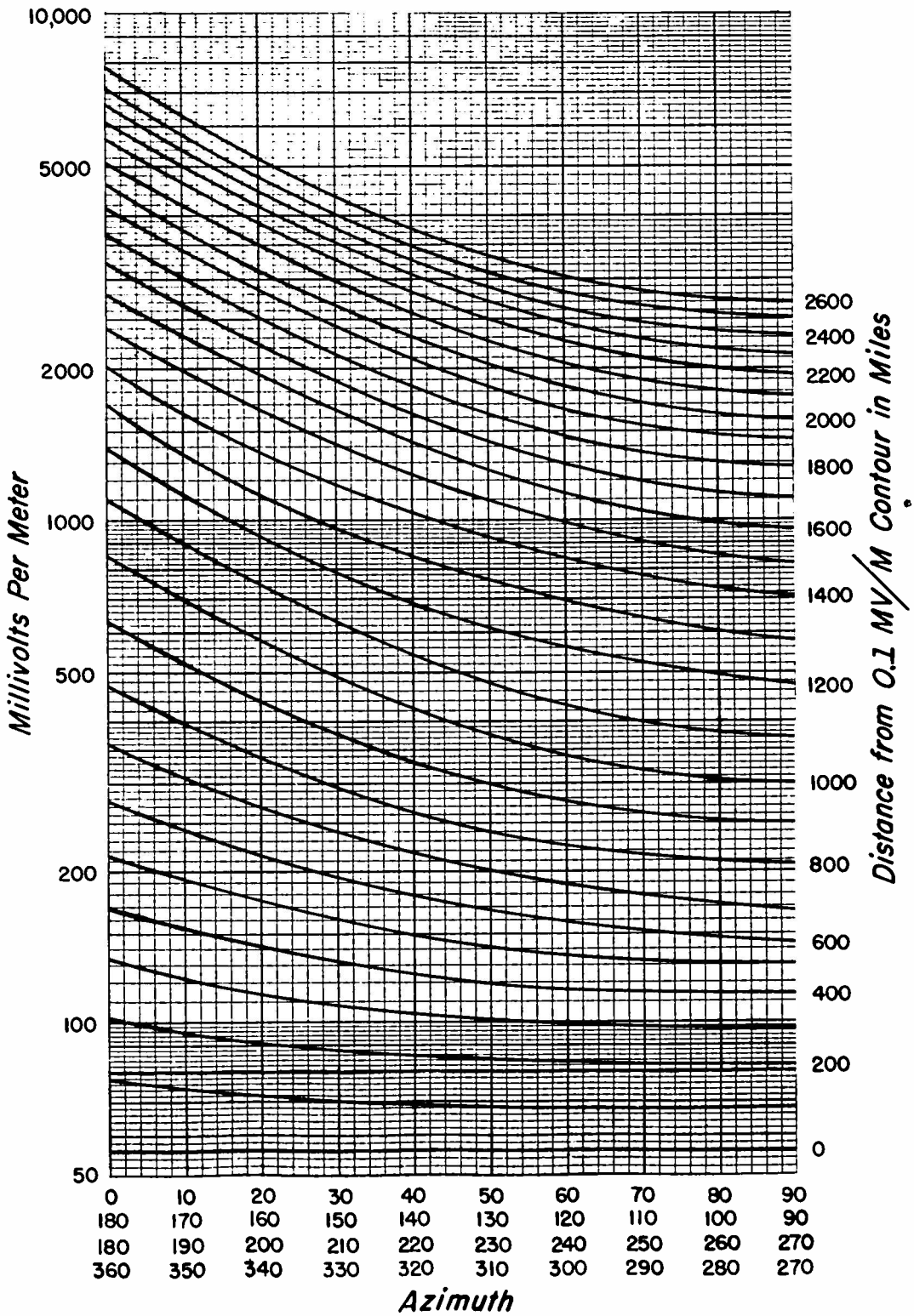
PERMISSIBLE DAYTIME RADIATION
FOR CLASS II STATIONS



FCC § 73.190 FIGURE 10

PERMISSIBLE DAYTIME RADIATION
FOR CLASS II STATIONS

1600 KC



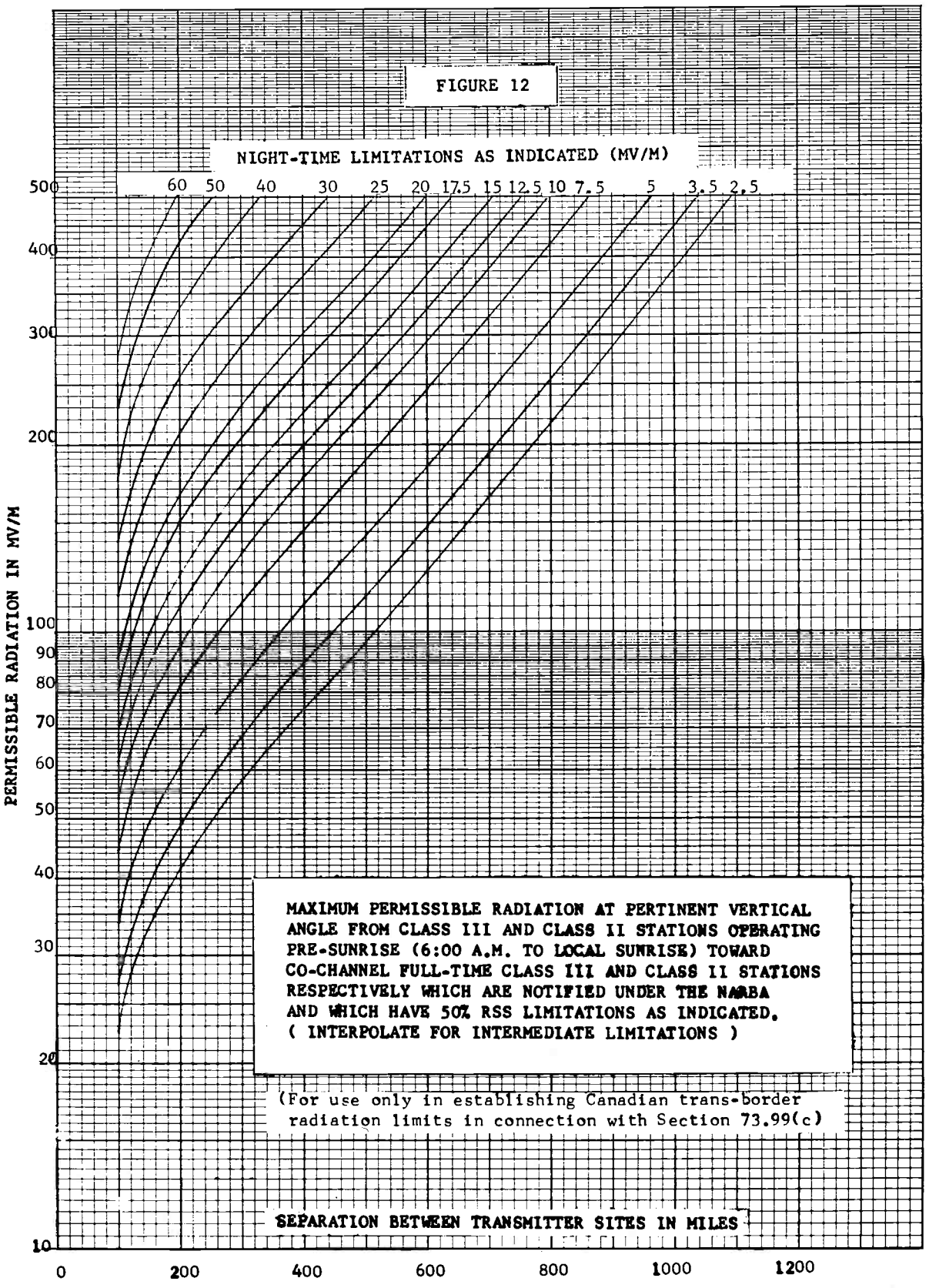


FIGURE 12
NIGHT-TIME LIMITATIONS AS INDICATED (MV/M)
60 50 40 30 25 20 17.5 15 12.5 10 7.5 5 3.5 2.5
PERMISSIBLE RADIATION IN MV/M
500
400
300
200
100
90
80
70
60
50
40
30
20
10
MAXIMUM PERMISSIBLE RADIATION AT PERTINENT VERTICAL ANGLE FROM CLASS III AND CLASS II STATIONS OPERATING PRE-SUNRISE (6:00 A.M. TO LOCAL SUNRISE) TOWARD CO-CHANNEL FULL-TIME CLASS III AND CLASS II STATIONS RESPECTIVELY WHICH ARE NOTIFIED UNDER THE NARBA AND WHICH HAVE 50% RSS LIMITATIONS AS INDICATED.
(INTERPOLATE FOR INTERMEDIATE LIMITATIONS)
(For use only in establishing Canadian trans-border radiation limits in connection with Section 73.99(c)
SEPARATION BETWEEN TRANSMITTER SITES IN MILES
0
200
400
600
800
1000
1200

SUBPART B—FM BROADCAST STATIONS

CLASSIFICATION OF FM BROADCAST STATIONS AND ALLOCATION OF FREQUENCIES

§ 73.201 Numerical designation of FM broadcast channels.

For convenience, the frequencies available for FM broadcasting (including those assigned to noncommercial educational broadcasting) are given numerical designations which are shown in the table below:

Frequency (Mc/s):	Channel No.	Frequency (Mc/s):	Channel No.
88.1	201	91.9	220
88.3	202	92.1	221
88.5	203	92.3	222
88.7	204	92.5	223
88.9	205	92.7	224
89.1	206	92.9	225
89.3	207	93.1	226
89.5	208	93.3	227
89.7	209	93.5	228
89.9	210	93.7	229
90.1	211	93.9	230
90.3	212	94.1	231
90.5	213	94.3	232
90.7	214	94.5	233
90.9	215	94.7	234
91.1	216	94.9	235
91.3	217	95.1	236
91.5	218	95.3	237
91.7	219	95.5	238
95.7	239	102.7	274
95.9	240	102.9	275
96.1	241	103.1	276
96.3	242	103.3	277
96.5	243	103.5	278
96.7	244	103.7	279
96.9	245	103.9	280
97.1	246	104.1	281
97.3	247	104.3	282
97.5	248	104.5	283
97.7	249	104.7	284
97.9	250	104.9	285
98.1	251	105.1	286
98.3	252	105.3	287
98.5	253	105.5	288
98.7	254	105.7	289
98.9	255	105.9	290
99.1	256	106.1	291
99.3	257	106.3	292
99.5	258	106.5	293
99.7	259	106.7	294
99.9	260	106.9	295
100.1	261	107.1	296
100.3	262	107.3	297
100.5	263	107.5	298
100.7	264	107.7	299
100.9	265	107.9	300
101.1	266		
101.3	267		
101.5	268		
101.7	269		
101.9	270		
102.1	271		
102.3	272		
102.5	273		

NOTE: The frequency 108.0 Mc/s may be assigned to VOR test stations subject to the condition that interference is not caused to the reception of FM broadcasting stations, present or future.

[§ 73.201 Note adopted eff. 5-10-65; III(64)-7]

§ 73.202 Table of Assignments.

(a) *General.* The following table of assignments contains the channels (other than noncommercial educational channels) assigned to the listed communities in the United States, its Territories and possessions. Channels designated with an "A" are for Class A FM stations. All other listed channels are for Class B stations in Zones I and I-A and for Class C stations in Zone II.

[§ 73.202(a) amended eff. 8-1-66; III(64)-14]

(b) *Table of FM Assignments.*

Alabama:	Channel No.
Abbeville	282A
[Abbeville—eff. 10-18-65; III (64)-10]	
Albertville	286
Alexander City	291
Andalusia	251
[Andalusia—eff. 12-12-66; III (64)-15]	
Anniston	263
Athens	282
Atmore	281
[Atmore—eff. 5-31-65; III (64)-7]	
Auburn	249A
Bay Minette	288A
Birmingham	229, 233, 243, 258, 284, 295, 299
Brewton	292A
[Brewton—eff. 12-12-66; III (64)-15]	
Butler	228A
[Butler—eff. 1-11-65; III(64)-5]	
Carrollton	231
[Carrollton—eff. 1-11-65; III (64)-5]	
Clanton	249A
[Clanton—eff. 2-24-67; III (64)-16]	
Cullman	221A, 266
[Cullman—eff. 11-18-66; III (64)-14]	
Decatur	245, 271
Demopolis	252A
Dothan	238, 259
Enterprise	245
[Enterprise—eff. 12-12-66; III (64)-15]	
Eufaula	224A
Evergreen	228A
[Evergreen—eff. 5-31-65; III (64)-7]	
Fairhope	221A
Fayette	225
Florence	297
Gadsden	279
Hamilton	221A
[Hamilton—eff. 10-18-65; III (64)-10]	
Huntsville	236, 256
Jackson	285A
Jasper	273
Mobile	225, 235, 241, 248, 260
Monroeville	257A
Montgomery	222, 255, 270, 277
Muscle Shoals	288A
Oneonta	249A
[Oneonta—eff. 3-1-67 III (64)-16]	
Opelika	265A
Ozark	285A
Phenix City	261A
Prichard	276A
Roanoke	237A
Scottsboro	252A
Selma	261A, 265A
[Selma—eff. 2-24-67; III(64)-16]	
Sheffield	292A

Alabama—Continued	Channel No.
Sylacauga	252A
Thomasville	237A
Troy	289
[*Troy—eff. 12-12-66; III(64)-15*]	
Tuscaloosa	239, 288A
Tuscumbia	262
Alaska:	
Anchorage	263, 267, 271, 280A, 288A
[*Anchorage—eff. 5-31-65; III (64)-7*]	
College	285A
Cordova	265A
Fairbanks	262, 266
Juneau	282, 286
Ketchikan	290, 294
Nome	262
Seward	276A
Sitka	284
Arizona:	
Apache Junction	296A
Bisbee	221A
Casa Grande	288A
Clifton	237A
Cottonwood	240A
Douglas	237A
Flagstaff	225, 230
Glendale	222
Globe	262
Holbrook	221A
Kingman	224A
Mesa	227, 284
Miami	276A
Nogales	252A
Page	228A
Phoenix	238, 238, 245, 254, 268, 273
Prescott	252A
Safford	231, 256
Show Low	228A
Sierra Vista	261A
Sun City	292A
[*Sun City—eff. 7-17-67; III (64)-18*]	
Tempe	250
Tolleson	264
Tucson	225, 229, 235, 241, 258
[*Tucson—eff. 3-1-67; III(64)-16*]	
Wickenburg	288A
[*Wickenburg—eff. 12-12-66; III(64)-15*]	
Willcox	244A
Winslow	236, 247
Yuma	226, 236
Arkansas:	
Arkadelphia	265A
Benton	296A
Berryville	237A
Blytheville	241
Camden	246
Clarksville	224A
Conway	262, 286
Corning	228A
[*Corning—eff. 6-27-66; III (64)-13*]	
Crossett	285A
[*Crossett—eff. 9-5-66; III (64)-14*]	
Dardanelle	272A

Arkansas—Continued	Channel No.
DeQueen	224A
De Witt	244A
[*De Witt—eff. 7-24-67; III (64)-18*]	
El Dorado	257A, 276A
Fayetteville	221A, 280A
Forrest City	228A
Fort Smith	229, 256, 260, 265A
Helena	298
Harrison	275
Hope	285A
Hot Springs	244A, 248, 292A
Jonesboro	270, 300
Little Rock	231, 239, 253, 279
[*Little Rock—eff. 5-31-65; III (64)-7*]	
Magnolia	300
[*Magnolia—eff. 3-1-67; III (64)-16*]	
Malvern	269A
Mammoth Spring	236
McGehee	272A
Mena	240A
Monticello	228A
Mountain Home	252A
Nashville	288A
Newport	288A
Osceola	251
Paragould	285A
[*Paragould—eff. 6-27-66; III (64)-13*]	
Paris	237A
Pine Bluff	222, 235
Pocahontas	280A
Rogers	232A
Searcy	257A
Siloam Springs	289
Texarkana	296A
Walnut Ridge	292A
Wynne	224A
[*Wynne—eff. 6-27-66; III(64)-13*]	
California:	
Alameda	224A
Alturas	233
Anaheim	240A
Anderson	232A
Apple Valley	272A
[*Apple Valley—eff. 7-31-64; III(64)-1*]	
Arcata	228A
Arroyo Grande	237A
Auburn	266
Bakersfield	231, 243, 268, 300
[*Bakersfield—eff. 12-12-66; III (64)-15*]	
Banning	269A
Barstow	232A
Berkeley	231, 275
Bishop	264
Blythe	262
Brawley	233, 241
Calexico	249A
Carmarillo	240A
[*Carmarillo—eff. 6-27-66; III (64)-13*]	
Carmel	269A
Carlsbad	240A

California—Continued	Channel No.
Chico	229, 236
Coachella	229
Crescent City	232A
Delano	253, 287
Dinuba	255, 262
El Cajon	227
El Centro	253
Escondido	221A
Eureka	222, 242
Fairfield	237A
[*Fairfield—eff. 1-11-65; III (64)-5*]	
Fort Bragg	224A, 237A
Fowler	280A
Fremont	285A
Fresno	229, 233, 238, 250, 270, 274
[*Fresno—eff. 5-22-67; III(64)-17*]	
Garden Grove	232A
Gilroy	232A
[*Gilroy—eff. 5-23-66; III(64)-13*]	
Glendale	270
[*Glendale—eff. 7-31-64; III (64)-1*]	
Hanford	266, 279
Hayward	269A
Hemet	288A
Indio	252A
Inglewood	280A
King City	221A
[*Lancaster deleted eff. 4-4-66; III(64)-12*]	
Lemoore	285A
Lodi	249A
[*Lodi—eff. 1-11-65; III(64)-5*]	
Lompoc	224A
Long Beach	250, 272A, 288A
Los Altos	249A
Los Angeles	222, 226, 230, 234, 238, 242, 246, 254, 258, 262, 266, 274, 278, 282, 286, 290, 298.
Los Banos	240A
Los Gatos	237A
Madera	221A
Marysville	260
Merced	268
Modesto	277, 281
Mojave	249A
Monterey	245
Mt. Shasta	237A
Needles	250
Newport Beach	276A
Oceanside	271
Ontario	228A
Oroville	249A
Oxnard	284
Pacific Grove	285A
Palm Springs	284
Paradise	244A
Pasadena	294
Paso Robles	232A
Porterville	240A
Quincy	240A
[*Quincy—eff. 5-23-66; III(64)-13*]	
Red Bluff	240A, 272A

	Channel No.
California—Continued	
Redding	251, 282
[*Redding—eff. 7-24-67; III (64)-18*]	
Redlands	244A
Redondo Beach	228A
Ridgecrest	224A
Riverside	224A, 248, 256
Roseville	228A
Sacramento	223, 241, 245, 253, 263, 286, 293, 300
Salinas	264, 273, 280A
San Bernardino	236, 260
San Clemente	300
[*San Clemente—eff. 4-4-66; III(64)-12*]	
San Diego	231, 235, 243, 247, 251, 264, 268, 275, 279, 287, 293
San Fernando	232A, 292A
San Francisco	227, 235, 239, 243, 247, 251, 255, 259, 267, 271, 279, 283, 287, 291, 295
San Jose	222, 253, 262, 293
San Luis Obispo	227, 241
San Mateo	299
San Rafael	265A
Santa Ana	244A, 292A
Santa Barbara	229, 248, 260, 277
Santa Clara	289
Santa Cruz	256
Santa Maria	256, 273
Santa Monica	276A
Santa Rosa	261A
Seaside	296A
Sierra Madre	296A
Sonora	224A
Stockton	257A, 297
Susanville	224A
Taft	280A
Tahoe Valley	276A
Thousand Oaks	224A
Tracy	265A
Truckee	269A
Tulare	235, 294
Turlock	226
Twentynine Palms	239
[*Twentynine Palms—eff. 7-31-64; III(64)-1*]	
Ukiah	228A, 232A
[*Ukiah—eff. 9-7-65; III (64)-9*]	
Ventura	236, 264
Victorville	252A
Visalia	225
Walnut Creek	221A
Wasco	249A
Weed	257A
West Covina	252A
Willows	224A
Woodland	273
Yreka	249A
Yuba City	280A
Colorado:	
Alamosa	228A
Aspen	249A
Boulder	234, 247
[*Boulder—eff. 1-24-66; III (64)-12*]	
Canon City	280A
Colorado—Continued	
Colorado Springs	225, 232A, 236, 243, 270
[*Colorado Springs amended in III(64)-1, as further amended eff. 5-31-65; III(64)-7*]	
Cortez	250, 254
Craig	229, 236
Delta	237A
Denver	239, 253, 258, 262, 266, 278, 286, 290, 294
[*Denver—eff. 7-24-67; III (64)-18*]	
Durango	263, 267
Fort Collins	227, 300
[*Fort Collins—eff. 11-8-65; III(64)-10*]	
Fort Morgan	232A
Glenwood Springs	224A
Grand Junction	222, 226
Greeley	222
Gunnison	252A, 272A
La Junta	221A
Lamar	227, 245
Leadville	228A
Littleton	298
[*Littleton—eff. 11-8-65; III (64)-10*]	
Longmont	282
Loveland	272A
Manitou Springs	274
Monte Vista	244A
Montrose	231, 241
Pueblo	250, 255, 260, 264
[*Pueblo—eff. 5-31-65; III(64)-7*]	
Rocky Ford	240A
Salida	221A
Sterling	244A, 288A
Trinidad	224A
Walsenburg	272A
Connecticut:	
Bridgeport	260
Brookfield	236
Danbury	252A
Darien	240A
Hamden	267
Hartford	229. 243, 275, 290, 295
[*Manchester deleted eff. 5-31-65; III(64)-7*]	
Meriden	239
Middletown	285A
New Britain	263
New Haven	232A, 256
Norwich	249A
Stamford	244A
Waterbury	223, 281
Westport	300
Delaware:	
Dover	234
Georgetown	228A
Milford	240A
Seaford	252A
Wilmington	229, 258
District of Columbia:	
Washington	230, 242, 246, 254, 258, 262, 266, 278, 297
Florida:	
Arcadia	252A
Atlantic Beach	285A
Florida—Continued	
Belle Glade	228A
Blountstown	272A
Boca Raton	260
Bradenton	277
Clearwater	239, 250
[*Clearwater—eff. 12-6-65; III (64)-11*]	
Clewiston	221A
[*Clewiston—eff. 10-18-65; III (64)-10*]	
Cocoa	257A
Cocoa Beach	266, 281
[*Cocoa Beach—eff. 10-18-65; III(64)-10*]	
Coral Gables	286
Crestview	285A
[*Crestview—eff. 7-13-64; III (64)-1*]	
Daytona Beach	233, 270
DeLand	290
[*DeLand—eff. 11-18-66; III (64)-14*]	
Delray Beach	274
Defuniak Springs	276A
Eau Gallie	296A
Ft. Lauderdale	264, 278, 290, 294
Fort Myers	237A, 245, 270
[*Fort Myers amended in III (64)-2, as further amended eff. 3-25-66; III(64)-12*]	
Ft. Pierce	238, 254
Ft. Walton Beach	257A
Gainesville	279
Green Cove Springs	224A
[*Green Cove Springs—eff. 5-23-66; III(64)-13*]	
Hialeah	221A
[*Hialeah—eff. 4-26-65; III (64)-7*]	
Homestead	252A
Immokalee	240A
[*Immokalee—eff. 4-4-66; III (64)-12*]	
Jacksonville	236, 241, 245, 256, 275
[*Jacksonville—eff. 7-13-64; III (64)-1*]	
Key West	223, 238
[*Key West—eff. 3-25-66; III (64)-12*]	
Lake City	232A
Lakeland	231
Leesburg	294
[*Leesburg—eff. 11-30-65; III (64)-11*]	
Live Oak	251
[*Live Oak—eff. 11-18-66; III (64)-14*]	
Madison	285A
[*Madison—eff. 5-25-66; III (64)-13*]	
Marathon	232A
Marianna	265A
Melbourne	272A
Miami	226, 242, 247, 256, 268, 298
[*Miami—eff. 10-18-65; III (64)-10*]	
Miami Beach	230, 235

Florida—Continued	Channel No.
Milton	272A
Mount Dora	299
Naples	228A, 233
[*Naples—eff. 8–10–64; III (64)–2*]	
New Port Richey	288A
[*New Port Richey—eff. 12–6–65; III(64)–11*]	
Ocala	229, 272A
[*Ocala—eff. 11–18–66; III(64)–14*]	
Okeechobee	276A
Orlando	222, 243, 262, 286
Palatka	260
Palm Beach	250
Panama City	223, 300
Pensacola	231, 264, 268
Perry	240A
Plantation Key	262
[*Plantation Key—eff. 3–25–66; III(64)–12*]	
Punta Gorda	224A
Quincy	269A
St. Augustine	249A
St. Petersburg	258, 268, 297
Sanford	237A
[*Sanford—eff. 7–13–64; III (64)–1*]	
Sarasota	273, 288A, 292A
Sebring	288A
Starke	296A
[*Starke—eff. 5–23–66; III(64)–13*]	
Stuart	224A
Tallahassee	285, 255, 281
[*Tallahassee—eff. 2–14–66; III (64)–12*]	
Tampa	227, 235, 264, 284
Titusville	252A
[*Titusville—eff. 6–7–65; III (64)–7*]	
Venice	221A
Vero Beach	292A
Ward Ridge	228A
West Palm Beach	288, 300
[*West Palm Beach—eff. 10–18–65; III(64)–10*]	
[*Windermere deleted eff. 7–13–64; III(64)–1*]	
Winter Haven	248
Winter Park	276A
[*Winter Park—eff. 11–18–66; III (64)–14*]	
Georgia:	
Albany	242, 283
Americus	232A
Athens	238, 284
Atlanta	225, 235, 241, 253, 259, 277
Augusta	272A, 276A, 282, 289
[*Augusta—eff. 12–12–66; III (64)–15*]	
Bainbridge	247
Blackshear	228A
Brunswick	264, 268
Camilla	288A
Carrollton	221A
[*Carrollton—eff. 9–4–64; III (64)–2*]	

Georgia—Continued	Channel No.
Cartersville	288A
Columbus	275, 285A, 297
Claxton	296A
Cordele	252A
Cornelia	257A
Covington	221A
[*Dalton deleted eff. 5–31–65; III(64)–7*]	
Dawson	221A
Douglas	258, 293
Dublin	224A
Eastman	244A
Gainesville	246, 294
Griffin	249A
Hawkinsville	269A
Jesup	288A
La Grange	281
Louisville	221A
[*Louisville—eff. 11–30–65; III (64)–11*]	
Macon	256, 287, 300
Manchester	227
Marietta	268
Milledgeville	272A
Metter	285A
Moultrie	230
Newnan	244A
Ocilla	237A
Perry	265A
Rockmart	296A
[*Rockmart—eff. 7–24–67; III (64)–18*]	
Rome	249A, 272A
[*Rome—eff. 9–4–64; III(64)–2*]	
Sandersville	232A
Savannah	226, 231, 238, 243, 247, 271
Smyrna	231
Statesboro	261A
Swainsboro	252A
Thomasville	296A
Thomson	269A
[*Thomson—eff. 3–1–67; III (64)–16*]	
Tifton	262
Toccoa	291
Valdosta	225, 266
Vidalia	249A
Washington	261A
Waycross	273, 277
Waynesboro	228A
Hawaii:	
[*All entries as adopted eff. 11–16–64; III(64)–3*]	
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[1] Effective 3:00 a.m. eastern standard time, October 1, 1967 (concurrently with expiration of the outstanding license for Station WKTN–FM on Channel 252A at Kenton, Ohio), or such earlier date as Station WKTN–FM may, upon its request, cease operation on Channel 252A at Kenton, Ohio.

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Mullins	265A
Myrtle Beach	221A
North Charleston	273
Orangeburg	294
Seneca	251
Spartanburg	255
Summerville	240A
Sumter	267
Walterboro	265A
South Dakota:	
Aberdeen	231, 235
Belle Fourche	240A
Brookings	269A
Deadwood	226, 236
Hot Springs	244A
Huron	221A
Madison	276A
Mitchell	265A
Mobridge	221A
Pierre	224A, 237A
Rapid City	230, 250
Sioux Falls	223, 228A, 243, 247
Vermillion	272A
Watertown	241, 245
[*Watertown—eff. 5-31-65; III (64)-7*]	
Winner	229
[*Winner—eff. 11-18-66; III (64)-14*]	
Yankton	262, 281
[*Yankton—eff. 5-31-65; III (64)-7*]	
Tennessee:	
Athens	252A
[*Athens—eff. 11-30-65; III (64)-11*]	
Bristol	245
Carthage	272A
Centerville	285A
Chattanooga	222, 243, 288A, 293
Clarksville	300
Cleveland	264
Clinton	285A
[*Clinton—eff. 11-30-65; III (64)-11*]	
Columbia	269A
Cookeville	232A, 252A
Covington	228A
Crossville	257A
[*Crossville—eff. 11-30-65; III (64)-11*]	
Dayton	285A
[*Dayton—eff. 11-30-65; III (64)-11*]	
Dickson	272A
Donelson	221A
[*Donelson—eff. 8-15-67; III (64)-18*]	

Tennessee—Continued	Channel No.
Dyersburg	261A
Elizabethton	257A
[*Elizabethton—eff. 11-30-65; III(64)-11*]	
Fayetteville	288A
Franklin	261A
Gallatin	283
Greeneville	235
Harriman	224A
[*Harriman—eff. 5-23-66; III (64)-13*]	
Humboldt	272A
Jackson	222, 281
Jamestown	261A
Johnson City	268
Kingsport	253, 285A
[*Kingsport—eff. 9-5-66; III (64)-14*]	
Knoxville	248, 278, 299
[*Knoxville—eff. 5-31-65; III (64)-7*]	
Lafayette	257A
LaFollette	288A
Lawrenceburg	240A
Lebanon	297
Lenoir City	228A
[*Lenoir City—eff. 7-24-67; III (64)-18*]	
Lewisburg	232A
Lexington	257A
Livingston	240A
Manchester	259
Martin	269A
[*Martin—eff. 5-31-65; III (64)-7*]	
McKenzie	295
McMinnville	269A
Memphis	246, 259, 266, 274, 283, 290
Morristown	240A
Murfreesboro	242
Nashville	225, 238, 250, 277, 290
Oak Ridge	232A
[*Oak Ridge—eff. 11-30-65; III (64)-11*]	
Paris	288A
[*Paris—eff. 3-25-66; III(64)-12*]	
Pulaski	252A
Ripley	237A
Savannah	269A
[*Savannah—eff. 10-18-65; III (64)-10*]	
Sevierville	271
Shelbyville	275
Sparta	288A
Springfield	232A
Sweetwater	287A
Tullahoma	227
Texas:	
Abilene	239, 257A, 264, 286
Alice	272A
Alpine	224A
Alvin	271
Amarillo	226, 231, 250, 254, 270
Andrews	288A

Texas—Continued	Channel No.
Austin	229, 238, 252A, 264
[*Austin—eff. 12–6–65; III(64)–11*]	
Ballinger	276A
Bay City	245
[*Bay City—eff. 3–25–66; III (64)–12*]	
Beaumont	231, 236, 248. 299
[*Beaumont amended in III (64)–5, as further amended eff. 5–31–65; III(64)–7*]	
Beeville	285A
Belton	292A
Big Lake	252A
Big Spring	237A
Bonham	252A
Borger	282
Brady	237A
Breckenridge	228A
Brenham	292A
Brownfield	292A
Brownsville	226, 262
Brownwood	257A, 268, 281
[*Brownwood—eff. 1–11–65; III (64)–5*]	
Bryan	252A
Burnet	296A
[*Burnet—eff. 5–22–67; III (64)–17*]	
Cameron	269A
Canyon	296A
Carrizo Springs	228A
Childress	244A
Cleburne	235
Cleveland	295
Coleman	296A
College Station	221A
Colorado City	292A
Comanche	232A
Corpus Christi	230, 238, 243, 256, 260
Crane	265A
Crockett	224A
Cuero	249A
Dalhart	240A
[*Dalhart—eff. 12–6–65; III (64)–11*]	
Dallas	223, 250, 254, 262, 266, 275, 279, 283, 287
[*Dallas—eff. 7–31–64; III (64)–1*]	
Del Rio	232A
Denison	269A
Denton	291
Diboll	238
Dumas	237A
Eagle Pass	224A
Eastland	244A
[*Eastland—eff. 7–24–67; III (64)–18*]	
Edinburg	273, 281
El Paso	227, 234, 242, 248, 253, 260, 264, 271, 275
Falfurrias	292A
Farwell	252A
Floydada	237A
Fort Stockton	232A
Fort Worth	230, 242, 246, 258, 271, 298
Gainesville	233
Galveston	293
Georgetown	244A
[*Georgetown—eff. 5–22–67; III (64)–17*]	
Gonzales	292A
[*Gonzales—eff. 11–18–66; III (64)–14*]	
Hamilton	221A
Harlingen	233, 241
Henderson	261A
Hereford	292A
Hillsboro	273
Houston	229, 233, 239, 243, 250, 256, 262, 266, 275, 281, 289
Huntsville	269A
Jacksonville	293
[*Jacksonville—eff. 6–27–66; III (64)–13*]	
Jasper	272A
Junction	228A
Kenedy-Karnes	232A
[*Kenedy-Karnes—eff. 5–22–67; III(64)–17*]	
Kermit	292A
Kilgore	240A
[*Kilgore—eff. 9–8–64; III(64)–2*]	
Killeen	227
Kingsville	249A
Lake Jackson	297
Lamesa	262, 284
[*Lamesa—eff. 9–7–65; III(64)–9*]	
Lampasas	257A
Laredo	264, 289, 300
Levelland	288A
Longview	289
Lubbock	229, 233, 242, 258, 266, 273
Lufkin	257A, 286
[*Lufkin—eff. 9–5–66; III(64)–14*]	
Marlin	244A
Marshall	280A
McAllen	245, 253
McCamey	237A
McKinney	237A
[*McKinney—eff. 5–23–66; III (64)–13*]	
Memphis	279
[*Memphis—eff. 6–27–66; III (64)–13*]	
Mercedes	296A
Merkel	272A
[*Merkel—eff. 5–31–65; III(64)–7*]	
Mexia	265A
Midland	222, 227, 271
Mission	221A
Merkel	272A
Monahans	260, 277
Mt. Pleasant	264
[*Mt. Pleasant—eff. 9–8–64; III (64)–2*]	
Muleshoe	276A
Nacogdoches	221A, 277
[*Nacogdoches—eff. 9–5–66; III (64)–14*]	
New Braunfels	221A
Odessa	245, 250, 256
Orange	283, 291
Palestine	232A
Pampa	262
Paris	257A
Pasadena	223
Pecos	252A
Perryton	240A
Pharr	285A
Plainview	247
Pleasanton	252A
Port Arthur	227, 253
[*Port Arthur amended in III (64)–5, as further amended eff. 5–31–65; III(64)–7*]	
Port Lavaca	240A
Quanah	265A
Ralls	252A
[*Ralls—eff. 9–7–65; III(64)–9*]	
Raymondville	269A
[*Raymondville—corrected in III (64)–10*]	
Rosenberg	285A
[*Rosenberg—eff. 3–25–66; III (64)–12*]	
Rusk	249A
San Angelo	225, 230, 234, 248
San Antonio	225, 241, 247, 258, 262, 270, 274, 283, 298
[*San Antonio—eff. 5–22–67; III (64)–17*]	
San Marcos	279
[*San Marcos—eff. 5–22–67; III (64)–17*]	
San Saba	244A
Seguin	287
Seminole	280A
Seymour	232A
Shamrock	224A
Sherman	244A
Silsbee	269A
[*Silsbee—eff. 6–27–66; III(64)–13*]	
Sinton	267, 277
Slaton	224A
Snyder	269A
Sonora	221A
Spearman	252A
Stamford	221A
Stephenville	252A
[*Stephenville—eff. 7–24–67; III (64)–18*]	
Sweetwater	244A
Taylor	221A
Temple	285A
Terrell Hills	292A
Texarkana	251, 273
Tulia	285A
Tyler	226, 257A, 268
[*Tyler—eff. 6–27–66; III(64)–13*]	

	Channel No.
Texas—Continued	
Uvalde	237A
Vernon	272A
Victoria	221A, 286, 254
Waco	238, 248, 260
Weslaco	247, 258
Wichita Falls	225, 236, 260, 277
[*Wichita Falls—eff. 5-23-66; III(64)-13*]	
Utah:	
Blanding	221A
Bountiful	288A
Brigham City	296A
Cedar City	223, 235
Logan	225, 233
Moab	244A
Ogden	238, 250, 266, 270
Orem	296A
Price	252A
Provo	235, 241
Richfield	229
St. George	228A
Salt Lake City	227, 231, 246, 254, 262, 278, 282
[*Salt Lake City—eff. 4-4-66; III(64)-12*]	
Spanish Fork	292A
Tooele	221A
[*Tooele—eff. 4-4-66; III(64)-12*]	
Vernal	224A
Vermont:	
Barre	296A
Bennington	232A
Burlington	225, 255
Montpelier	244A, 276A
Newport	300
Rutland	246, 251
St. Albans	272A
Springfield	228A
Waterbury	287
White River Junction	237A
Virginia:	
Abingdon	224A
Arlington	286
Ashland	261A
Blacksburg	285A
[*Blacksburg—eff. 7-13-64; III(64)-1*]	
Blackstone	228A
Charlottesville	237A, 248
Clifton Forge	280A
Covington	265A
Crewe	284
Culpeper	276A
Danville	277
[*Danville—eff. 12-1-66; III(64)-15*]	
Farmville	239
Fredericksburg	227, 268
Front Royal	280A
Galax	251
Gretna	292A
[*Gretna—eff. 12-1-66; III(64)-15*]	
Grundy	249A
Hampton	267

	Channel No.
Virginia—Continued	
Harrisonburg	264
[*Harrisonburg—eff. 3-27-67; III(64)-16*]	
Hopewell	221A
Lawrenceville	288A
Lexington	252A
Luray	257A, 292A
Lynchburg	261A, 269A
Manassas	294
Marion	230, 272A
[*Marion—eff. 2-24-67; III(64)-16*]	
Martinsville	242
Norfolk-Newport News	225, 239, 247, 254, 259, 263, 275, 283, 287
Norton	292A
[*Norton—eff. 9-5-66; III(64)-14*]	
Orange	244A
Petersburg	237A, 257A
[*Petersburg—eff. 12-6-65; III(64)-11*]	
Pulaski	296A
Radford	269A
[*Radford—eff. 7-13-64; III(64)-1*]	
Richmond	233, 251, 271, 279, 293
Roanoke	222, 235, 256
Salem	228A
South Boston	248
Staunton	228A
[*Staunton—eff. 3-27-67; III(64)-16*]	
Tappahannock	288A
[*Tappahannock—eff. 6-27-66; III(64)-13*]	
Tasley	277
[*Tasley—eff. 9-7-65; III(64)-9*]	
Warrenton	232A, 299
Warsaw	265A
[*Warsaw—eff. 9-5-66; III(64)-14*]	
[*Waynesboro—deleted eff. 3-27-67; III(64)-16*]	
Williamsburg	243
Winchester	223, 273
Woodbridge	290
Washington:	
Aberdeen	284
Bellingham	225, 282
Bremerton	295
Centralia	275
Chelan	228A
Colfax	272A
Colville	221A
Edmonds	287
Ellensburg	221A
Ephrata	240A
Grand Coulee	253, 266
Hoquiam	280A
Kennewick	287
Longview	288A
[*Longview—eff. 5-22-67; III(64)-17*]	

	Channel No.
Washington—Continued	
Lynden	293
Moses Lake	262
Omak	224A
Opportunity	241
Othello	249A
Prosser	269A
[*Prosser—eff. 4-25-66; III(64)-12*]	
Pullman	285A
Quincy	276A
[*Quincy—eff. 4-25-66; III(64)-12*]	
Richland	274, 292A
[*Richland—eff. 4-25-66; III(64)-12*]	
Seattle	223, 227, 231, 235, 239, 243, 251, 255, 260, 264, 268, 273, 299.
Spokane	225, 229, 251, 255, 260, 289, 300
Sunnyside	244A
Tacoma	247, 280A, 291
Toppenish	224A
Walla Walla	227, 246
Wenatchee	271, 285A
[*Wenatchee—eff. 4-25-66; III(64)-12*]	
Yakima	233, 281, 297
[*Yakima—eff. 4-25-66; III(64)-12*]	
West Virginia:	
Bath (Berkeley Springs)	228A
[*Bath—eff. 7-13-64; III(64)-1*]	
Beckley	258, 279
Bluefield	283, 292A
[*Buckhannon—deleted eff. 3-27-67; III(64)-16*]	
Charleston	241, 248, 253, 260, 274
[*Charleston—eff. 6-6-66; III(64)-13*]	
Charles Town	252A
Clarksburg	224A, 285A, 293
[*Clarksburg amended in III(64)-2; as further amended eff. 12-6-65; III(64)-11*]	
[*Elkins—deleted eff. 3-27-67; III(64)-16*]	
Fairmont	250, 276A
[*Fairmont—eff. 12-6-65; III(64)-11*]	
Grafton	265A
Huntington	263, 277, 300
[*Huntington—eff. 7-13-64; III(64)-1*]	
Keyser	240A
Logan	270
[*Logan—eff. 6-6-66; III(64)-13*]	
Martinsburg	248
Montgomery	265A
Morgantown	261A, 270
[*Morgantown amended in III(64)-2, as further amended eff. 4-4-66; III(64)-12*]	

	Channel No.
West Virginia—Continued	
Moundsville	288A
New Martinsville	280A
Oak Hill	231, 290
[*Oak Hill—eff. 6-6-66; III (64)-13*]	
Parkersburg	257A, 276A
[*Richwood—deleted eff. 3-27-67; III(64)-16*]	
Ronceverte	288A
St. Albans	286
[*St. Albans—eff. 5-10-65; III (64)-7*]	
[*Weston—deleted eff. 3-27-67; III(64)-16*]	
Wheeling	247, 254, 298
Williamson	243
Wisconsin:	
Antigo	285A
Appleton	289
[*Appleton—eff. 3-12-65; III (64)-6*]	
Ashland	240A
Beloit	237A
[*Beloit—eff. 7-31-64; III (64)-1*]	
Beaver Dam	237A
[*Beaver Dam—eff. 2-24-67; III (64)-16*]	
Chippewa Falls	288A
[*Chippewa Falls—eff. 3-1-67; III(64)-16*]	
Dodgeville	296A
[*Dodgeville—eff. 9-5-66; III (64)-14*]	
Eagle River	232A
Eau Claire	231, 264, 283
[*Eau Claire—eff. 5-23-66; III (64)-13*]	
Fond du Lac	296A
[*Fond du Lac—eff. 5-31-65; III (64)-7*]	
Fort Atkinson	297
Green Bay	252A, 266
[*Green Bay—eff. 7-13-64; III (64)-1*]	
Greenfield Township	235
Hayward	221A
Janesville	260
Kaukauna	285A
Kenosha	236, 245
La Crosse	227
Ladysmith	225
[*Ladysmith—eff. 12-12-66; III (64)-15*]	
Madison	251, 268, 273, 281
Manitowoc	221A, 272A
[*Manitowoc—eff. 5-31-65; III (64)-7*]	
Marinette	236
Marshfield	293
[*Marshfield—eff. 8-10-64; III (64)-2*]	
Medford	257A
Menomonee Falls	252A
[*Menomonee Falls—eff. 7-13-64; III(64)-1*]	
Menomonie	221A
[*Menomonie—eff. 5-23-66; III (64)-13*]	
Merrill	228A
[*Merrill—eff. 8-10-64; III (64)-2*]	
Middleton	292A
[*Middleton—eff. 8-10-64; III (64)-2*]	
Milwaukee	227, 233, 239, 243, 247, 256, 271, 275, 298
Monroe	229
Mt. Horeb	221A
Neenah-Menasha	257A
[*Neenah-Menasha amended in III(64)-6, as further amended eff. 4-4-66; III(64)-12*]	
Neillsville	298
[*Neillsville—eff. 5-31-65; III (64)-7*]	
New London	228A
[*New London—eff. 4-4-66; III (64)-12*]	
New Richmond	296A
[*New Richmond—eff. 3-1-67; III(64)-16*]	
Oconto	296A
[*Oconto—eff. 9-5-66; III(64)-14*]	
Oshkosh	244A, 280A
[*Oshkosh—eff. 5-31-65; III (64)-7*]	
Park Falls	252A
Port Washington	261A
[*Port Washington—eff. 8-10-64; III(64)-2*]	
Portage	261A
[*Portage—eff. 12-6-65; III (64)-11*]	
Prairie Du Chien	232A
Racine	221A, 264
Reedsburg	285A
[*Reedsburg—eff. 11-18-66; III (64)-14*]	
Rhinelander	300
[*Rhinelander—eff. 5-31-65; III (64)-7*]	
Rice Lake	242
Richland Center	265A
Ripon	240A
River Falls	292A
[*River Falls—eff. 3-25-66; III (64)-12*]	
Sauk City	244A
Shawano	261A, 274
[*Shawano—eff. 12-6-65; III (64)-11*]	
Sheboygan	249A
Shell Lake	237A
[*Shell Lake—eff. 3-1-67; III (64)-16*]	
Sparta	246
Stevens Point	250
Sturgeon Bay	230, 240A
[*Sturgeon Bay—eff. 12-12-66; III(64)-15*]	
Tomah	255
Viroqua	272A
Watertown	284
Waukesha	291
Waupaca	224A
[*Waupaca—eff. 8-10-64; III (64)-2*]	
Wausau	238, 270
Wauwatosa	279
West Bend	223
Wisconsin Rapids	277
[*Wisconsin Rapids—eff. 8-10-64; III(64)-2*]	
Wyoming:	
Buffalo	224A
Casper	233, 238
Cheyenne	250, 292A
Cody	232A
Douglas	221A
Evanston	292A
Gillette	228A
Lander	248
Laramie	241, 255
New Castle	257A
Powell	225
Rawlins	224A
Riverton	228A
Rock Springs	243, 258
Sheridan	235, 243
Thermopolis	252A, 269A
Torrington	257A
Wheatland	269A
Worland	240A
U.S. TERRITORIES AND POSSESSIONS	
[*All entries as adopted eff. 11-16-64; III(64)-3*]	
Guam:	
Agana	230, 238
Puerto Rico:	
Adjuntas	275
Aguadilla	225, 262
Arecibo	293, 297
Bayamon	234, 264
Caguas	277
Coamo	223
Fajardo	243
Guayama	295
Humacao	299
Isabella	268
Manati	245
Mayaguez	231, 248, 256
Ponce	227, 270, 286
Rio Piedras	239
San German	236
San Juan	229, 253, 260, 273, 284, 289
Utuado	281
Yauco	241
Virgin Islands:	
Charlotte Amalie	250, 266
Christiansted	258, 291

§ 73.203 Availability of channels.

(a) Subject to the provisions of paragraph (b) of this section, applications may be filed to construct FM broadcast stations in the 48 conterminous states only on the channels assigned in the table of assignments (§ 73.202(b)) and only in communities listed therein. Applications which fail to comply with this requirement, whether or not accompanied by a petition to amend the table, will not be accepted for filing: *Provided, however,* That applications specifying channels which accord with publicly announced Commission orders changing the table of assignments will be accepted for filing even though such applications are tendered before the effective dates of such channel changes.

(b) A channel assigned to a community listed in the table of assignments is available upon application in any unlisted community which is located within 25 miles of the listed community. Where channels are assigned to two or more communities listed in combination in the table of assignments the provisions of this paragraph shall apply separately to each community so listed. The distance between communities shall be determined by the distance between the respective coordinates thereof as set forth in the publication of the United States Department of Commerce entitled "Air Line Distance Between Cities in the United States". (This publication may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.) If said publication does not contain the coordinates of either or both communities, the coordinates of the main post office in either or both of the communities shall be used. The method to be followed in making the measurements is set forth in § 73.208(c).

§ 73.204 International agreements and other restrictions on use of channels.

(a) Authorizations issued by the Commission for FM broadcast facilities will be subject to the provisions of any agreements entered into by the United States with Canada concerning FM assignments and authorizations. The Commission may decide after consultation with Canada that an application should not be granted; or if, pursuant to an agreement providing for timely objection after grant, Canada files such objection, the Commission may on its own motion set aside the grant pending consideration. The Commission will give notice of the filing of such objections.

(b) The frequency 89.1 Mc/s (channel 206) is reserved in the New York City metropolitan area for the use of the United Nations with the equivalent of an antenna height of 500 feet above average terrain and effective radiated power of 20 kilowatts, and the Commission will make no assignments which would cause objectionable interference with such use.

(c) In Alaska, the frequency band 88–100 Mc/s is allocated exclusively to Government radio services and the non-Government fixed service. The frequencies 88.1 through 99.9 Mc/s (channels 201 through 260) will not be assigned in Alaska for use by FM broadcast stations.

(d) In Hawaii, the frequency band 98–108 Mc/s is allocated for non-broadcast use. The frequencies 98.1 through 107.9 Mc/s (channels 251 through 300) will not be assigned in Hawaii for use by FM broadcast stations.

§ 73.205 Zones.

For the purpose of allocation and assignment, the United States is divided into three zones as follows:

(a) Zone I consists of that portion of the United States located within the confines of the following lines drawn on the United States Albers Equal Area Projection Map (based on standard parallels 29½° and 45½°; North American datum): Beginning at the most easterly point on the State boundary line between North Carolina and Virginia; thence in a straight line to a point on the Virginia-West Virginia boundary line located at north latitude 37°49′ and west longitude 80°12′30″; thence westerly along the southern boundary lines of the States of West Virginia, Ohio, Indiana, and Illinois to a point at the junction of the Illinois, Kentucky, and Missouri State boundary lines; thence northerly along the western boundary line of the State of Illinois to a point at the junction of the Illinois, Iowa, and Wisconsin State boundary lines; thence easterly along the northern State boundary line of Illinois to the 90th meridian; thence north along this meridian to the 43.5° parallel; thence east along this parallel to the United States-Canada border; thence southerly and following that border until it again intersects the 43.5° parallel; thence east along this parallel to the 71st meridian; thence in a straight line to the intersection of the 69th meridian and the 45th parallel; thence east along the 45th parallel to the Atlantic Ocean. When any of the above lines pass through a city, the city shall be considered to be located in Zone I. (See Figure 1 of § 73.699.)

(b) Zone I–A consists of Puerto Rico, the Virgin Islands and that portion of the State of California which is located south of the 40th parallel.

(c) Zone II consists of Alaska, Hawaii and the rest of the United States which is not located in either Zone I or Zone I–A.

[*§ 73.205 amended in III(64)–3; Intro and (a) amended eff. 8–1–66; III(64)–14*]

§ 73.206 Classes of commercial channels, and stations operating thereon.

(a) *Class A channels and stations.* (1) Except as provided in § 73.204, the following frequencies are des-

ignated as Class A channels and are assigned for use, in all zones, by Class A stations only:

Frequency (Mc/s):	*Channel No.*	*Frequency (Mc/s):*	*Channel No.*
92.1	221	100.1	261
92.7	224	100.9	265
93.5	228	101.7	269
94.3	232	102.3	272
95.3	237	103.1	276
95.9	240	103.9	280
96.7	244	104.9	285
97.7	249	105.5	288
98.3	252	106.3	292
99.3	257	107.1	296

(2) A Class A station is a station which operates on a Class A channel, and is designed to render service to a relatively small community, city, or town, and the surrounding rural area.

(3) A Class A station will not be authorized to operate with effective radiated power greater than 3 kilowatts (4.8 dbk), and the coverage of a Class A station shall not exceed that obtained from 3 kilowatts effective radiated power and antenna height above average terrain of 300 feet. For provisions concerning minimum facilities, and concerning reduction in power where antenna height above average terrain exceeds 300 feet, see § 73.211.

(b) *Class B–C channels and Class B and Class C stations.* (1) Except for the channels specified in paragraph (a)(1) of this section, all of the channels listed in § 73.201 from 222 through 300 (92.3 through 107.9 Mc/s) are classified as Class B–C channels, and (subject to the restrictions set forth in § 73.204) are assigned for use in Zones I and I–A by Class B stations only, and for use in Zone II by Class C stations only (there are no Class C stations in Zones I or I–A and no Class B stations in Zone II).

(2) A Class B station is a station which operates on a Class B–C channel in Zone I or Zone I–A, and is designed to render service to a sizable community, city, or town, or to the principal city or cities of an urbanized area, and to the surrounding area.

(3) With respect to Class B stations authorized after September 10, 1962, no such station will be authorized with effective radiated power greater than 50 kilowatts (17 dbk), and the coverage of a Class B station authorized after that date shall not exceed that obtained from 50 kilowatts effective radiated power and 500 feet antenna height above average terrain. For provisions concerning minimum power, and concerning reduction in power where antenna height above average terrain exceeds 500 feet, see § 73.211.

(4) A Class C station is a station which operates on a Class B–C channel in Zone II, and is designed to render service to a community, city, or town, and large surrounding area.

(5) With respect to Class C stations authorized after September 10, 1962, no such station will be authorized with effective radiated power greater than 100 kilowatts (20 dbk), and the coverage of a Class C station authorized after that date shall not exceed that obtained from 100 kilowatts effective radiated power and antenna height above average terrain of 2,000 feet. For provisions concerning minimum power, and reduction in power where antenna height above average terrain exceeds 2,000 feet, see § 73.211.

§ 73.207 Minimum mileage separations between co-channel and adjacent-channel stations on commercial channels.

(a) Petitions to amend the table of assignments (§ 73.202(b)) (other than those expressly requesting amendment of this section or § 73.205) will be dismissed and no application for a new station, change in the channel of an existing station, or increase in antenna height or effective radiated power, or change in location of an existing station will be accepted for filing unless the proposed facilities will be located at least as far from the transmitter sites of other co-channel and adjacent-channel stations (both existing and proposed) as the distances in miles specified in this paragraph. Proposed stations of the respective classes shown in the left-hand column of the following table shall be located no less than the distance shown from co-channel stations and first adjacent-channel stations (200 kc/s removed) and second and third adjacent-channel stations (400 and 600 kc/s removed) of the classes shown in the remaining columns of the table. The distances shown between stations of different classes apply regardless of which is the proposed station under consideration (e.g., distances shown from a new Class A station to an existing Class C station are also the distances between a new Class C and an existing Class A station). The distances between Class B and Class C stations apply only across zone lines. The adjacent-channel spacings listed also apply: (1) To applications for noncommercial educational facilities on Channels 218, 219, or 220, with respect to other stations on Channels 221, 222, or 223; (2) to applications for facilities on Channels 221, 222, or 223, with respect to noncommercial educational stations on Channels 218, 219, or 220 (for classification of noncommercial education stations, see § 73.504).

CLASS OF STATION AND FREQUENCY SEPARATION (kc/s)

Class of station	Class A				Class B				Class C				10-watt educational			
	Co-Ch.	200	400	600	Co-Ch.	200	400	600	Co-Ch.	200	400	600	Co-Ch.	200	400	600
A	65	40	15	15	----------	65	40	40	----------	105	65	65	----------	30	15	15
B	----------	------	------	------	150	105	40	40	170	135	65	65	----------	------	40	40
C	----------	------	------	------	----------	------	------	------	180	150	65	65	----------	------	65	65
10-watt educational	----------	------	------	------	----------	------	------	------	----------	------	------	------	----------	------	------	------

NOTE: Stations or assignments separated in frequency by 10.6 or 10.8 Mc/s (53 or 54 channels) will not be authorized unless they conform to the following separation table:

Class of stations	*Required spacing in miles*
A to A	5
B to A	10
B to B	15
C to A	20
C to B	25
C to C	30

(b) The zone in which the transmitter of an FM station is located or proposed to be located determines the applicable rules with respect to minimum required spacings.

[*§ 73.207 amended in III(64)-3 and III(64)-9; (a) amended eff. 8-1-66; III(64)-14*]

§ 73.208 Reference points and distance computations.

(a) In considering petitions to amend the table of assignments (§ 73.202(b)), the following reference points shall be used by the Commission in determining separations between communities:

(1) Where transmitter sites for the pertinent channels have been authorized in communities involved in a petition to amend the table of assignments, separations between such communities shall be determined by the distance between the coordinates of the authorized transmitter sites in the respective communities as set forth in the Commission's authorizations therefor.

(2) Where an authorized transmitter site is available for use as a reference point in one community but not in the other for the pertinent channels, separations shall be determined by the distance between the coordinates of the transmitter site as set forth in the Commission's authorization therefor and the coordinates of the other community as set forth in the publication of the United States Department of Commerce entitled "Air Line Distances Between Cities in the United States." If said publication does not contain the coordinates for said other community, the coordinates of the main post office thereof shall be used.

(3) Where no authorized transmitter sites are available for use as reference points in both communities for the pertinent channels, the distance between the two communities listed in the above publication shall be used. If said publication does not contain such distance, the separation between the two communities shall be determined by the distance between the coordinates thereof as set forth in said publication. Where such coordinates are not contained in said publication, the coordinates of the main post offices of said communities shall be used.

(4) Where the distance between the reference point in a community to which a channel is proposed to be assigned and the reference point in another community or communities does not meet the minimum separation requirements of § 73.207, the channel may be assigned to such community upon a showing that a transmitter site is available that would meet the minimum separation requirements of § 73.207 and the minimum field intensity requirements of § 73.315. In such cases, where a station is not authorized in the community or communities to which measurements from the proposed channel assignment must be made pursuant to § 73.207, a showing should also be made that the distance between suitable transmitter sites in such other community or communities and the proposed transmitter site for the new channel meet the Commission's minimum spacing and coverage requirements.

(b) Station separations in licensing proceedings shall be determined by the distance between the coordinates of the proposed transmitter site in one community and

(1) The coordinates of an authorized transmitter site for the pertinent channel in the other community; or, where such transmitter site is not available for use as a reference point,

(2) The coordinates of the other community as set forth in the above-described publication of the United States Department of Commerce; or, if not contained therein,

(3) The coordinates of the main post office of such other community.

(4) In addition, where there are pending applications in other communities which, if granted, would have to be considered in determining station separations, the coordinates of the transmitter sites proposed in such applications must be used to determine whether the requirements with respect to minimum separations between the proposed stations in the respective cities have been met.

[*§ 73.208(b) as amended eff. 10-19-64; III(64)-3*]

(c) The distance between reference points is considered to be the length of the hypotenuse of a right triangle, one side of which is the difference in latitude of the reference points and the other side the difference in longitude of the two reference points, and shall be computed by the method set forth in this paragraph.

(This method is appropriate for determining distances up to 220 miles, and for such distances will normally be more accurate than using spherical trigonometry without correction for the spheroidal shape of the earth. However, its accuracy deteriorates rapidly at distances beyond 300 miles and this method should not be used to compute greater distances.)

(1) Determine the difference in latitude and the difference in longitude between the two reference points. Convert these two differences into degrees and decimal parts of a degree in accordance with Table I of § 73.698.

(2) Determine the middle latitude of the two reference points to the nearest second of latitude (average the latitudes of the two points).

(3) Multiply the difference in latitude by the number of miles per degree of latitude difference obtained from Table II of § 73.698 for the appropriate middle latitude (interpolate linearly). This determines the north-south distance in statute miles (L_a).

NOTE: In determining necessary distance computations for Alaska, Hawaii, and the Territories, the appropriate mileage per degree may be obtained by linear interpolation of the data given on pages 1246 and 1247 of the tables in publication H.O. No. 9 (Bowditch-American Practical Navigator—1958 Edition) of the U.S. Navy Department, Hydrographic Office. This publication may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.

(4) Multiply the difference in longitude by the number of miles per degree of longitude difference, obtained from Table III of § 73.698, for the appropriate middle latitude (interpolate linearly). This determines the east-west distance in statute miles (L_o).

(5) Determine the distance between the two reference points by the square root of the sum of the squares of the distances obtained in subparagraphs (3) and (4) of this paragraph, using sufficient decimal figures to determine the distance to the nearest mile; i.e.,

$$D=(L_a^2+L_o^2)^{1/2}$$

where:

D=Distance in statute miles.
L_a=North-south distance in statute miles.
L_o=East-west distance in statute miles.

§ 73.209 Protection from interference.

(a) Permittees and licensees of FM broadcast stations are not protected from any interference which may be caused by the grant of a new station, or of authority to modify the facilities of an existing station, in accordance with the provisions of this subpart.

(b) The nature and extent of the protection from interference accorded to FM broadcast stations is limited solely to the protection which results from the minimum assignment and station separation requirements and the rules with respect to maximum powers and antenna heights set forth in this subpart.

(c) When the Commission determines that grant of an application would serve the public interest, convenience, and necessity and the instrument of authorization specifies an antenna location in a designated antenna farm area which results in mileage separations less than those specified in this subpart, FM broadcast station permittees and licensees shall be afforded protection from interference equivalent to the protection afforded under the minimum mileage separations specified in this subpart.

[*§ 73.209(c) adopted eff. 7-24-67; III(64)-18*]

§ 73.210 Station location and program origination.

(a)(1) Except as provided in paragraph (b) of this section, each FM broadcast station will be licensed to serve primarily a particular city, town, political subdivision, or community which will be specified in the station license and the station will be considered to be located in such place.

(2) Each station shall maintain a studio, which will be known as the main studio, in the place where the station is located: *Provided*, That the main studio may be located at the transmitter site whether or not the transmitter site is in the place where the station is located.

(3) A majority (computed on the basis of duration and not number) of a station's programs or, in the case of a station affiliated with a network, two-thirds of such station's non-network programs, whichever is smaller, shall originate from the main studio or from other studios or remote points situated in the place where the station is located.

(b)(1) Stations will be licensed to serve more than one city, town, political subdivision, or community only where a satisfactory showing is made that each such place meets all the requirements of this subpart with respect to the location of main studios; that the station can and will originate a substantial number of local live programs from each such place; and that the requirements as to origination of programs contained in paragraph (a) of this section would place an unreasonable burden on the station if it were licensed to serve only one city, town, political subdivision, or community.

(2) A station licensed to serve more than one place shall be considered to be located in and shall maintain main studios in each such place.

(3) With respect to such station, the requirements in paragraph (a) of this section as to origination of programs shall be satisfied by the origination of programs from any or all of the main studios, other studios, or remote points situated in any or all of the places in which the main studios are located.

[*§ 73.210(c) deleted eff. 8-1-66; III(64)-14*]

§ 73.211 Power and antenna height requirements.

(a) *Minimum requirements.* (1) Except as provided in paragraph (b)(2) of this section, the minimum effective radiated power shall be,

Class A ..... 100 watts (— 10 dbk)
Class B ..... 5 kw (7 dbk)
Class C ..... 25 kw (14 dbk)

(2) No mimimum antenna height above average terrain is specified.

(b) *Maximum power and antenna height.* (1) The maximum effective radiated power in any direction and maximum antenna height for equivalence purposes, shall be as follows for the various classes of stations:

Class	Maximum power	Maximum antenna height (feet above average terrain)
A	3 kw (4.8 dbk)	300
B	50 kw (17.0 dbk)	500
C	100 kw (20.0 dbk)	2,000

(2) Antenna heights may be used exceeding those specified in this paragraph for equivalence purposes, provided effective radiated power is reduced in the amount determined by use of the appropriate curves in Figure 3 of § 73.333. Where, under Figure 3 of § 73.333, effective radiated power must be reduced to an amount less than the normal minimum specified in paragraph (a) (1) of this section for the class of station involved, the effective radiated power determined by Figure 3 of § 73.333 shall be the minimum for the station involved.

(3) In Puerto Rico antenna heights may be used up to 2,000 feet above average terrain with effective radiated powers up to 25 kw. For antenna heights above 2,000 feet the power shall be reduced so that the station's 1 mv/m contour (located pursuant to Figure 1 of § 73.333) will be no further from the station's transmitter than with the facilities of 25 kw and antenna height of 2,000 feet. For powers above 25 kw (up to 50 kw) no antenna heights will be authorized which result in greater coverage by the 1 mv/m contour than that obtained with the facilities of 25 kw and antenna height of 2,000 feet.

(c) *Determination of applicable rules.* The zone in which the transmitter of an FM station is located or proposed to be located determines the applicable rules with respect to the class of station, and thus the minimum and maximum requirements as to facilities.

(d) *Existing stations.* Stations authorized as of September 10, 1962 which do not conform to the requirements of this section, may continue to operate as authorized. For stations operating with facilities in excess of those specified in paragraph (b) of this section no changes in facilities will be authorized which either increases the effective radiated power or extends the location of the 1 mv/m field strength contour beyond that of its present authorization in any direction. The provisions of this section shall not apply to applications to increase facilities for those stations operating with powers less than the minimum powers specified in paragraph (a) of this section.

[*§ 73.211 amended in III (64)–3; (b) (3) & (d) amended eff. 8–1–66; III (64)–14*]

§ 73.212 Administrative changes in authorizations.

(a) In the issuance of FM broadcast station authorizations, the Commission will specify the transmitter output power and effective radiated power in accordance with the following tabulation:

Power (watts or kw):	*Rounded out to nearest figure (watts or kw)*
1 to 3	.05
3 to 10	.1
10 to 30	.5
30 to 100	1
100 to 300	5
300 to 1,000	10

(b) Antenna height above average terrain will be specified in accordance with the following tabulation:

Antenna height above average terrain:	*Rounded out to nearest figures (feet)*
0 to 100	1
100 to 300	5
Over 300	10

§ 73.213 Stations at spacings below the minimum separations.

(a) Stations which are separated from other co-channel or adjacent channel stations less than the minimum distances specified in § 73.207 may apply for changes in facilities provided the requested facilities conform with the following table:

FACILITIES TO BE AUTHORIZED FOR SHORT-SPACED FM STATIONS

Class of station	Separation in miles		Facilities authorized	
	Co-channel	First adjacent	Power (kw.)	Antenna height (ft.)
A to A	45–65		3	300.
A to A	40–44		2	300.
A to A	less than 40		1	300.
A to B		50–65	3	300 Class A.
			50	500 Class B.
A to B		40–49	3	300 Class A.
			20	500 Class B.
A to B		less than 40	3	300 Class A.
			10	500 Class B.
A to C		80–105	3	300 Class A.
			100	2,000 Class C.
A to C		60–79	3	300 Class A.
			50	2,000 Class C.
A to C		less than 60	3	300 Class A.
			20	2,000 Class C.
B to B	125–150	80–105	50	500.
B to B	100–124	65–79	20	500.
B to B	75–99	50–64	10	500.
B to B	less than 75	less than 50	5	500.
B to C	140–170	110–135	50	500 Class B.
			100	2,000 Class C.
B to C	110–139	85–109	20	500 Class B.
			50	2,000 Class C.
B to C	90–109	60–84	10	500 Class B.
			20	2,000 Class C.
B to C	less than 90	less than 60	5	500 Class B.
			10	2,000 Class C.
C to C	150–180	125–150	100	2,000.
C to C	120–149	95–124	50	2,000.
C to C	100–119	75–94	20	2,000.
C to C	less than 100	less than 75	10	2,000.

(b) Stations authorized facilities in excess of those specified in this section may continue to operate with such facilities.

(c) Stations may elect to operate omnidirectionally with facilities no greater than the least they should be permitted in any direction under paragraph (a) of this section. Greater facilities (up to the maximum specified in § 73.211(b) for their class) may be used if, by use of a directional antenna, radiation in any direction in which a short separation exists is reduced to no more than that permitted under paragraph (a) of this section. Applications for use of directional antennas must be in conformance with § 73.316(d); in addition, the increase in radiation off the line between the short-spaced stations shall not exceed 2 db per 10 degrees of azimuth; and in no event shall radiation in any direction exceed the maximum permitted under § 73.211(b) for the particular class of station.

(d) Stations will be authorized maximum facilities for their class in those directions in which they are short-spaced to other stations on second or third adjacent channels.

(e) The powers listed in the table are the maximums to be authorized. Antenna heights may be used exceeding those specified in the table for equivalence purposes, provided the effective radiated power is reduced in the amount necessary to place the 1 mv/m contour at no greater distance as determined by use of Figure 1 of § 73.333. The antenna height value to be used is that above average terrain and not that in any particular direction. Where antenna heights below 100 feet are encountered (or negative heights) an assumed value of 100 feet above average terrain shall be assumed for the purposes of this paragraph.

(f) The following provisions will govern applications for move of transmitter site:

(1) No application to move will be accepted which creates short spacing to standard spaced stations and assignments less than the distances specified in § 73.207, including second and third adjacent channel separations. This provision applies even if in other respects the application would be acceptable under this paragraph.

(2) Stations short-spaced with respect to other stations under § 73.207 may apply to move transmitter site, even though by the move the separation would be further shortened, under the following conditions and with the following facilities:

(i) Where the short separation is second or third adjacent channel, with any facilities up to the maximum permitted under § 73.211.

(ii) Where the short separation is co-channel or first adjacent channel, stations may apply for facilities up to the maximum for the mileage bracket in which they would fall after the move, as specified in paragraph (a) of this section, or with their present facilities if they are not moving so far as to fall into a lower bracket. (See subdivision (iii) of this subparagraph for further restrictions on very short-spaced stations.)

(iii) The provisions of this subparagraph apply where the resulting separation after the move would be less than: co-channel, 40 miles Class A to Class A, 75 miles Class B to Class B, 90 miles Class B to Class C or vice versa, or 100 miles Class C to Class C; first adjacent channel, 40 miles Class A to Class B or vice versa, 50 miles Class B to Class B, 60 miles Class A or B to Class C, or vice versa, and 75 miles Class C to Class C. Stations so situated may apply to move and use either their present facilities or no more than those specified for their mileage bracket in paragraph (a) of this section, if the move would not decrease the short distance by more than three miles. If the move would decrease the short distance a greater amount, a station will be permitted no more than the facilities which would give it, in the critical direction, a 1 mv/m contour located no further out than that which would result from using the former location and the maximum facilities specified for the mileage bracket.

[§ 73.213 *as adopted eff. 11–16–64; III(64)–3*]

ADMINISTRATIVE PROCEDURE

§ 73.214 Cross reference.

See Subpart D of Part 1 of this chapter, for general requirements as to applications, filing of applications and description of application forms, other forms and information to be filed with the Commission, the manner in which applications are processed, and provisions applying to action on applications. See § 1.1111 of Subpart G of that part for the fees to be paid in connection with applications for facilities in the service covered in this subpart.

§ 73.215 Notification of filing of applications.

(a) *Radio Astronomy and Radio Research Installations.* In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new FM broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded

by 39°15′ N on the north, 78°30′ W on the east, 37°30′ N on the south, and 80°30′ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box No. 2, Green Bank, West Virginia, 24944, in writing of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of 20 days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(b) *Location on Government land.* Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

[*The text of § 73.215 redesignated (a) and (b) added eff. 3-20-67; III(64)-16*]

§ 73.216 Equipment tests.

(a) During the process of construction of an FM broadcast station, the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations, and the applicable engineering standards.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of the program test. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations and the applicable engineering standards, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 73.217 Program tests.

(a) Upon completion of construction of an FM broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and the applicable engineering standards, and when an application for station license has been filed showing the station to be in satisfactory operating condition, the permittee may request authority to conduct program tests: *Provided*, That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified. (All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application.)

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked, program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation under program test authority shall be in strict compliance with the rules governing FM broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized.

(e) The granting of program test authority shall not be construed as approval by the Commission of the application for station license.

§ 73.218 Normal license period.

(a) Licenses for FM broadcast stations ordinarily will be issued for a period of three years and, when regularly renewed, at three year intervals thereafter: *Provided, however,* That, if the Commission finds that the public interest, convenience, and necessity will be served thereby, it may issue either an initial license or a renewal thereof for a lesser term. When regularly issued or renewed, licenses will be issued to expire at the hour of 3:00 a.m., eastern standard time, in accordance with the following schedule, and at three year intervals thereafter.

(1) For stations located in Florida, Puerto Rico and Virgin Islands, February 1, 1964.

(2) For stations located in Alabama and Georgia, April 1, 1964.

(3) For stations located in Arkansas, Louisiana and Mississippi, June 1, 1964.

(4) For stations located in Tennessee, Kentucky and Indiana, August 1, 1964.

(5) For stations located in Ohio and Michigan, October 1, 1964.

(6) For stations located in Illinois and Wisconsin, December 1, 1964.

(7) For stations located in Iowa and Missouri, February 1, 1965.

(8) For stations located in Minnesota, North Dakota, South Dakota, Montana and Colorado, April 1, 1965.

(9) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1965.

(10) For stations located in Texas, August 1, 1965.

(11) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico and Idaho, October 1, 1965.

(12) For stations located in California, December 1, 1965.

(13) For stations located in Washington, Oregon, Alaska and Hawaii, February 1, 1966.

(14) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont, April 1, 1966.

(15) For stations located in New Jersey and New York, June 1, 1966.

(16) For Stations located in Delaware and Pennsylvania, August 1, 1966.

(17) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1966.

(18) For stations located in North Carolina, South Carolina, December 1, 1966.

LICENSING POLICIES

§ 73.231 Exclusive affiliation of station.

No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, broadcasting the programs of any other network organization. (The term "network organization" as used herein includes national and regional network organizations. See ch. VII, J of Report on Chain Broadcasting.)

§ 73.232 Territorial exclusivity.

No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which prevents or hinders another broadcasting station serving substantially the same area from broadcasting the network's programs not taken by the former station, or which prevents or hinders another broadcast station serving a substantially different area from broadcasting any program of the network organization. This section shall not be construed to prohibit any contract, arrangement, or understanding between a station and a network organization pursuant to which the station is granted the first call in its primary service area upon the programs of the network organization.

§ 73.233 Term of affiliation.

No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which provides, by original terms, provisions for renewal, or otherwise for the affiliation of the station with the network organization for a period longer than 2 years: *Provided,* That a contract, arrangement, or understanding for a period up to 2 years, may be entered into within 6 months prior to the commencement of such period.

§ 73.234 Option time.

No license shall be granted to an FM broadcast station which options for network programs any time

subject to call on less than 56 days' notice, or more time than a total of 3 hours within each of four segments of the broadcast day, as herein described. The broadcast day is divided into four segments, as follows: 8 a.m. to 1 p.m.; 1 p.m. to 6 p.m.; 6 p.m. to 11 p.m.; 11 p.m. to 8 a.m. (These segments are to be determined for each station in terms of local time at the location of the station but may remain constant throughout the year regardless of shifts from standard to daylight saving time or vice versa.) Such options may not be exclusive as against other network organizations and may not prevent or hinder the station from optioning or selling any or all of the time covered by the option, or other time, to other network organizations.

NOTE 1: As used in this section, an option is any contract, arrangement, or understanding, express or implied, between a station and a network organization which prevents or hinders the station from scheduling programs before the network agrees to utilize the time during which such programs are scheduled, or which requires the station to clear time already scheduled when the network organization seeks to utilize the time.

NOTE 2: All time options permitted under this section must be specified clock hours, expressed in terms of any time system set forth in the contract agreed upon by the station and network organization. Shifts from daylight saving to standard time or vice versa may or may not shift the specified hours correspondingly as agreed by the station and network organization.

§ 73.235 Right to reject programs.

No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which (a), with respect to programs offered pursuant to an affiliation contract, prevents or hinders the station from rejecting or refusing network programs which the station reasonably believes to be unsatisfactory or unsuitable; or which (b), with respect to network programs so offered or already contracted for, prevents the station from rejecting or refusing any program which, in its opinion, is contrary to the public interest, or from substituting a program of outstanding local or national importance.

§ 73.236 Network ownership of stations.

No license shall be granted to a network organization, or to any person directly or indirectly controlled by or under common control of a network organization, for an FM broadcast station in any locality where the existing FM broadcast stations are so few or of such unequal desirability (in terms of coverage, power, frequency, or other related matters) that competition would be substantially restrained by such licensing. (The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.)

§ 73.237 Dual network operation.

No license shall be issued to an FM broadcast station affiliated with a network organization which maintains more than one network of FM broadcast stations: *Provided*, That this section shall not be applicable if such networks are not operated simultaneously, or if there is no substantial overlap in the territory served by the group of stations comprising each such network.

§ 73.238 Control by networks of station rates.

No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, fixing or altering its rates for the sale of broadcast time for other than the network's programs.

§ 73.239 Use of common antenna site.

No FM broadcast station license or renewal of FM broadcast station license will be granted to any person who owns, leases, or controls a particular site which is peculiarly suitable for FM broadcasting in a particular area and (a) which is not available for use by other FM broadcast station licensees; and (b) no other comparable site is available in the area; and (c) where the exclusive use of such site by the applicant or licensee would unduly limit the number of FM broadcast stations that can be authorized in a particular area or would unduly restrict competition among FM broadcast stations.

§ 73.240 Multiple ownership.

(a) No license for an FM broadcast station shall be granted to any party (including all parties under common control) if:

(1) Such party directly or indirectly owns, operates, or controls one or more FM broadcast stations and the grant of such license will result in any overlap of the

predicted 1 mv/m contours of the existing and proposed stations, computed in accordance with § 73.313; or

(2) Such party, or any stockholder, officer or director of such party, directly or indirectly owns, operates, controls, or has any interest in, or is an officer or director of any other FM broadcast station if the grant of such license would result in a concentration of control of FM broadcasting in a manner inconsistent with public interest, convenience, or necessity. In determining whether there is such a concentration of control, consideration will be given to the facts of each case with particular reference to such factors as the size, extent and location of areas served, the number of people served, classes of stations involved, and the extent of other competitive service to the areas in question. The Commission, however, will in any event consider that there would be such a concentration of control contrary to the public interest, convenience or necessity for any party or any of its stockholders, officers or directors to have a direct or indirect interest in, or be stockholders, officers, or directors of, more than seven FM broadcast stations.

(b) Paragraph (a) of this section is not applicable to non-commercial educational FM stations.

NOTE 1: The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

NOTE 2: In applying the foregoing provisions to the stockholders of a corporation which has more than 50 voting stockholders, only those stockholders need be considered who are officers or directors or who directly or indirectly own 1 percent or more of the outstanding voting stock.

NOTE 3: Paragraph (a)(1) of this section will not be applied so as to require divestiture, by any licensee, of existing facilities. Said paragraph will not apply to applications for assignment of license or transfer of control filed in accordance with §§ 1.540(b) or 1.541(b) of this chapter, or to applications for assignment of license or transfer of control to heirs or legatees by will or intestacy where no new or increased overlap would be created between commonly owned stations. Said paragraph will apply to all applications for new stations, to all other applications for assignment or transfer, and to all applications for major changes in existing stations except major changes that will result in overlap no greater than that already existing. (The resulting overlap areas in such major change cases may consist partly or entirely of new terrain. However, if the population in the resulting overlap areas substantially exceeds that in the previously existing overlap areas, the Commission will not grant the application if it finds that to do so would be against the public interest, convenience, and necessity.) Commonly owned stations with overlapping contours prohibited by paragraph (a)(1) of this section may not be assigned or transferred to a single person, group, or entity, except as provided in this Note.

[*§ 73.240, amended in III(64)-1 and III(64)-3, as further amended re Note 3 eff. 12-28-64; III(64)-5*]

§ 73.241 Special rules relating to contracts providing for reservation of time upon sale of a station.

No license, renewal of license, assignment of license, or transfer of control of a corporate licensee shall be granted or authorized to a FM broadcast station which has a contract, arrangement or understanding, express or implied, pursuant to which, as consideration or partial consideration for the assignment of license or transfer of control, the assignor of a station license or the transferor of stock, where transfer of a corporate licensee is involved, or the nominee of such assignor or transferor retains any right of reversion of the license or any right to the reassignment of the license in the future, or reserves the right to use the facilities of the station for any period whatsoever.

§ 73.242 Duplication of AM and FM programming.

(a) After October 15, 1965, licensees of FM stations in cities of over 100,000 population (as listed in the latest regular U.S. Census Reports) shall operate so as to devote no more than 50 percent of the average FM broadcast week to programs duplicated from an AM station owned by the same licensee in the same local area. For the purposes of this paragraph, duplication is defined to mean simultaneous broadcasting of a particular program over both the AM and FM station or the broadcast of a particular FM program within 24 hours before or after the identical program is broadcast over the AM station.

(b) Compliance with the non-duplication requirement shall be evidenced by such showing in connection with renewal applications as the Commission may require.

(c) Upon a substantial showing that continued program duplication over a particular station would better serve the public interest than immediate non-duplication, a licensee may be granted a temporary exemption from the requirements of paragraph (a) of this section. Requests for such exemption must be submitted to the Commission, accompanied by supporting data, at least 6 months prior to the time the non-duplication requirement of paragraph (a) of this section is to become effective as to a particular station. Such exemption, if granted, will ordinarily run to the end of the station's current license period, or if granted near the end of the license period, for some other reasonable period not to exceed 3 years.

[*§ 73.242 amended in III(64)-2 and III(64)-7; (a) amended eff. 8-1-66; III(64)-14*]

EQUIPMENT

§ 73.250 Acceptability of broadcast transmitters for licensing.

(a) In order to facilitate the filing of, and action on applications for station authorizations, transmitters will be accepted for licensing by the Commission under one of the following conditions:

(1) A transmitter may be type-accepted upon the request of any manufacturer of transmitters built in quantity by following the type acceptance procedure set forth in Part 2 of this chapter, provided that the data and information submitted indicates that the transmitter meets the requirements of § 73.317. If accepted, such transmitter will be included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment". Applicants specifying transmitters included on such a list need not submit detailed descriptions and diagrams where the correct type number is specified, provided that the equipment proposed is identical with that accepted. Copies of this list are available for inspection at the Commission's office in Washington, D.C., and at each of its field offices.

(2) An application specifying a transmitter not included on the Radio Equipment List, Part B, may be accepted upon the request of a prospective licensee submitting with the application for construction permit a complete description of the transmitter, including the circuit diagram, listing of all tubes used, function of each, multiplication in each stage, plate current and voltage applied to each tube, a description of the oscillator circuit together with any devices installed for the purpose of frequency stabilization and the means of varying output power to compensate for power supply voltage variations. However, if this data has been filed with the Commission by a manufacturer in connection with a request for type acceptance, it need not be submitted with the application for construction permit but may be referred to as "on file". Measurement data for type acceptance made in accordance with subparagraph (1) of this paragraph shall be submitted with the license application.

(3) A transmitter shown on an instrument of authorization by manufacturer and type number, or as a composite, and which was in use prior to June 30, 1955 may continue to be used by the licensee, his successors or assignees, provided such transmitter continues to comply with the rules and regulations.

(4) A permittee may, without further authority, install a transmitter other than that specifically authorized in its construction permit if such transmitter is listed in the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment" as acceptable for the transmitter output power authorized and, if operation under § 73.295 or § 73.297 is included, such transmitter is listed in the said "Radio Equipment List" as acceptable for the appropriate type of operation.

(5) A licensee may, without further authority, install and utilize a transmitter other than that specifically authorized in its station license if the transmitter so installed and utilized is listed in the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment" as acceptable for the transmitter output power authorized and, if operation under § 73.295 or § 73.297 is included, such transmitter is listed in the said "Radio Equipment List" as acceptable for the appropriate type of operation. In the event of such a transmitter substitution, the Commission and the Engineer in Charge of the radio district in which

the station is located shall be notified within 3 days after the date of installation of the transmitter. Such notice shall specify the manufacturer and type number of the transmitter and shall include a certification by the licensee that the transmitter as installed complies with the appropriate technical provisions of this subpart.

(b) Additional rules with respect to withdrawal of type-acceptance, modification of type-accepted equipment and limitations on the findings upon which type acceptance is based are set forth in Part 2 of this chapter.

§ 73.252 Frequency monitor.

(a) The licensee of each station shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a frequency monitor of a type approved by the Commission which shall be independent of the frequency control of the transmitter.

NOTE: Approved frequency monitors are included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment". Copies of this list are available for inspection at the Commission's office in Washington, D.C., and at each of its field offices.

(b) In the event that the frequency monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) The frequency of the station shall be compared with an external frequency source of known accuracy at sufficiently frequent intervals to insure that the frequency is maintained within the tolerance prescribed in § 73.269. An entry shall be made in the station log as to the method used and the results thereof.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with § 1.549 of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

§ 73.253 Modulation monitors.

(a) The licensee of each station shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a modulation monitor of a type approved by the Commission for nonmultiplex operation: *Provided*, That: (1) If the station is engaged in stereophonic operation as contemplated by § 73.297, the licensee shall have in operation a modulation monitor of a type approved by the Commission for monitoring stereophonic operation, and (2) if the station is engaged in operation with a Subsidiary Communications Authorization, as contemplated by § 73.295, the licensee shall have in operation a modulation monitor of a type approved by the Commission for monitoring SCA operation.

NOTE 1: Approved modulation monitors (nonmultiplex, stereophonic and SCA) are included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment." Copies of this list are available for inspection at the Commission's office in Washington, D.C., and at its field offices.

NOTE 2: The provisions of this subpart shall become effective September 1, 1967, for stereophonic modulation monitors and March 1, 1968, for SCA modulation monitors except that the licensee of any FM broadcast station who purchased and installed a stereophonic or SCA modulation monitor prior to July 5, 1966, which meets in part the requirements of § 73.332 may continue to use such monitor until January 1, 1972.

(b) In the event that the modulation monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) During the period when the station is operated without the modulation monitor the licensee shall provide other suitable means for insuring that the modulation is maintained within the tolerance prescribed in § 73.268.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with § 1.549 of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

[*§ 73.253 amended in III(64)-13; (a) Note 2 amended eff. 5-26-67; III(64)-18*]

§ 73.254 Required transmitter performance.

(a) The construction, installation, operation and performance of the FM broadcast transmitting system shall be in accordance with § 73.317.

(b) The licensee of each FM broadcast station shall make the following equipment performance measurements at least at yearly intervals. (One such set of

measurements shall be made during the four-month period preceding the date of filing application for renewal of station license.)

(1) Audio frequency response from 50 to 15,000 cycles for approximately 25, 50 and 100 percent modulation. Measurements shall be made on at least the following audio frequencies: 50, 100, 400, 1000, 5000, 10,000 and 15,000 cycles. The frequency response measurements should normally be made without de-emphasis; however, standard 75 microsecond deemphasis may be employed in the measuring equipment or system provided the accuracy of the de-emphasis circuit is sufficient to insure that the measured response is within the prescribed limits.

(2) Audio frequency harmonic distortion for 25, 50 and 100 percent modulation for the fundamental frequencies of 50, 100, 400, 1000, and 5000 cycles. Audio frequency harmonics for 100 percent modulation for fundamental frequencies of 10,000 and 15,000 cycles. Measurements shall normally include harmonics to 30,000 cycles. The distortion measurements shall be made employing 75 microsecond deemphasis in the measuring equipment or system.

(3) Output noise level (frequency modulation) in the band of 50 to 15,000 cycles in decibels below the audio frequency level representing a frequency swing of 75 kilocycles. The noise measurements shall be made employing 75 microsecond deemphasis in the measuring equipment or system.

(4) Output noise level (amplitude modulation) in the band of 50 to 15,000 cycles in decibels below the level representing 100 percent amplitude modulation. The noise measurements shall be made employing 75 microsecond deemphasis in the measuring equipment or system. All measurements shall be made with the equipment adjusted for normal program operation and shall include all circuits between the main studio microphone terminals and the antenna output, including telephone lines, preemphasis circuits and any equalizers employed except for microphones, and without compression if a compression amplifier is installed.

(c) The data required by paragraph (b) of this section together with a description of instruments and procedure signed by the engineer making the measurements shall be kept on file at the transmitter and retained for a period of two years and shall be made available during that time upon request to any duly authorized representative of the Federal Communications Commission.

§ 73.255 Auxiliary transmitter.

Upon showing that a need exists for the use of an auxiliary transmitter in addition to the regular transmitter of an FM broadcast station, a license therefor may be issued: *Provided*, That:

(a) An auxiliary transmitter may be installed either at the same location as the main transmitter or at another location.

(b) A licensed operator shall be in control whenever an auxiliary transmitter is placed in operation.

(c) The auxiliary transmitter shall be maintained so that it may be put into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitter.

(2) The transmission of regular programs during maintenance or modification work on the main transmitter, necessitating discontinuance of its operation for a period not to exceed 5 days. (This includes the equipment changes which may be made without authority as set forth elsewhere in the rules and regulations or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.542 of this chapter.)

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitter shall be tested at least once each week to determine that it is in proper operating condition and that it is adjusted to the proper frequency, except that in the case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) of this section is satisfactory. Tests shall be conducted only between midnight and 6 a.m., local standard time. A record shall be kept of the time and result of each test. Such records shall be retained for a period of two years.

(e) The auxiliary transmitter shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitter, but in no event shall it be greater than such power.

§ 73.256 Alternate main transmitters.

The licensee of an FM broadcast station may be licensed for alternate main transmitters provided that a technical need for such alternate transmitters is shown (such as licensees maintaining 24-hour schedule and needing alternate operation for maintenance, or where developmental work requires alternate operation) and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the construction, installation, operation, and performance requirements of § 73.317.

§ 73.257 Changes in equipment and antenna system.

Licensees of FM broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(2) That would result in the external performance of the transmitter being in disagreement with that prescribed in § 73.317.

(b) Specific authority, upon filing formal application (FCC Form 301) therefor, is required for a change in service area or for any of the following changes:

(1) Changes involving an increase or decrease in the power rating of the transmitter.

(2) A replacement of the transmitter as a whole, unless such transmitter is one which may be installed and utilized in accordance with the provisions of § 73.250(a)(5).

(3) Change in the location of the transmitting antenna.

(4) Change in antenna system, including transmission line.

(5) Change in location of main studio, if it is proposed to move the main studio to a different city from that specified in the license.

(6) Change in the power delivered to the antenna.

(7) Change in frequency control and/or modulation system.

(8) Change in the authorized transmitter remote control point(s).

(c) Other changes, except as above provided for in this section or in the Technical Standards of this subpart, may be made at any time without the authority of the Commission: *Provided*, That the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

[*§ 73.257(b)(2) as amended eff. 1-20-64; III(64)-1*]

§ 73.258 Indicating instruments.

(a) Each FM broadcast station shall be equipped with indicating instruments, which conform with the specifications set forth in § 73.320, for measuring the direct plate voltage and current of the last radio stage and the transmission line radio frequency current, voltage or power.

(b) In the event that any one of these indicating instruments becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified immediately after the instrument is found to be defective and immediately after the repaired or replaced instrument has been installed and functioning properly.

(3) If the defective instrument is a plate voltmeter or plate ammeter in the last radio stage, the operating power shall be maintained by means of the radio frequency transmission line meter.

(c) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request may be filed in accordance with § 1.549 of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

TECHNICAL OPERATION AND OPERATORS

§ 73.261 Time of operation.

(a) All FM broadcast stations will be licensed for unlimited time operation. A minimum of 36 hours per week during the hours of 6:00 a.m. to midnight, consisting of not less than 5 hours in any one day, except Sunday, must be devoted to the FM broadcast operation.

(b) In the event that causes beyond a licensee's control make it impossible to adhere to the operating schedule in paragraph (a) of this section or to continue operating, the station may limit or discontinue operation for a period of not more than 10 days, without further authority of the Commission. However, the Commission and the Engineer in Charge of the radio district in which the station is located shall be immediately notified in writing if the station is unable to maintain the minimum operating schedule and shall be subsequently notified when the station resumes regular operation.

[*§ 73.261(a) as amended eff. 12-31-64; III(64)-1*]

§ 73.262 Experimental operation.

The period between 1:00 a.m. and 6:00 a.m., local standard time, may be used for experimental purposes in testing and maintaining apparatus by the licensee of any FM broadcast station on its assigned frequency and not in excess of its authorized power, without specific authorization by the Commission.

§ 73.263 Station inspection.

The licensee of any FM broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 73.264 Station and operator licenses; posting of.

(a) The station license and any other instrument of station authorization shall be posted in a conspicuous place and in such manner that all terms are visible, at the place the licensee considers to be the principal control point of the transmitter. At all other control points listed on the station authorization, a photocopy of the station license and other instruments of station authorization shall be posted.

(b) The original operator license, or FCC Form 759, of each station operator shall be posted at the place where he is on duty as an operator.

§ 73.265 Operator requirements.

(a) One or more radio operators holding a valid radiotelephone first-class operator license, except as provided in paragraph (b) of this section, shall be in actual charge of the transmitting apparatus and shall be on duty either at the transmitter location or remote control point. If operation by remote control has not been authorized, the transmitter shall be readily accessible and clearly visible to the operator at his normal operating position. If operation by remote control is authorized, the control and monitoring equipment shall be readily accessible and clearly visible to the operator at his normal operating position.

(b) In cases where a station is authorized to operate with a transmitter power output not in excess of 25 kilowatts, the routine operation of the transmitter may be performed by an operator holding a valid first-class or second-class radiotelephone or radiotelegraph operator license or a radiotelephone third-class operator permit which has been endorsed for broadcast station operation. The operator shall be on duty at the transmitter or authorized remote control point and in actual charge thereof. Except at times when the operation of the station is under the immediate supervision of an operator holding a valid radiotelephone first-class operator license, adjustments of the transmitter shall be limited to the following:

(1) Those necessary to turn the transmitter on and off.

(2) Adjustments of external controls as may be necessary to compensate for voltage fluctuations in the power supply.

(3) Adjustments of external controls to maintain modulation of the transmitter within prescribed limits. It shall be the responsibility of the licensee to insure that the person who may be required to perform these tasks as well as to perform other duties (such as reading meters and making log entries), is properly instructed so as to be capable of performing the duties required of him at times when not under the immediate supervision of a radiotelephone first-class operator. Where necessary, printed step-by-step instructions shall be posted for those transmitter adjustments which the lesser grade operator is authorized to make. Should the transmitting apparatus be observed to be operating in any manner inconsistent with this subpart or the station's instrument of authorization at any time when an operator holding a valid radiotelephone first-class operator license is not immediately available, and none of the above adjustments is effective in correcting the condition of improper operation, the emissions of the station shall be immediately terminated.

[*§ 73.265(a) and (b) as amended eff. 5-14-65; III(64)-8*]

(c) If the routine operation of the transmitting apparatus at an FM broadcast station is performed by an operator other than a radiotelephone first-class operator pursuant to the provisions of paragraph (b) of this section, the licensee shall either employ one or more operators holding a valid radiotelephone first-class operator license as a full-time member of the station staff or, in the alternative, contract in writing for the services on a part-time basis of one or more such operators. The radiotelephone first-class operator or operators shall perform transmitter maintenance and shall be promptly available at all times to correct conditions of improper operation beyond the scope of authority of the lesser grade operator on duty. If such services are on a contract part-time basis, a signed copy of the agreement shall be kept in the files of the station and at the transmitter or control point and shall be made available for inspection upon request by any authorized representative of the Commission. A signed copy of the agreement shall also be forwarded to the Commission and to the Engineer in Charge of the radio district in which the station is located within 3 days after the agreement is signed.

[*§ 73.265(c) Note deleted eff. 11-26-65; III(64)-11*]

(d) The licensed operator on duty and in charge of an FM broadcast transmitter may at the discretion of the licensee, be employed for other duties or for the operation of another radio station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such other stations: *Provided, however,* That such duties

shall in nowise interfere with the proper operation of the FM broadcast transmitter.

(e) At all FM broadcast stations, a complete inspection of all transmitting equipment in use shall be made by an operator holding a valid radiotelephone first-class operator license at least once each day, 5 days each week, with an interval of no less than 12 hours between successive inspections. This inspection shall include such tests, adjustments, and repairs as may be necessary to insure operation in conformance with the provisions of this subpart and the current instrument of authorization for the station.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318.)

§ 73.266 Facsimile broadcasting and multiplex transmission.

(a) FM broadcast stations may transmit simplex facsimile in accordance with transmission standards set forth in § 73.318 during periods not devoted to FM aural broadcasting. Such transmissions may not exceed one hour during the period between 7 a.m. and midnight (no limit for the hours between midnight and 7 a.m.) and may not be counted toward the minimum operation required by § 73.261. The Commission shall be notified by the licensee of the FM broadcast station of its intent to transmit such facsimile.

(b) FM broadcast stations may, upon securing authorization from the Commission, transmit multiplex facsimile in accordance with transmission standards set forth in § 73.318: *Provided*, That the transmission of such facsimile does not reduce the quality of aural programs simultaneously transmitted by the licensee below that required by the Technical Standards of this subpart and that no degradation of such aural programs will result from such facsimile transmissions when received on FM receivers not equipped with filter or other additional equipment.

§ 73.267 Operating power; determination and maintenance of.

(a) *Determination.* The operating power of each station shall be determined by either the direct or indirect method.

(1) Using the direct method, the power shall be measured at the output terminals of the transmitter while operating into a dummy load of substantially zero reactance and a resistance equal to the transmission line characteristic impedance. The transmitter shall be unmodulated during this measurement. If electrical devices are used to determine the power output, such devices shall permit determination of this power to within an accuracy of ±5 percent of the power indicated by the full scale reading of the electrical indicating instrument of the device. If temperature and coolant flow indicating devices are used to determine the power output, such devices shall permit determination of this power to within an accuracy of 4 percent of measured average power output. During this measurement the direct plate voltage and current of the last radio stage and the transmission line meter shall be read and compared with similar readings taken with the dummy load replaced by the antenna. These readings shall be in substantial agreement.

(2) Using the indirect method, the operating power is the product of the plate voltage (E_p) and the plate current (I_p) of the last radio stage, and an efficiency factor, F, as follows:

$$\text{Operating power} = E_p \times I_p \times F$$

(3) The efficiency factor, F, shall be established by the transmitter manufacturer for each type of transmitter for which he submits data to the Commission, over the entire operating range of powers for which the transmitter is designed, and shall be shown in the instruction books supplied to the customer with each transmitter. In the case of composite equipment, the factor F shall be furnished to the Commission with a statement of the basis used in determining such factor.

(b) *Maintenance.* (1) The operating power shall be maintained as near as practicable to the authorized power and shall not be less than 90 percent nor greater than 105 percent of authorized power except as indicated in paragraph (c) of this section.

(2) When determined by the direct method, the operating power of the transmitter shall be monitored by a transmission line meter which reads proportional to the voltage, current, or power at the output terminals of the transmitter, the meter to be calibrated at intervals not exceeding 6 months. The calibration shall cover, as a minimum, the range from 90 to 105 percent of authorized power and the meter shall provide clear indications which will permit maintaining the operating power within the prescribed tolerance or the meter shall be calibrated to read directly in power units.

(c) *Reduced power.* In the event it becomes technically impossible to operate with authorized power, the station may be operated with reduced power for a period of 10 days or less without further authority of the Commission: *Provided*, That the Commission and the Engineer in Charge of the radio district in which the station is located shall be immediately notified in writing if the station is unable to maintain the minimum operating schedule (specified in § 73.261) with authorized power and shall be subsequently notified upon resumption of operation with authorized power.

§ 73.268 Modulation.

The percentage of modulation shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice. In no case is it to exceed 100 percent on peaks of frequent recurrence. Generally, it should not be less than 85 percent on peaks of frequent recurrence; but where necessary to avoid objectionable loudness modulation may be reduced to whatever level is necessary, even if the resulting modulation is substantially less than 85 percent on peaks of frequent recurrence.

[*§ 73.268 as amended eff. 9–1–65; III(64)–9*]

§ 73.269 Frequency tolerance.

The center frequency of each FM broadcast station shall be maintained within 2000 cycles of the assigned center frequency.

§ 73.270 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of that part.

§ 73.271 Discontinuance of operation.

The licensee of each station shall notify the Commission in Washington, D.C., and the Engineer in Charge of the radio district where such station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D.C., office of the Commission for cancellation.

§ 73.273 Emergency antenna.

In the event it becomes impossible to operate with the regularly authorized antenna, the station may, without further authority, be operated with an emergency antenna for a period of 10 days or less pending necessary repairs: *Provided*, That the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately upon the beginning of such operation and upon the resumption of normal operation.

§ 73.274 Remote control authorization.

(a) Application to operate a station by remote control may be made as a part of the application for construction permit for a new station. Application to operate an authorized station shall be made on FCC Form 301–A.

(b) An authorization for remote control will be issued only after a satisfactory showing has been made including, among other things, the location of the remote control point(s).

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

[*§ 73.274(b) amended eff. 3–22–67; III(64)–17*]

§ 73.275 Remote control operation.

(a) Operation by remote control shall be subject to the following conditions:

(1) The equipment at the operating and transmitting positions shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by the licensee.

(2) The control circuits from the operating position to the transmitter shall provide positive on and off control and shall be such that open circuits, short circuits, grounds or other line faults will not actuate the transmitter and any fault causing loss of such control will automatically place the transmitter in an inoperative position.

(3) A malfunction of any part of the remote control equipment and associated line circuits resulting in improper control or inaccurate meter readings shall be the cause for the immediate cessation of operation by remote control.

(4) Control and monitoring equipment shall be installed so as to allow the licensed operator at the remote control point to perform all the functions in a manner required by the provisions of this part.

(b) All stations, whether operating by remote control or direct control, shall be equipped so as to be able to follow the prescribed procedure set forth in § 73.921(b).

§ 73.276 Permissible transmissions.

(a) No FM broadcast licensee or permittee shall enter into any agreement, arrangement or understanding, oral or written, whereby it undertakes to supply, or receives consideration for supplying, on its main channel a functional music, background music, or other subscription service (including storecasting) for reception in the place or places of business of any subscriber.

(b) The transmission (or interruption) of radio energy in the FM broadcast band is permissible only pursuant to a station license, program test authorization, Subsidiary Communications Authorization (SCA) or other specific authority therefor.

[*§ 73.276 as adopted eff. 12–31–64; III(64)–1*]

OTHER OPERATING REQUIREMENTS

§ 73.281 General requirements relating to logs.

(a) The licensee or permittee of each FM broadcast station shall maintain program, operating, and maintenance logs as set forth in §§ 73.282, 73.283, and 73.284. Each log shall be kept by the station employee or employees (or contract operator) competent to do so, having actual knowledge of the facts required, who in the case of program and operating logs shall sign the appropriate log when starting duty, and again when going off duty.

(b) The logs shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required for the particular class of station concerned is readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log. Each sheet shall be numbered and dated. Time entries shall be either in local standard or daylight saving time and shall be indicated accordingly.

(c) No log or preprinted log or schedule which upon completion becomes a log, or portion thereof, shall be erased, obliterated, or willfully destroyed within the period of retention provided by the provisions of this part. Any necessary correction shall be made only pursuant to §§ 73.282, 73.283 and 73.284, and only by striking out the erroneous portion, or by making a corrective explanation on the log, or attachment to it as provided in those sections.

(d) Entries shall be made in the logs as required by §§ 73.282, 73.283, and 73.284. Additional information such as that needed for billing purposes or for the cuing of automatic equipment may be entered on the logs. Such additional information, so entered, shall not be subject to the restrictions and limitations in the Commission's rules on the making of corrections and changes in logs.

[*§ 73.281 (a), (c), and (d), as amended eff. 2-21-66; III(64)-12*]

§ 73.282 Program log.

(a) The following entries shall be made in the program log:

(1) *For each program.* (i) An entry identifying the program by name or title. The name or title should be included on each page of the log containing entries pertaining to that particular program (i.e., if a program begins on one page of the log and continues on the next page, the title should be repeated.)

(ii) An entry of the time each program begins and ends. If programs are broadcast during which separately identifiable program units of a different type or source are presented, and if the licensee wishes to count such units separately, the beginning and ending time for the longer program need be entered only once for the entire program. The program units which the licensee wishes to count separately shall then be entered underneath the entry for a longer program, with the beginning and ending time of each such unit, and with the entry indented or otherwise distinguished so as to make it clear that the program unit referred to was broadcast within the longer program. For example, a recorded entertainment program from 8 a.m. to 9 a.m. within which a 5-minute newscast is broadcast at 8:30, would be shown as follows:

8:00–9:00:
Morning Record Parade.
8:30–8:35:
News and Weather.

(iii) An entry classifying each program as to type, using the definitions set forth in NOTE 1 at the end of this section.

(iv) An entry classifying each program as to source, using the definitions set forth in NOTE 2 at the end of this section. (For network programs, also give name or initials of network, e.g., ABC, CBS, NBC, Mutual.)

(v) An entry for each program presenting a political candidate, showing the name and political affiliation of such candidate.

(2) *For commercial matter.* (i) An entry identifying (*a*) the sponsor(s) of the program; (*b*) the person(s) who paid for the announcement, or (*c*) the person(s) who furnished the materials or services referred to in § 73.289(d). If the title of a sponsored program includes the name of the sponsor, e.g., XYZ News, a separate entry for the sponsor is not required.

(ii) Commercial continuity. An entry showing the total amount of commercial continuity (CC) within each commercially sponsored program. See NOTE 3 following this section for definition of commercial continuity and NOTE 5 for statement as to computation of commercial time.

(iii) Commercial announcement. An entry showing the duration of each commercial announcement (CA) and an entry which shows either the beginning time of each such announcement or which divides the log to show the 15-minute time segment (beginning on the hour) within which the announcement was broadcast. See Note 3 following this section for definition of commercial announcement and Note 5 for statement as to computation of commercial time.

(iv) An entry showing that the appropriate announcement(s) (sponsorship, furnishing material or

services, etc.) have been made as required by Section 317 of the Communications Act and § 73.289. A checkmark (√) will suffice but shall be made in such a way as to indicate the matter to which it relates.

(3) *For public service announcements.* (i) An entry showing that a public service announcement (PSA) has been broadcast together with the name of the organization or interest on whose behalf it is made. See Note 4 following this section for definition of a public service announcement.

(4) *For other announcements.* (i) An entry of the time that each required station identification announcement is made (call letters and licensed location; see § 73.287).

(ii) An entry for each announcement presenting a political candidate, showing the name and political affiliation of such candidate.

(iii) An entry for each announcement made pursuant to the local notice requirements of §§ 1.580 (pregrant) and 1.594 (designation for hearing) of this chapter, showing the time it was broadcast.

(iv) An entry showing that a mechanical reproduction announcement has been made in accordance with the provisions of § 73.288.

(b) Program log entries may be made either at the time of or prior to broadcast. A station broadcasting the programs of a national network which will supply it with all information as to such programs, commercial matter and other announcements for the composite week need not log such data but shall record in its log the time when it joins the network, the name of each network program broadcast, the sponsor(s), if a commercially sponsored program, the time it leaves the network, and any nonnetwork matter broadcast required to be logged. The information supplied by the network shall be retained with the program logs.

(c) No provision of this section shall be construed as prohibiting the recording or other automatic maintenance of data required for program logs. However, where such automatic logging is used, the licensee must comply with the following requirements:

(1) The licensee, whether employing manual or automatic logging or a combination thereof, must be able accurately to furnish the Commission with all information required to be logged;

(2) Each recording, tape, or other means employed shall be accompanied by a certificate of the operator or other responsible person on duty at the time or other duly authorized agent of the licensee, to the effect that it accurately reflects what was actually broadcast. Any information required to be logged which cannot be incorporated in the automatic process shall be maintained in a separate record which shall similarly be authenticated;

(3) The licensee shall extract any required information from the recording for the days specified by the Commission or its duly authorized representative and submit it in written log form, together with the underlying recording, tape, or other means employed.

(d) Program logs shall be changed or corrected only in the manner prescribed in § 73.281(c) and only in accordance with the following:

(1) *Manually kept log.* Where, in any program log, or preprinted program log, or program schedule which upon completion is used as a program log, a correction is made before the person keeping the log has signed the log upon going off duty, such correction, no matter by whom made, shall be initialed by the person keeping the log prior to his signing of the log when going off duty, as attesting to the fact that the log as corrected is an accurate representation of what was broadcast. If corrections or additions are made on the log after it has been so signed, explanation must be made on the log or on an attachment to it, dated and signed by either the person who kept the log, the station program director or manager, or an officer of the licensee.

NOTE 1. *Program type definitions.* The definitions of the first eight types of programs (a) through (h) are intended not to overlap each other and will normally include all the various programs broadcast. Definitions (i) through (k) are subcategories and the programs classified thereunder will also be classified under one of the appropriate first eight types. There may also be further duplication within types (i) through (k); (e.g., a program presenting a candidate for public office, prepared by an educational institution, would be classified as Public Affairs (PA), Political (POL), and Educational Institution (ED).

(a) Agricultural programs (A) include market reports, farming or other information specifically addressed, or primarily of interest, to the agricultural population.

(b) Entertainment programs (E) include all programs intended primarily as entertainment, such as music, drama, variety, comedy, quiz, etc.

(c) News programs (N) include reports dealing with current local, national, and international events, including weather and stock market reports; and when an integral part of a news program, commentary, analysis, and sports news.

(d) Public affairs programs (PA) include talks, commentaries, discussions, speeches, editorials, political programs, documentaries, forums, panels, round tables, and similar programs primarily concerning local, national, and international public affairs.

(e) Religious programs (R) include sermons or devotionals; religious news; and music, drama, and other types of programs designed primarily for religious purposes.

(f) Instructional programs (I) include programs (other than those classified under Agricultural, News, Public Affairs, Religious, or Sports) involving the discussion of, or primarily designed to further an appreciation or understanding of,

literature, music, fine arts, history, geography, and the natural and social sciences; and programs devoted to occupational and vocational instruction, instruction with respect to hobbies, and similar programs intended primarily to instruct.

(g) Sports programs (S) include play-by-play and pre- or post-game related activities and separate programs of sports instruction, news or information (e.g., fishing opportunities, golfing instructions, etc.).

(h) Other programs (O) include all programs not falling within definitions (a) through (g).

(i) Editorials (EDIT) include programs presented for the purpose of stating opinions of the licensee.

(j) Political programs (POL) include those which present candidates for public office or which give expressions (other than in station editorials) to views on such candidates or on issues subject to public ballot.

(k) Educational Institution programs (ED) include any program prepared by, in behalf of, or in cooperation with, educational institutions, educational organizations, libraries, museums, PTA's, or similar organizations. Sports programs shall not be included.

NOTE 2. *Program source definitions.* (a) A local program (L) is any program originated or produced by the station, or for the production of which the station is primarily responsible, employing live talent more than 50 percent of the time. Such a program, taped or recorded for later broadcast, shall be classified as local. A local program fed to a network shall be classified by the originating station as local. All nonnetwork news programs may be classified as local. Programs primarily featuring records or transcriptions shall be classified as recorded even though a station announcer appears in connection with such material. However, identifiable units of such programs which are live and separately logged as such may be classified as local. (E.g., if during the course of a program featuring records or transcriptions a nonnetwork 2-minute news report is given and logged as a news program, the report may be classified as local.)

(b) A network program (NET) is any program furnished to the station by a network (national, regional or special). Delayed broadcasts of programs originated by networks are classified as networks.

(c) A recorded program (REC) is any program not otherwise defined in this Note including, without limitation, those using recordings, transcriptions, or tapes.

NOTE 3. Definition of commercial matter (CM) includes commercial continuity (network and nonnetwork) and commercial announcements (network and nonnetwork) as follows:

(a) Commercial continuity (CC) is the advertising message of a program sponsor.

(b) A commercial announcement (CA) is any other advertising message for which a charge is made, or other consideration is received.

(1) Included are (i) "bonus spots"; (ii) trade-out spots, and (iii) promotional announcements of a future program where consideration is received for such an announcement or where such announcement identifies the sponsor of a future program beyond mention of the sponsor's name as an integral part of the title of the program. (E.g., where the agreement for the sale of time provides that the sponsor will receive promotional announcements, or when the promotional announcement contains a statement such as "Listen tomorrow for the—[name of program]—brought to you by—[sponsor's name]—.")

(2) Other announcements including but not limited to the following are not commercial announcements:

(i) Promotional announcements, except as heretofore defined in paragraph (b).

(ii) Station identification announcements for which no charge is made.

(iii) Mechanical reproduction announcements.

(iv) Public service announcements.

(v) Announcements made pursuant to § 73.289(d) that materials or services have been furnished as an inducement to broadcast a political program or a program involving the discussion of controversial public issues.

(vi) Announcements made pursuant to the local notice requirements of §§ 1.580 (pre-grant) and 1.594 (designation for hearing) of this chapter.

NOTE 4. *Definition of a public service announcement.* A public service announcement is an announcement for which no charge is made and which promotes programs, activities, or services of Federal, State, or local governments (e.g., recruiting, sales of bonds, etc.) or the programs, activities or services of nonprofit organizations (e.g., UGF, Red Cross Blood Donations, etc.), and other announcements regarded as serving community interests, excluding time signals, routine weather announcements and promotional announcements.

NOTE 5. *Computation of commercial time.* Duration of a recorded announcement shall be stated precisely. As to live announcements, the entry shall be as close an approximation to the time consumed as possible. The amount of commercial time scheduled will usually be sufficient. It is not necessary, for example, to correct an entry of a 20-second commercial to accommodate varying reading speeds even though the actual time consumed might be a few seconds more or less than the scheduled time. However, it is incumbent upon the licensee to ensure that the entry represents as close an approximation of the time actually consumed as possible.

[*§ 73.282 amended in III(64)-9; par. (d) as adopted eff. 2-21-66; III(64)-12*]

§ 73.283 Operating log.

(a) The following entries shall be made in the operating log by the properly licensed operator in actual charge of the transmitting apparatus only:

(1) An entry of the time the station begins to supply power to the antenna and the time it stops.

(2) An entry of each interruption of the carrier wave, where restoration is not automatic, its cause and duration followed by the signature of the person restoring operation (if licensed operator other than the licensed operator on duty).

(3) An entry, at the beginning of operation and at intervals not exceeding one-half hour, of the following (actual readings observed prior to making any adjustments to the equipment) and, when appropriate, an indication of corrections made to restore parameters to normal operating values:

(i) Operating constants of last radio stage (total plate voltage and plate current).

(ii) RF transmission line meter reading.

(iii) Frequency monitor reading.

(4) Any other entries required by the instrument of authorization or the provisions of this part.

(5) The entries required by § 17.38 (a), (b), and (c) of this chapter.

(6) An entry, where applicable, describing the results obtained in determining the pilot subcarrier frequency for stereophonic broadcasting.

(b) Automatic devices accurately calibrated and with appropriate time, date and circuit functions may be utilized to record the entries in the operating log: *Provided,* That:

(1) They do not effect the operation of circuits or accuracy of indicating instruments of the equipment being recorded;

(2) The recording devices have an accuracy equivalent to the accuracy of the indicating instruments;

(3) The calibration is checked against the original indicators at least once a week and the results noted in the maintenance log;

(4) Provision is made to actuate automatically an aural alarm circuit located near the operator on duty if any of the automatic log readings are not within the tolerances or other requirements specified in the rules or instrument of authorization;

(5) Unless the alarm circuit operates continuously, devices which record each parameter in sequence must read each parameter at least once during each 10-minute period and clearly indicate the parameter being recorded;

(6) The automatic logging equipment is located at the remote control point if the transmitter is remotely controlled or at the transmitter location if the transmitter is manually controlled;

(7) The automatic logging equipment is located in the near vicinity of the operator on duty and inspected by him periodically during the broadcast day; and

(8) The indicating equipment conforms to the requirements of § 73.320 except that the scales need not exceed 2 inches in length. Arbitrary scales may not be used.

(c) In preparing the operating log, original data may be recorded in rough form and later transcribed into the log, but in such a case all portions of the original memoranda shall be preserved as a part of the complete log.

(d) Operating logs shall be changed or corrected only in the manner prescribed in § 73.281(c) and only in accordance with the following:

(1) *Manually kept log.* Any necessary corrections in a manually kept operating log shall be made only by the person making the original entry who shall make and initial each correction prior to signing the log when going off duty in accordance with § 73.281(a). If corrections or additions are made on the log after it has been so signed, explanation must be made on the log or on an attachment to it, dated and signed by either the operator who kept the log, the station technical supervisor or an officer of the licensee.

(2) *Automatic logging.* No automatically kept operating log shall be altered in any way after entries have been recorded. Any errors or omissions found in an automatically kept operating log shall be noted and explained in a memorandum signed by the operator on duty (who, under the provisions of paragraph (b)(7) of this section, is required to inspect the automatic equipment) or by the station technical supervisor or an officer of the licensee. Such memorandum shall be affixed to the original log in question.

[*§ 73.283 amended in III(64)–12, as further amended to adopt (a)(6) eff. 7–5–66; III(64)–13*]

§ 73.284 Maintenance log.

(a) The following entries shall be made in the maintenance log:

(1) An entry each week of the time and result of test of auxiliary transmitter.

(2) A notation of all frequency checks and measurements made independently of the frequency monitor and of the correlation of these measurements with frequency monitor indications.

(3) A notation each week of the calibration check of automatic recording devices as required by § 73.283 (b)(3).

(4) An entry of the date and time of removal from and restoration to service of any of the following equipment in the event it becomes defective:

(i) Modulation monitor.

(ii) Frequency monitor.

(iii) Final stage plate voltmeter.

(iv) Final stage plate ammeter.

(v) Transmission line radio frequency voltage, current, or power meter.

(5) Record of tower light inspections where required by § 17.38(d) of this chapter (Part 17—Construction, Marking, and Lighting of Antenna Structures).

(6) Entries shall be made so as to describe fully any experimental operation pursuant to § 73.262.

(7) Any other entries required by the current instrument of authorization of the station and the provisions of this subpart.

(b) Upon completion of the inspection required by § 73.265(e), the inspecting operator shall enter a signed statement that the required inspection has been made, noting in detail the tests, adjustments, and repairs which were accomplished in order to insure operation in accordance with the provisions of this subpart and

the current instrument of authorization of the station. The statement shall also specify the amount of time, exclusive of travel time to and from the transmitter, which was devoted to such inspection duties. If complete repair could not be effected, the statement shall set forth in detail the items of equipment concerned, the manner and degree in which they are defective, and the reasons for failure to make satisfactory repairs.

(c) The inspecting operator shall sign and date the maintenance log at the conclusion of each inspection. In preparing the maintenance log, original data may be recorded in rough form and later transcribed into the log, but in such cases all portions of the memorandum shall be preserved as a part of the complete log.

(d) Any necessary corrections in the maintenance log shall be made only by the inspecting operator who shall initial and date all changes prior to signing the log. If corrections or additions are made on the log after the log has been so signed explanation must be made the subject of a separate memorandum, dated and signed by the operator who made the entry in question or the station technical supervisor or by an officer of the licensee. Such memorandum should explain fully the circumstances surrounding the errors or ambiguities, and shall be affixed to the original log in question. If written and signed by other than the inspecting operator who made the entry, the memorandum shall contain a satisfactory explanation of why such signature is lacking.

[*§ 73.284 as amended eff. 2-21-66; III(64)-12*]

§ 73.285 Retention of logs.

Logs of FM broadcast stations shall be retained by the licensee or permittee for a period of 2 years: *Provided, however*, That logs involving communications incident to a disaster or which include communications incident to or involved in an investgation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further*, That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 73.286 Availability of logs and records.

The following shall be made available upon request by an authorized representative of the Commission:

(a) Program, operating and maintenance logs.

(b) Equipment performance measurements required by § 73.254.

§ 73.287 Station identification.

(a) A licensee of an FM broadcast station shall make separate station identification announcement (call letters and location) for such station: *Provided, however*, That, if the same licensee operates an FM broadcast station and a standard broadcast station and simultaneously broadcasts the same programs over the facilities of both such stations, station identification announcements may be made jointly for both stations for periods of such simultaneous operation. If the call letters of the FM station do not clearly reveal that it is an FM station, the joint announcement shall state that one of the stations is an FM station. Station identification announcement shall be made at the beginning and ending of each time of operation and during operation (1) on the hour and (2) either on the half hour or at the quarter hour following the hour and at the quarter hour preceding the next hour: *Provided,*

(b) Such identification announcement need not be made on the hour when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production of longer duration than 30 minutes. In such cases the identification announcement shall be made at the beginning of the program, at the first interruption of the entertainment continuity, and at the conclusion of the program.

(c) Such identification announcement need not be made on the half hour or quarter hours when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production. In such cases an identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion of the program: *Provided,* That an announcement within 5 minutes of the times specified in paragraph (a) (2) of this section will satisfy the requirements of identification announcements.

(d) In the case of variety show programs, baseball game programs or similar programs of longer duration than 30 minutes, the identification announcement shall be made within 5 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(e) In the case of all other programs, the identification announcement shall be made within 2 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(f) In making the identification announcement the call letters shall be given only on the channel of the station identified thereby except as otherwise provided herein.

§ 73.288 Mechanical reproductions.

(a) No mechanically reproduced program consisting of a speech, news event, news commentator, forum, panel discussion, or special event in which the element of time is of special significance, or any other program in which the element of time is of special significance and presentation of which would create, either intentionally or otherwise, the impression or belief on the part of the listening audience that the event or program being broadcast is in fact occurring simultaneously with the broadcast, shall be broadcast without an appropriate announcement being made either at the beginning or end of such reproduction or at the beginning or end of the program in which such reproduction is used that it is a mechanical reproduction or a mechanically reproduced program: *Provided, however*, That each such program of one minute or less need not be announced as such.

(b) The exact form of identifying announcement is not prescribed, but the language shall be clear and in terms commonly used and understood. Any other program mechanically reproduced or series of mechanical reproductions, including a mechanical reproduction used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of sponsorship of the program proper, need not be announced as provided in paragraph (a) of this section, but the licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

(c) The requirements of paragraph (a) of this section are waived with respect to network programs, transcribed and rebroadcast at a later hour because of the time zone differential between the place where the program originates and where it is rebroadcast, this waiver being applicable whether the off-the-line recording is made by the network itself at one of its key stations or by an individual station, but only when the off-the-line recording is for broadcast at an hour not exceeding the time zone differential between the place where the program originates and where it is rebroadcast. Each station which broadcasts network programs at a later hour in accordance with this waiver shall make an appropriate announcement at least once each day between the hours of 10:00 a.m., and 10:00 p.m., stating that some or all of the network programs which are broadcast by that station are delayed broadcasts by means of transcription. This waiver provision also applies during the annual periods in which daylight saving time will be effective with respect to network programs transcribed and rebroadcast one hour later because of the time differential resulting from the adoption of daylight saving time in some areas.

§ 73.289 Sponsored programs, announcement of.

(a) When an FM broadcast station transmits any matter for which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, such station, the station shall broadcast an announcement that such matter is sponsored, paid for, or furnished, either in whole or in part, and by whom or on whose behalf such consideration was supplied: *Provided, however*, That "service or other valuable consideration" shall not include any service or property furnished without charge or at a nominal charge for use on, or in connection with, a broadcast unless it is so furnished in consideration for an identification in a broadcast of any person, product, service, trademark, or brand name beyond an identification which is reasonably related to the use of such service or property on the broadcast.

(b) The licensee of each FM broadcast station shall exercise reasonable diligence to obtain from its employees, and from other persons with whom it deals directly in connection with any program matter for broadcast, information to enable such licensee to make the announcement required by this section.

(c) In any case where a report (concerning the providing or accepting of valuable consideration by any person for inclusion of any matter in a program intended for broadcasting) has been made to an FM broadcast station, as required by section 508 of the Communications Act of 1934, as amended, of circumstances which would have required an announcement under this section had the consideration been received by such FM broadcast station, an appropriate announcement shall be made by such station.

(d) In the case of any political program or any program involving the discussion of public controversial issues for which any records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which

such material or services are used that such records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such program: *Provided, however,* That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or conclusion of the program.

(e) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received or by whom the material or services referred to in paragraph (d) of this section are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

(f) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for, or furnished, either in whole or in part, or for which material or services referred to in paragraph (d) of this section are furnished, by a corporation, committee, association, or other unincorporated group, the announcement required by this section shall disclose the name of such corporation, committee, association, or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association or other unincorporated group shall be made available for public inspection at the studios or general offices of one of the FM broadcast stations carrying the program in each community in which the program is broadcast.

(g) In the case of broadcast matter advertising commercial products or services, an announcement stating the sponsor's corporate or trade name, or the name of the sponsor's product, when it is clear that the mention of the name of the product constitutes a sponsorship identification, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

(h) The announcements required by section 317(a) of the Communications Act of 1934, as amended, are waived with respect to the broadcast of "want ad" or classified advertisements sponsored by individuals. The waiver granted in this paragraph shall not extend to classified advertisements or want ads sponsored by any form of business enterprise, corporate or otherwise. Whenever sponsorship announcements are omitted pursuant to this paragraph the following conditions shall be observed:

(1) The licensee shall maintain a list showing the name, address, and (where available) the telephone number of each advertiser and shall attach this list to the program log for each day's operation; and

(2) Shall make this list available to members of the public who have a legitimate interest in obtaining the information contained in the list.

(i) Commission interpretations in connection with the provisions of this section may be found in the Commission's Public Notice entitled "Applicability of Sponsorship Identification Rules" (FCC 63-409; 28 F.R. 4732, May 10, 1963) and such supplements thereto as are issued from time to time.

(Sec. 317, 48 Stat. 1089, as amended; 47 U.S.C. 317)

[§ 73.289(h) *redesignated par.* (i) *and a new* (h) *adopted eff. 6-2-67; III(64)-18*]

§ 73.290 Broadcasts by candidates for public office.

(a) *Definitions.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, state or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who—

(1) Has qualified for a place on the ballot or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method, and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all

other such candidates for that office to use such facilities: *Provided*, That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Rates and practices.* (1) The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means direct or indirect. A candidate shall, in each case, be charged no more than the rate the station would charge if the candidate were a commercial advertiser whose advertising was directed to promoting its business within the same area as that encompassed by the particular office for which such person is a candidate. All discount privileges otherwise offered by a station to commercial advertisers shall be available upon equal terms to all candidates for public office.

(2) In making time available to candidates for public office no licensee shall make any discrimination between candidates in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Inspection of records.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests, and the charges made, if any, if request is granted. Such records shall be retained for a period of two years.

NOTE: See § 1.526 of this chapter.

(e) *Time of request.* A request for equal opportunities must be submitted to the licensee within one week of the day on which the prior use occurred.

(f) *Burden of proof.* A candidate requesting such equal opportunities of the licensee, or complaining of non-compliance to the Commission shall have the burden of proving that he and his opponent are legally qualified candidates for the same public office.

(Sec. 315, 48 Stat. 1088, as amended; 47 U.S.C. 315)

[§ 73.290(d) *Note as adopted eff. 5-14-65; III(64)-7*]

§ 73.291 Rebroadcast.

(a) The term "rebroadcast" means reception by radio of the program of a radio station, and the simultaneous or subsequent retransmission of such program by a broadcast station.

NOTE 1: As used in this section, program includes any complete program or part thereof.

NOTE 2: In case a program is transmitted from its point of origin to a broadcast station entirely by telephone facilities in which a section of such transmission is by radio, the broadcastng of this program is not considered a rebroadcast.

(b) The licensee of an FM broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard, FM or noncommercial educational FM broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program. The foregoing requirements concerning notification of call letters and certification of authority shall not apply to a station when rebroadcasting Defense Network (FM) programs. (Blanket authorizations for the rebroadcast of such programs have been filed with the Commission by all Defense Network (FM) stations.)

NOTE: The notice and certification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of a standard or FM broadcast station several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

(c) (1) The licensee of an FM broadcast station located within a State or the District of Columbia may, without further authority of the Commission, rebroadcast on a noncommercial basis a noncommercial program of a United States international broadcast station.

(2) The licensee of an FM broadcast station located in any territory or insular possession of the United States may, without further authority of the Commission, rebroadcast any program of a United States international broadcast station.

(3) In the case of any rebroadcast under the provisions of this paragraph, the Commission shall be notified of the call letters of each station whose program is rebroadcast and the licensee shall certify that express authority has been received from the licensee of the station originating the program.

(d) No licensee of an FM broadcast station shall rebroadcast the program of any United States radio station not designated in paragraph (b) or (c) of this section without written authority having first been obtained from the Commission upon application (informal) accompanied by written consent or certification of consent of the licensee of the station originating the program.

NOTE 1: The broadcasting of a program relayed by a remote pickup broadcast station or an ST broadcast station is not considered a rebroadcast.

NOTE 2: By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 73.291(d) is suspended only insofar as it requires prior written authority of the Commission for the rebroadcasting of programs originated for that express purpose by United States Government radio stations.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

§ 73.292 Lotteries.

(a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of, any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U.S.C. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize, such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question.

(Sec. 1304, 62 Stat. 763, 18 U.S.C. 1304)

§ 73.293 Subsidiary Communications Authorizations.

(a) A FM broadcast licensee or permittee may apply for a Subsidiary Communications Authorization (SCA) to provide limited types of subsidiary services on a multiplex basis. Permissible uses must fall within one or both of the following categories:

(1) Transmission of programs which are of a broadcast nature, but which are of interest primarily to limited segments of the public wishing to subscribe thereto. Illustrative services include: background music; storecasting; detailed weather forecasting; special time signals; and other material of a broadcast nature expressly designed and intended for business, professional, educational, religious, trade, labor, agricultural or other groups engaged in any lawful activity.

(2) Transmission of signals which are directly related to the operation of FM broadcast stations; for example: relaying of broadcast material to other FM and standard broadcast stations; remote cueing and order circuits; remote control telemetering functions associated with authorized STL operation, and similar uses.

(b) Applications for Subsidiary Communications Authorizations shall be submitted on FCC Form 318. An applicant for SCA shall specify the particular nature or purpose of the proposed use.

(c) SCA operations may be conducted without restriction as to time so long as the main channel is programmed simultaneously.

§ 73.294 Nature of the SCA.

(a) The SCA is of a subsidiary or secondary nature and shall not exist apart from the FM license or permit. No transfer or assignment of it shall be made separate from the FM broadcast license, and failure to transfer the SCA (through application on FCC Form 318) with the FM license or permit renders the SCA void. The licensee or permittee must seek renewal of the SCA (on FCC Form 318) at the same time it applies for its renewal of FM license or permit; failure to renew the latter automatically terminates the SCA.

(b) The grant or renewal of an FM license or permit shall not be furthered or promoted by the proposed or past operation under an SCA; the licensee must establish that his broadcast operation is in the public interest wholly apart from the SCA activities. (Violation of rules applicable to the SCA operation would, of course, reflect on the licensee's qualifications to hold its broadcast license or permit.)

§ 73.295 Operation under Subsidiary Communications Authorizations.

(a) Operations conducted under a Subsidiary Communications Authorization (SCA) shall conform to the uses and purposes authorized by the Commission in granting the SCA application. Prior permission to engage in any new or additional activity must be obtained from the Commission pursuant to application therefor.

(b) Superaudible and subaudible tones and pulses may, when authorized by the Commission, be employed by SCA holders to activate and deactivate subscribers' multiplex receivers. The use of these or any other control techniques to delete main channel material is specifically forbidden.

(c) In all arrangements entered into with outside parties affecting SCA operation, the licensee or permittee must retain control over all material transmitted over the station's facilities, with the right to reject any material which it deems inappropriate or undesirable. Subchannel leasing agreements shall be reduced to writing and filed with the Commission pursuant to § 1.613(d) of this chapter.

(d) The logging, announcement, and other requirements imposed by §§ 73.282, 73.283, 73.284, 73.287, 73.288, and 73.289 are not applicable to material transmitted on authorized subcarrier frequencies.

(e) To the extent that SCA circuits are used for the transmission of program material, each licensee or permittee shall maintain a daily program log in which a general description of the material transmitted shall be entered once during each broadcast day: *Provided, however,* That in the event of a change in the general description of the material transmitted, an entry shall be made in the SCA program log indicating the time of each such change and a description thereof.

(f) Each licensee or permittee shall maintain a daily operating log of SCA operation in which the following entries shall be made (excluding subcarrier interruptions of five minutes or less):

(1) Time subcarrier generator is turned on.

(2) Time modulation is applied to subcarrier.

(3) Time modulation is removed from subcarrier.

(4) Time subcarrier generator is turned off.

(5) An entry describing the results obtained in determining the frequency of each SCA subcarrier.

(g) Program and operating logs for SCA operation may be kept on special columns provided on the station's regular program and operating log sheets.

(h) Technical standards governing SCA operation (§ 73.319) shall be observed by all FM broadcast stations engaging in such operation.

(i) The subcarrier frequency of each SCA subcarrier shall be checked as often as necessary to insure that it is kept at all times within 500 cycles per second of the authorized frequency. At least one check shall be made each day. The choice of method of performing the daily frequency check is left to the discretion of the licensee. However, whatever method is used shall be capable of sufficient accuracy to reveal de-

viations of the operating frequency in excess of the 500 cycle per second tolerance.

[*§ 73.295 amended in III(64)–1, as further amended to adopt pars (f)(5) and (i) eff. 7–5–66; eff. date for making measurements under par. (i) stayed until 10–31–66; III(64)–13*]

§ 73.296 Emergency Weather Warnings.

Upon receipt of notification from the United States Weather Bureau, of an Emergency Weather Warning of a condition of immediate danger to life and property, all FM broadcast stations may, at their option, broadcast Emergency Action Notification Signal (two 5-second carrier breaks and 15 seconds of 1,000 CPS tone) followed by the Emergency Weather Warning.

(Sec. 606, 48 Stat. 1104, as amended; 47 U.S.C. 606, E.O. 11092, 28 F.R. 1847)

§ 73.297 Stereophonic broadcasting.

(a) FM broadcast stations may, without further authority, transmit stereophonic programs in accordance with the technical standards set forth in § 73.322: *Provided, however,* That the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified within 10 days of the installation of type-accepted stereophonic transmission equipment or any change therein, and of the commencement of stereophonic programing.

(b) The pilot subcarrier frequency shall be checked as often as necessary to insure that it is kept at all times within the prescribed tolerance. At least one check shall be made each day. The choice of method of performing the daily frequency check is left to the discretion of the licensee. However, whatever method is used shall be capable of sufficient accuracy to reveal deviations of the pilot subcarrier frequency in excess of the prescribed 2-cycle per second tolerance.

[*§ 73.297 as amended eff. 7–5–66; eff. date for making measurements under par. (b) stayed until 10–31–66; III(64)–13*]

§ 73.298 Operation during emergency.

(a) The licensee of an FM broadcast station or the permittee of such a station operating under program test authority is authorized only to disseminate radio communications intended to be received by the public. However, during a period of emergency or imminent emergency in the area in which the station is located such a licensee or permittee may also utilize its station for transmitting communications directly related to the emergency which are intended to be received by specific individuals for the purpose of dispatching aid, assisting in rescue operations or otherwise promoting the safety of life and property or alleviating hardship. In the course of such operation a station may communicate with stations of other classes and in other services. For the purposes of this section, an emergency shall mean a situation that would generally and seriously endanger life and property or cause substantial hardship as a result of events such as hurricane or other severe weather conditions, flood, earthquake or wide-area forest fire. The term shall not include situations resulting from frosts, or localized fires which are not a source of general danger.

(b) The decision to operate under the provisions of this section lies solely with the licensee or permittee of the station, requests by governmental or other officials not being controlling. However, such emergency operation shall terminate upon order of the Commission.

(c) When engaged in operation under the provisions of this section a station shall use the freguency specified in and power not in excess of that specified in its instrument of authorization.

(d) A licensee or permittee operating under the provisions of this section shall (1) as soon as possible after the beginning of such emergency use, send notice to the Commission at Washington, D.C., and to the Engineer in Charge of the district in which the station is located, stating the nature of the emergency and the use to which the station is being put; (2) discontinue such emergency operation as soon as the conditions requiring such operation are no longer present or the public has had an opportunity to be adequately informed; and (3) immediately upon cessation of such emergency operation notify the Commission in Washington, D.C., and the Engineer in Charge of the district in which the station is located, and shall in such notice justify the operation by stating the nature of the emergency, the exact times of operation, the type of emergency information transmitted, the total amount of time devoted to the transmission of emergency information, and other pertinent details.

(e) No operation under this section shall be permitted if an Emergency Action Condition, under the provisions of Subpart G of this part, is in effect. If a station is operating under this section and an Emergency Action Condition is declared, compliance with the Emergency Action Notification shall take precedence.

§ 73.299 Fradulent billing practices.

No licensee of an FM broadcast station shall knowingly issue to any local, regional or national advertiser,

advertising agency, station representative, manufacturer, distributor, jobber or any other party, any bill, invoice, affidavit, or other document which contains false information concerning the amount actually charged by the licensee for the broadcast advertising for which such bill, invoice, affidavit or other document is issued, or which misrepresents the nature, content or quantity of such advertising. Licensees shall exercise reasonable diligence to see that their agents and employees do not issue any documents which would violate this section if issued by the licensee.

NOTE: Commission interpretations in connection with this Rule may be found in a separate Public Notice issued Oct. 22, 1965, entitled "Applicability of Fraudulent Billing Rule." (FCC 65-952.)

[*§ 73.299 as adopted eff. 11-29-65; III(64)-11*]

§ 73.300 Personal attack; political editorials.

(a) When, during the presentation of views on a controversial issue of public importance, an attack is made upon the honesty, character, integrity or like personal qualities of an identified person or group, the licensee shall, within a reasonable time and in no event later than 1 week after the attack, transmit to the person or group attacked (1) notification of the date, time and identification of the broadcast; (2) a script or tape (or an accurate summary if a script or tape is not available) of the attack; and (3) an offer of a reasonable opportunity to respond over the licensee's facilities.

(b) The provisions of paragraph (a) of this section shall be inapplicable to attacks on foreign groups or foreign public figures or where personal attacks are made by legally qualified candidates, their authorized spokesmen, or those associated with them in the campaign, on other such candidates, their authorized spokesman, or persons associated with the candidates in the campaign.

NOTE: In a specific factual situation, the fairness doctrine may be applicable in this general area of political broadcasts. See section 315(a) of the Act (47 U.S.C. 315(a)); public notice: Applicability of the Fairness Doctrine in the Handling of Controversial Issues of Public Importance. 29 F.R. 10415.

(c) Where a licensee, in an editorial, (i) endorses or (ii) opposes a legally qualified candidate or candidates, the licensee shall, within 24 hours after the editorial, transmit to respectively (i) the other qualified candidate or candidates for the same office or (ii) the candidate opposed in the editorial (1) notification of the date and the time of the editorial; (2) a script or tape of the editorial; and (3) an offer of a reasonable opportunity for a candidate or a spokesman of the candidate to respond over the licensee's facilities: *Provided, however*, That where such editorials are broadcast within 72 hours prior to the day of the election, the licensee shall comply with the provisions of this paragraph sufficiently far in advance of the broadcast to enable the candidate or candidates to have a reasonable opportunity to prepare a response and to present it in a timely fashion.

[*§ 73.300 adopted eff. 8-14-67; III(64)-18*]

FM TECHNICAL STANDARDS

§ 73.310 Definitions.

(a) *Frequency modulation.*

Antenna height above average terrain. The average of the antenna heights above the terrain from 2 to 10 miles from the antenna for the eight directions spaced evenly for each 45 degrees of azimuth starting with True North. (In general, a different antenna height will be determined in each direction from the antenna. The average of these various heights is considered the antenna height above the average terrain. In some cases less than eight directions may be used. See § 73.313(d).) Where circular or elliptical polarization is employed, the antenna height above average terrain shall be based upon the height of the radiation center of the antenna which transmits the horizontal component of radiation.

Antenna power gain. The square of the ratio of the root-mean-square free space field strength produced at 1 mile in the horizontal plane, in millivolts per meter for 1 kilowatt antenna input power to 137.6 mv/m. This ratio should be expressed in decibels (db). (If specified for a particular direction, antenna power gain is based on the field strength in that direction only.)

Center frequency. The term "center frequency" means:

(1) The average frequency of the emitted wave when modulated by a sinusoidal signal.

(2) The frequency of the emitted wave without modulation.

Effective radiated power. The term "effective radiated power" means the product of the antenna power (transmitter output power less transmission line loss) times (1) the antenna power gain, or (2) the antenna field gain squared. Where circular or elliptical polarization is employed, the term effective radiated power is applied separately to the horizontal and vertical components of radiation. For allocation purposes, the effective radiated power authorized is the horizonally polarized component of radiation only.

FM broadcast band. The band of frequencies extending from 88 to 108 megacycles per second, which includes those assigned to noncommercial educational broadcasting.

FM broadcast channel. A band of frequencies 200 kc/s wide and designated by its center frequency. Channels for FM broadcast stations begin at 88.1 Mc/s and continue in successive steps of 200 kc/s to and including 107.9 Mc/s.

FM broadcast station. A station employing frequency modulation in the FM broadcast band and licensed primarily for the transmission of radiotelephone

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emissions intended to be received by the general public.

Field strength. The electric field strength in the horizontal plane.

Free space field strength. The field strength that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

Frequency Modulation. A system of modulation where the instantaneous radio frequency varies in proportion to the instantaneous amplitude of the modulating signal (amplitude of modulating signal to be measured after pre-emphasis, if used) and the instantaneous radio frequency is independent of the frequency of the modulating signal.

Frequency swing. The instantaneous departure of the frequency of the emitted wave from the center frequency resulting from modulation.

Multiplex transmission. The term "multiplex transmission" means the simultaneous transmission of two or more signals within a single channel. Multiplex transmission as applied to FM broadcast stations means the transmission of facsimile or other signals in addition to the regular broadcast signals.

Percentage modulation. The ratio of the actual frequency swing to the frequency swing defined as 100 percent modulation, expressed in percentage. For FM broadcast stations, a frequency swing of ±75 kilocycles is defined as 100 percent modulation.

(b) *Stereophonic broadcasting.*

Cross-talk. An undesired signal occurring in one channel caused by an electrical signal in another channel.

FM stereophonic broadcast. The transmission of a stereophonic program by a single FM broadcast station utilizing the main channel and a stereophonic subchannel.

Left (or right) signal. The electrical output of a microphone or combination of microphones placed so as to convey the intensity, time, and location of sounds originating predominately to the listener's left (or right) of the center of the performing area.

Left (or right) stereophonic channel. The left (or right) signal as electrically reproduced in reception of FM stereophonic broadcasts.

Main channel. The band of frequencies from 50 to 15,000 cycles per second which frequency-modulate the main carrier.

Pilot subcarrier. A subcarrier serving as a control signal for use in the reception of FM stereophonic broadcasts.

Stereophonic separation. The ratio of the electrical signal caused in the right (or left) stereophonic channel to the electrical signal caused in the left (or right) stereophonic channel by the transmission of only a right (or left) signal.

Stereophonic subcarrier. A subcarrier having a frequency which is the second harmonic of the pilot subcarrier frequency and which is employed in FM stereophonic broadcasting.

Stereophonic subchannel. The band of frequencies from 23 to 53 kilocycles per second containing the stereophonic subcarrier and its associated sidebands.

(c) *Facsimile.*

Available line. The portion of the total length of scanning line that can be used specifically for picture signals.

Index of cooperation. The product of the number of lines per inch, the available line length in inches, and the reciprocal of the line-use ratio (e.g., 105×8.2×8/7=984).

Line-use ratio. The ratio of the available line to the the total length of scanning line.

Optical density. The logarithm (to the base 10) of the ratio of incident to transmitted or reflected light.

Rectilinear scanning. The process of scanning an area in a predetermined sequence of narrow straight parallel strips.

§ 73.311 Field strength contours.

(a) Applications for FM broadcast authorization must show three field strength contours. These are the 70 dbu (3.16 mv/m), 60 dbu (1 mv/m), and 34 dbu (50 uv/m). These contours indicate only the approximate extent of coverage over average terrain and in the absence of interference. Under actual conditions, the true coverage may vary greatly from these estimates because the terrain over any specific path is expected to be different from the average terrain on which the field strength chart was based. Because of these factors the estimated contours give no assurance of service to any specific percentage of receiver locations within the distances indicated.

(b) The field strength contours provided for in this section shall be considered for the following purposes only:

(1) In the estimation of coverage resulting from the selection of a particular transmitter site by an applicant for an FM broadcast station.

(2) In connection with problems of coverage arising out of application of § 73.240.

(3) In determining compliance with § 73.315(a) concerning the minimum field strength to be provided over the principal community to be served.

[*§ 73.311(b) amended eff. 8-1-66; III(64)-14*]

§ 73.312 Topographic data.

(a) In the preparation of the profile graphs previously described, and in determining the location and height above mean sea level of the antenna site, the elevation or contour intervals shall be taken from United States Geological Survey Topographic Quadrangle Maps, United States Army Corps of Engineers Maps or Tennessee Valley Authority maps, whichever is the latest, for all areas for which such maps are available. If such maps are not published for the area in question, the next best topographic information should be used. Topographic data may sometimes be obtained from state and municipal agencies. The data from the Sectional Aeronautical Charts (including bench marks) or railroad depot elevations and highway elevations from road maps may be used

where no better information is available. In cases where limited topographic data can be obtained, use may be made of an altimeter in a car driven along roads extending generally radially from the transmitter site.

(b) The Commission will not ordinarily require the submission of topographical maps for areas beyond 15 miles from the antenna site, but the maps must include the principal city or cities to be served. If it appears necessary, additional data may be requested.

(c) The U.S. Geological Survey Topography Quadrangle Sheets may be obtained from the U.S. Geological Survey Department of the Interior, Washington, D.C. 20240. The Sectional Aeronautical Charts are available from the U.S. Coast and Geodetic Survey, Department of Commerce, Washington, D.C. 20235. These maps may also be secured from branch offices and from authorized agents or dealers in most principal cities.

[*§ 73.312(c) amended eff. 8–1–66; III(64)–14*]

§ 73.313 Prediction of coverage.

(a) All predictions of coverage made pursuant to this section shall be made without regard to interference and shall be made only on the basis of estimated field strengths.

(b) Predictions of coverage shall be made only for the same purposes as relate to the use of field strength contours as specified in § 73.311.

(c)(1) In predicting the distance to the field strength contours, the F(50,50) field strength chart, Figure 1 of § 73.333, shall be used. The 50 percent field strength is defined as that value exceeded for 50 percent of the time. The F(50,50) chart gives the estimated 50 percent field strengths exceeded at 50 percent of the locations in decibels above 1 microvolt per meter. The chart is based on an effective power of 1 kilowatt radiated from a half-wave dipole in free space, which produces an unattenuated field strength at 1 mile of about 103 db above 1 microvolt per meter (137.6 millivolts per meter).

(2) To use the chart for other powers, the sliding scale associated with the chart should be trimmed and used as the ordinate scale. This sliding scale is placed on the chart with the appropriate gradation for power in line with the horizontal 40 db line on the chart. The right edge of the scale is placed in line with the appropriate antenna height gradations, and the chart then becomes direct reading (in uv/m and in db above 1 uv/m) for this power and antenna height. Where the antenna height is not one of those for which a scale is provided, the signal strength or distance is determined by interpolation between the curves connecting the equidistant scale. Dividers may be used in lieu of the sliding scale. In predicting the distance to the field strength contours, the effective radiated power to be used is that in the horizontal plane in the pertinent direction. In predicting other field strengths over areas not in horizontal plane, the effective radiated power to be used is the power in the direction of such areas; the appropriate vertical plane radiation pattern must, of course, be considered in determining this power.

(d) The antenna height to be used with this chart is the height of the radiation center of the antenna above the average terrain along the radial in question. In determining the average elevation of the terrain, the elevations between 2 and 10 miles from the antenna site are employed. Profile graphs shall be drawn for eight radials beginning at the antenna site and extending 10 miles therefrom. The radials should be drawn for each 45 degrees of azimuth starting with True North. At least one radial must include the principal community to be served even though such community may be more than 10 miles from the antenna site. However, in the event none of the evenly spaced radials include the principal community to be served and one or more such radials are drawn in addition to the eight evenly spaced radials, such additional radials shall not be employed in computing the antenna height above average terrain. Where the 2- to 10-mile portion of a radial extends in whole or in part over a large body of water or extends over foreign territory but the 50 uv/m contour encompasses land area within the United States beyond the 10-mile portion of the radial, the entire 2- to 10-mile portion of the radial shall be included in the computation of antenna height above average terrain. However, where the 50 uv/m contour does not so encompass United States land area and (1) the entire 2- to 10-mile portion of the radial extends over large bodies of water or foreign territory, such radial shall be completely omitted from the computation of antenna height above average terrain, and (2) where a part of the 2- to 10-mile portion of a radial extends over large bodies of water or over foreign territory, only that part of the radial extending from the 2-mile sector to the outermost portion of land area within the United States covered by the radial shall be employed in the computation of antenna height above average terrain. The profile graph for each radial should be plotted by contour intervals of from 40 to 100 feet and, where the data permits, at least 50 points of elevation (generally uniformly spaced) should be used for each radial. In instances of very rugged terrain where the use of contour intervals of 100 feet would result in several points in a short distance, 200- or 400-foot contour intervals may be used for such distances. On the other hand, where the terrain is uniform or gently sloping the smallest contour interval indicated on the topographic map should be used, although only relatively few points may be available. The profile graph should indicate the topography accurately for each radial, and the graphs should be plotted with the distance in miles as the abscissa and the elevation in feet above mean sea level as the ordinate. The profile graphs should indicate the source of the topographical data employed. The graph should also show the elevation of the center of the radiating system. The graph may be plotted

either on rectangular coordinate paper or on special paper which shows the curvature of the earth. It is not necessary to take the curvature of the earth into consideration in this procedure, as this factor is taken care of in the charts showing signal strengths. The average elevation of the 8-mile distance between 2 and 10 miles from the antenna site should then be determined from the profile graph for each radial. This may be obtained by averaging a large number of equally spaced points, by using a planimeter, or by obtaining the median elevation (that exceeded for 50 percent of the distance) in sectors and averaging those values.

(e) In cases where the terrain in one or more directions from the antenna site departs widely from the average elevation of the 2- to 10-mile sector, the prediction method may indicate contour distances that are different from what may be expected in practice. For example, a mountain ridge may indicate the practical limit of service although the prediction method may indicate otherwise. In such cases the prediction method should be followed, but a supplemental showing may be made concerning the contour distances as determined by other means. Such supplemental showing should describe the procedure employed and should include sample calculations. Maps of predicted coverage should include both the coverage as predicted by the regular method and as predicted by a supplemental method. When measurements of area are required, these should include the area obtained by the regular prediction method and the area obtained by the supplemental method. In directions where the terrain is such that negative antenna heights or heights below 100 feet for the 2- to 10-mile sector are obtained, a supplemental showing of expected coverage must be included together with a description of the method employed in predicting such coverage. In special cases, the Commission may require additional information as to terrain and coverage.

§ 73.315 Transmitter location.

(a) The transmitter location shall be chosen so that, on the basis of the effective radiated power and antenna height above average terrain employed, a minimum field strength of 70 decibels above 1 microvolt per meter (dbu), or 3.16 millivolts per meter, will be provided over the entire principal community to be served.

(b) The transmitter location should be as near the center of the proposed service area as possible consistent with the applicant's ability to find a site with sufficient elevation to provide service throughout the area. Location of the antenna at a point of high elevation is necessary to reduce to a minimum the shadow effect on propagation due to hills and buildings which may reduce materially the intensity of the station's signals in a particular direction. The transmitting site should be selected consistent with the purpose of the station, i.e., whether it is intended to serve a small city, a metropolitan area, or a large region. Inasmuch as service may be provided by signals of 1 mv/m or greater field strengths in metropolitan areas, and inasmuch as signals as low as 50 uv/m may provide service in rural areas, considerable latitude in the geographical location of the transmitter is permitted; however, the necessity for a high elevation for the antenna may render this problem difficult. In general, the transmitting antenna of a station should be located at the most central point at the highest elevation available. In providing the best degree of service to an area, it is usually preferable to use a high antenna rather than a lower antenna with increased transmitter power. The location should be so chosen that line-of-sight can be obtained from the antenna over the principal city or cities to be served; in no event should there be a major obstruction in this path.

(c) The transmitting location should be selected so that the 1 mv/m contour encompasses the urban population within the area to be served. It is recognized that topography, shape of the desired service area, and population distribution may make the choice of a transmitter location difficult. In such cases consideration may be given to the use of a directional antenna system, although it is generally preferable to choose a site where a nondirectional antenna may be employed.

(d) In cases of questionable antenna locations it is desirable to conduct propagation tests to indicate the field intensity expected in the principal city or cities to be served and in other areas, particularly where severe shadow problems may be expected. In considering applications proposing the use of such locations, the Commission may require site tests to be made. Such tests should include measurements made in accordance with good engineering practice, and full data thereon must be supplied to the Commission. The test transmitter should employ an antenna having a height as close as possible to the proposed antenna height, using a balloon or other support if necessary and feasible. Information concerning the authorization of site tests may be obtained from the Commission upon request.

(e) Present information is not sufficiently complete to establish "blanket areas" of FM broadcast stations, which are defined as those areas adjacent to the transmitters in which the reception of other stations is subject to interference due to the strong signal from the stations. Where it is found necessary to locate the transmitter in a residential area where blanketing problems may appear to be excessive, the application must include a showing concerning the availability of other sites. The authorization of station construction in areas where blanketing problems appear to be excessive will be on the basis that the applicant will assume full responsibility for the adjustment of reasonable complaints arising from excessively strong signals of the applicant's station.

(f) Cognizance must of course be taken regarding the possible hazard of the proposed antenna structure to aviation and the proximity of the proposed site to

airports and airways. Procedures and standards with respect to the Commission's consideration of proposed antenna structures which will serve as a guide to persons intending to apply for radio station licenses are contained in Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures).

§ 73.316 Antenna systems.

(a) It shall be standard to employ horizontal polarization; however, circular or elliptical polarization may be employed if desired. Clockwise or counterclockwise rotation may be used. The supplemental vertically polarized effective radiated power required for circular or elliptical polarization shall in no event exceed the effective radiated power authorized.

(b) The antenna must be constructed so that it is as clear as possible of surrounding buildings or objects that would cause shadow problems.

(c) *Directional antennas.* A directional antenna is considered to be an antenna that is designed or altered for the purpose of obtaining a noncircular radiation pattern. Directional antennas may not be used for the purpose of reducing minimum mileage separation requirements but may be employed for the purpose of improving service or for the purpose of using a particular site; directional antennas with a ratio of maximum to minimum radiation in the horizontal plane of more than 15 decibels will not be permitted.

(d) *Applications for directional antennas.* Applications proposing the use of directional antenna systems must be accompanied by the following:

(1) Complete description of the proposed antenna system, including:

(i) a description of the means whereby the directivity is proposed to be obtained, and

(ii) the means (such as a rotatable reference antenna) whereby the operational antenna pattern will be determined prior to licensed operation and maintained within proper tolerances thereafter.

(2) Horizontal and vertical plane radiation patterns showing the free space field strength in mv/m at 1 mile and effective radiated power in dbk for each direction. If directivity was computed, the showing shall include the method by which the radiation patterns were computed, including formulae used, sample calculations and tabulations of data. If the directivity was measured, the method employed should be fully described, including the equipment used and the resultant measured data shall be tabulated. Sufficient vertical patterns shall be included to indicate clearly the radiation characteristics of the antenna above and below the horizontal plane. Complete information and patterns shall be provided for angles of $\pm 10°$ from the horizontal plane and sufficient additional information included on that portion of the pattern lying between $+10°$ and the zenith and $-10°$ and the nadir, to conclusively demonstrate the absence of undesirable lobes in these areas. The horizontal plane pattern shall be plotted on polar coordinate paper with reference to True North. The vertical plane pattern shall be plotted on rectangular coordinate paper with reference to the horizontal plane.

(3) Name, address, and qualifications of the engineer making the calculations.

(e) Applications proposing the use of FM broadcast antennas in the immediate vicinity (i. e., 200 feet or less) of (1) other FM broadcast antennas, or (2) television broadcast antennas for frequencies adjacent to the FM broadcast band, must include a showing as to the expected effect, if any, of such proximate operation.

(f) In cases where it is proposed to use a tower of a standard broadcast station as a supporting structure for an FM broadcast antenna, an application for construction permit (or modification of construction permit) for such station must be filed for consideration with the FM application. Applications may be required for other classes of stations when their towers are to be used in connection with FM broadcast stations.

(g) When an FM broadcast antenna is mounted on a nondirectional standard broadcast antenna, new re-

sistance measurements must be made of the standard broadcast antenna after installation and testing of the FM broadcast antenna. During the installation and until the new resistance determination is approved, the standard broadcast station licensee should apply for authority (informal application) to operate by the indirect method of power determination. The FM broadcast license application will not be considered until the application form concerning resistance measurements is filed for the standard broadcast station.

(h) When an FM broadcast antenna is mounted on an element of a standard broadcast directional antenna, a full engineering study concerning the effect of the FM broadcast antenna on the directional pattern must be filed with the application concerning the standard broadcast station. Depending upon the individual case, the Commission may require readjustment and certain field intensity measurements of the standard broadcast station following the completion of the FM broadcast antenna system.

(i) When the proposed FM broadcast antenna is to be mounted on a tower in the vicinity of a standard broadcast directional array and it appears that the operation of the directional antenna system may be affected, an engineering study must be filed with the FM broadcast application concerning the effect of the FM broadcast antenna on the directional pattern. Readjustment and field intensity measurements of the standard broadcast station may be required following construction of the FM broadcast antenna.

(j) Information regarding data required in connection with standard broadcast directional antenna systems may be found in § 73.150 of this chapter. (See also Standard Broadcast Technical Standards.)

(k) If a common tower is used for antenna and/or antenna supporting purposes by two or more licensees or permittees of FM broadcast stations, or by one or more such licensees or permittees and one or more licensees or permittees of any other class or service, each permittee or licensee shall be responsible for painting and illuminating the structure when obstruction marking and lighting are required by the Commission.

[*§ 73.316(k) as amended eff. 9-20-65; III(64)-10*]

(l) It is recommended that an emergency FM broadcast antenna be installed, or, alternately, an auxiliary transmission line or lines if feasible in the particular circumstances. Data thereon should be supplied with the application for construction permit; if proposed after station construction, an informal application should be submitted to the Commission.

(m) When necessary for the protection of air navigation, the antenna and supporting structure shall be painted and illuminated in accordance with the specifications supplied by the Commission pursuant to section 303 (q) of the Communications Act of 1934, as amended.

§ 73.317 Transmitters and associated equipment.

(a) *Electrical performance standards.* The general design of the FM broadcast transmitting system (from input terminals of microphone preamplifier, through audio facilities at the studio, through lines or other circuits between studio and transmitter, through audio facilities at the transmitter, and through the transmitter, but excluding equalizers for the correction of deficiencies in microphone response) shall be in accordance with the following principles and specifications:

(1) The transmitter shall operate satisfactorily in the operating power range with a frequency swing of 75 kilocycles per second, which is defined as 100 percent modulation.

(2) The transmitting system shall be capable of transmitting a band of frequencies from 50 to 15,000 cycles. Preemphasis shall be employed in accordance with the impedance-frequency characteristic of a series inductance-resistance network having a time constant of 75 microseconds. (See Fig. 2 of § 73.333.) The deviation of the system response from the standard preemphasis curve shall lie between two limits

as shown in Figure 2 of § 73.333. The upper of these limits shall be uniform (no deviation) from 50 to 15,000 cycles. The lower limit shall be uniform from 100 to 7,500 cycles, and 3 db below the upper limit; from 100 to 50 cycles the lower limit shall fall from the 3 db limit at a uniform rate of 1 db per octave (4 db at 50 cycles); from 7,500 to 15,000 cycles the lower limit shall fall from the 3 db limit at a uniform rate of 2 db per octave (5 db at 15,000 cycles).

(3) At any modulation frequency between 50 and 15,000 cycles and at modulation percentages of 25, 50, and 100 percent, the combined audio frequency harmonics measured in the output of the system shall not exceed the root-mean-square values given in the following table:

Modulating frequency:	*Distortion percent*
50 to 100 cycles	3.5
100 to 7,500 cycles	2.5
7,500 to 15,000 cycles	3.0

(i) Measurements shall be made employing 75 microsecond deemphasis in the measuring equipment and 75 microsecond preemphasis in the transmitting equipment, and without compression if a compression amplifier is employed. Harmonics shall be included to 30 kc/s.

(ii) It is recommended that none of the three main divisions of the system (transmitter, studio to transmitter circuit, and audio facilities) contribute over one-half of these percentages since at some frequencies the total distortion may become the arithmetic sum of the distortions of the divisions.

(4) The transmitting system output noise level (frequency modulation) in the band of 50 to 15,000 cycles shall be at least 60 decibels below 100 percent modulation (frequency swing of ±75 kilocycles). The measurement shall be made using 400 cycle modulation as a reference. The noise-measuring equipment shall be provided with standard 75 microsecond deemphasis; the ballistic characteristics of the instrument shall be similar to those of the standard VU meter.

(5) The transmitting system output noise level (amplitude modulation) in the band of 50 to 15,000 cycles shall be at least 50 decibels below the level representing 100 percent amplitude modulation. The noise-measuring equipment shall be provided with standard 75-microsecond deemphasis; the ballistic characteristics of the instrument shall be similar to those of the standard VU meter.

(6) Automatic means shall be provided in the transmitter to maintain the assigned center frequency within the allowable tolerance (±2000 cycles).

(7) The transmitter shall be equipped with suitable indicating instruments for the determination of operating power and with other instruments as are necessary for proper adjustment, operation, and maintenance of the equipment (see § 73.320).

(8) Adequate provision shall be made for varying the transmitter output power to compensate for excessive variations in line voltage or for other factors affecting the output power.

(9) Adequate provision shall be provided in all component parts to avoid overheating at the rated maximum output power.

(10) Means should be provided for connection and continuous operation of approved frequency and modulation monitors.

(11) If a limiting or compression amplifier is employed, precaution should be maintained in its connection in the circuit due to the use of preemphasis in the transmitting system.

(12) Any emission appearing on a frequency removed from the carrier by between 120 kc/s and 240 kc/s, inclusive, shall be attenuated at least 25 decibels below the level of the unmodulated carrier. Compliance with this specification will be deemed to show the occupied bandwith to be 240 kc/s or less.

(13) Any emission appearing on a frequency removed from the carrier by more than 240 kc/s and up

to and including 600 kc/s shall be attenuated at least 35 db below the level of the unmodulated carrier.

(14) Any emission appearing on a frequency removed from the carrier by more than 600 kc/s shall be attenuated at least 43+ 10 Log_{10} (Power, in watts) decibels below the level of the unmodulated carrier, or 80 decibels, whichever is the lesser attenuation.

(b) *Construction.* In general, the transmitter shall be constructed either on racks and panels or in totally enclosed frames protected as required by article 810 of the National Electrical Code (Section 8192 (a), (b), and (c)), and as set forth below:

(1) Means shall be provided for making all tuning adjustments, requiring voltages in excess of 350 volts to be applied to the circuit, from the front of the panels with all access doors closed.

(2) Proper bleeder resistors or other automatic means shall be installed across all capacitor banks to lower any voltage which may remain accessible with access door open to less than 350 volts within 2 seconds after the access door is opened.

(3) All plate supply and other high voltage equipment, including transformers, filters, rectifiers and motor generators, shall be protected so as to prevent injury to operating personnel.

(i) Commutator guards shall be provided on all high voltage rotating machinery. Coupling guards should be provided on motor generators.

(ii) Power equipment and control panels of the transmitter shall meet the above requirements (exposed 220 volt AC switching equipment on the front of the power control panels is not recommended but is not prohibited).

(iii) Power equipment located at a broadcast station but not directly associated with the transmitter (not purchased as part of same), such as power distribution panels, are not under the jurisdiction of the Commission; therefore § 73.254 does not apply.

(4) Metering equipment:

(i) All instruments having more than 1,000 volts potential to ground on the movement shall be protected by a cage or cover in addition to the regular case. (Some instruments are designed by the manufacturer to operate safely with voltages in excess of 1,000 volts on the movement. If it can be shown by the manufacturer's rating that the instrument will operate safely at the applied potential, additional protection is not necessary.)

(ii) In case the plate voltmeter is located on the low potential side of the multiplier resistor with the potential of the high potential terminal of the instrument at or less than 1,000 volts above ground, no protective case is required. However, it is good practice to protect voltmeters subject to more than 5,000 volts with suitable over-voltage protective devices across the instrument terminals in case the winding opens.

(iii) Transmission line meters and any other radio frequency instrument which may be necessary for the operator to read shall be so installed as to be easily and accurately read without the operator having to risk contact with circuits carrying high potential radio frequency energy.

(5) It is recommended that component parts comply as much as possible with the component specifications designated by the Army-Navy Electronics Standards Agency.

(c) *Wiring and shielding.* (1) The transmitter panels or units shall be wired in accordance with standard switchboard practice, either with insulated leads properly cabled and supported or with rigid bus bar properly insulated and protected.

(2) Wiring between units of the transmitter, with the exception of circuits carrying radio frequency energy, shall be installed in conduits or approved fiber or metal raceways for protection from mechanical injury.

(3) Circuits carrying radio frequency energy between units shall be coaxial, two wire balanced lines, or properly shielded.

(4) All stages or units shall be adequately shielded and filtered to prevent interaction and radiation.

(5) The frequency and modulation monitors and associated radio frequency lines to the transmitter shall be thoroughly shielded.

(d) *Installation.* (1) The installation shall be made in suitable quarters.

(2) Since an operator must be on duty at the transmitter control point during operation, suitable facilities for his welfare and comfort shall be provided at the control point.

(e) *Other technical data.* An accurate circuit diagram, as furnished by the manufacturer of the equipment, shall be retained at the transmitter location.

(f) *Operation.* In addition to specific requirements of the rules governing FM broadcast stations, the following operating requirements are specified:

(1) The maximum percentage of modulation shall be maintained in accordance with § 73.268. However, precautions shall be taken so as not to substantially alter the dynamic characteristics of musical programs.

(2) The station equipment shall be so operated, tuned, and adjusted that emissions outside of the authorized channel do not cause harmful interference to the reception of other radio stations. FM broadcast stations employing transmitters type accepted after January 1, 1960, shall maintain the bandwidth occupied by their emissions in accordance with the specifications set forth in paragraph (a) of this section. Stations employing transmitters installed or type accepted prior to January 1, 1960, shall achieve the highest degree of compliance practicable with their existing equipment. In either case, should harmful interference to the reception of other radio stations occur, the licensee may be required to take such further steps as may be necessary to eliminate the interference.

(3) If a limiting or compression amplifier is employed, care should be maintained in its use due to preemphasis in the transmitting system.

(g) *Studio equipment.* (1) Studio equipment shall be subject to all the above requirements where applicable except as follows:

(i) If properly covered by an underwriter's certificate, it will be considered as satisfying safety requirements.

(ii) Section 8192 of article 810 of the National Electrical Code shall apply for voltages only in excess of 500 volts.

(2) No specific requirements are made with regard to the microphones to be employed. However, microphone performance (including compensating networks, if employed) shall be compatible with the required performance of the transmitting system.

(3) No specific requirements are made relative to the design and acoustical treatment of studios. However, the design of studios, particularly the main studio, shall be compatible with the required performance characteristics of FM broadcast stations.

§ 73.318 Facsimile: engineering standards.

The following standards apply to facsimile broadcasting under § 73.266:

(a) Rectilinear scanning shall be employed, with scanning spot progressing from left to right and scanned lines progressing from top to bottom of subject copy.

(b) The standard index of cooperation shall be 984.

(c) The number of scanning lines per minute shall be 360.

(d) The line-use ratio shall be ⅞, or 315° of the full scanning cycle.

(e) The ⅛ cycle or 45° not included in the available scanning line shall be divided into 3 equal parts, the first 15° being used for transmission at approximately white level, the second 15° for transmission at approximately black level, and the third 15° for transmission at approximately white level.

(f) An interval of not more than 12 seconds shall be available between two pages of subject copy, for the transmission of a page-separation signal and/or other services.

(g) Amplitude or frequency (frequency-shift) modulation of the subcarrier shall be used.

(h) Subcarrier modulation shall normally vary approximately linearly with the optical density of the subject copy.

(i) Negative modulation shall be used, i. e., for amplitude modulation of subcarrier, maximum subcarrier amplitude and maximum radio frequency swing on black; for frequency modulation of subcarrier, highest instantaneous frequency of subcarrier on black.

(j) Subcarrier noise level shall be maintained at least 30 db below maximum (black) picture modulation level, at the radio transmitter input.

(k) The facsimile subcarrier transmission shall be conducted in the frequency range between 22 and 28 kilocycles. Should amplitude modulation of the subcarrier be employed the subcarrier frequency shall be 25 kilocycles with sidebands extending not more than 3 kilocycles in either direction from the subcarrier frequency. Should frequency modulation of the subcarrier be employed the total swing of the subcarrier shall be within the range from 22 to 28 kilocycles, with 22 kilocycles corresponding to white and 28 kilocycles corresponding to black on the transmitted copy. In multiplex operation the modulation of the FM carrier by the modulated subcarrier shall not exceed 5 percent. In simplex operation the modulation of the FM carrier by the modulated subcarrier shall not exceed 30 percent.

(l) During periods of multiplex facsimile transmission, frequency modulation of the FM carrier caused by the aural signals shall, in the frequency range from 20 to 30 kilocycles, be at least 60 db below 100 percent modulation. Frequency modulation of the FM carrier caused by the facsimile signals shall, in the frequency range from 50 to 15,000 cycles, be at least 60 db below 100 percent modulation.

§ 73.319 Subsidiary communications multiplex operations: engineering standards.

(a) Frequency modulation of SCA subcarriers shall be used.

(b) The instantaneous frequency of SCA subcarriers shall at all times be within the range 20 to 75 kilocycles: *Provided, however,* That when the station is engaged in stereophonic broadcasting pursuant to § 73.297, the instantaneous frequency of SCA subcarriers shall at all times be within the range 53 to 75 kilocycles.

(c) The arithmetic sum of the modulation of the main carrier by SCA subcarriers shall not exceed 30 percent: *Provided, however,* That when the station is engaged in stereophonic broadcasting pursuant to § 73.297, the arithmetic sum of the modulation of the main carrier by the SCA subcarriers shall not exceed 10 percent.

(d) The total modulation of the main carrier, including SCA subcarriers, shall meet the requirements of § 73.268.

(e) Frequency modulation of the main carrier caused by the SCA subcarrier operation shall, in the frequency range 50 to 15,000 cycles, be at least 60 db below 100 percent modulation: *Provided, however,* That when the station is engaged in stereophonic broadcasting pursuant to § 73.297, frequency modulation of the main carrier by the SCA subcarrier operation shall, in the frequency range 50 to 53,000 cycles, be at least 60 db below 100 percent modulation.

[*§ 73.319 amended by deletion of the Note following par. (c) eff. 7-5-66; III(64)-13*]

§ 73.320 Indicating instruments—specifications.

The following requirements and specifications shall apply to indicating instruments used by FM broadcast stations:

(a) Instruments indicating the plate current or plate voltage of the last radio stage (linear scale instruments) shall meet the following specifications:

(1) Length of scale shall be not less than 2 3/10 inches.

(2) Accuracy shall be at least 2 percent of the full scale reading.

(3) Scale shall have at least 40 divisions.

(4) Full scale reading shall not be greater than five times the minimum normal indication.

(b) Instruments indicating transmission line current or voltage shall meet the following specifications:

(1) Instruments having linear scales shall meet the requirements of paragraph (a) (1), (2), (3), and (4) of this section.

(2) Instruments having logarithmic or square law scales:

(i) Shall meet the requirements of paragraph (a) (1) and (2) of this section for linear scale instruments.

(ii) Full scale reading shall not be greater than three times the minimum normal indication.

(iii) No scale division above one-third full scale reading shall be greater than one-thirtieth of the full scale reading.

(c) Radio frequency instruments having expanded scales:

(1) Shall meet the requirements of paragraph (a) (1), (2), and (4) of this section for linear scale instruments.

(2) No scale division above one-fifth full scale reading shall be greater than one-fiftieth of the full scale reading.

(3) The meter face shall be marked with the words "Expanded scale" or the abbreviation thereof (E.S.).

(d) No required instrument, the accuracy of which is questionable, shall be employed. Repairs and recalibration of instruments shall be made by the manufacturer, or by an authorized instrument repair service of the manufacturer, or by some other properly qualified and equipped instrument repair service. In any event the repaired instrument must be supplied with a certificate of calibration.

(e) [Reserved]

(f) The function of each instrument used in the equipment shall be clearly and permanently shown on the instrument itself or on the panel immediately adjacent thereto.

§ 73.321 Auxiliary transmitters.

Auxiliary transmitters may not exceed the power rating or operating power range of the main transmitter, but need not conform to the performance characteristics specified by § 73.317 (a) (2) to (a) (5) inclusive. The subsequent portions of § 73.317 apply to auxiliary transmitters.

§ 73.322 Stereophonic transmission standards.

(a) The modulating signal for the main channel shall consist of the sum of the left and right signals.

(b) A pilot subcarrier at 19,000 cycles plus or minus 2 cycles shall be transmitted that shall frequency modulate the main carrier between the limits of 8 and 10 percent.

(c) The stereophonic subcarrier shall be the second harmonic of the pilot subcarrier and shall cross the time axis with a positive slope simultaneously with each crossing of the time axis by the pilot subcarrier.

(d) Amplitude modulation of the stereophonic subcarrier shall be used.

(e) The stereophonic subcarrier shall be suppressed to a level less than one percent modulation of the main carrier.

(f) The stereophonic subcarrier shall be capable of accepting audio frequencies from 50 to 15,000 cycles.

(g) The modulating signal for the stereophonic subcarrier shall be equal to the difference of the left and right signals.

(h) The pre-emphasis characteristics of the stereophonic subchannel shall be identical with those of the main channel with respect to phase and amplitude at all frequencies.

(i) The sum of the side bands resulting from amplitude modulation of the stereophonic subcarrier shall not cause a peak deviation of the main carrier in excess of 45 percent of total modulation (excluding SCA subcarriers) when only a left (or right) signal exists; simultaneously in the main channel, the deviation when only a left (or right) signal exists shall not exceed 45 percent of total modulation (excluding SCA subcarriers).

(j) Total modulation of the main carrier including pilot subcarrier and SCA subcarriers shall meet the requirements of § 73.268 with maximum modulation of the main carrier by all SCA subcarriers limited to 10 percent.

(k) At the instant when only a positive left signal is applied, the main channel modulation shall cause an upward deviation of the main carrier frequency; and the stereophonic subcarrier and its sidebands signal shall cross the time axis simultaneously and in the same direction.

(l) The ratio of peak main channel deviation to peak stereophonic subchannel deviation when only a steady state left (or right) signal exists shall be within plus or minus 3.5 percent of unity for all levels of this signal and all frequencies from 50 to 15,000 cycles.

(m) The phase difference between the zero points of the main channel signal and the stereophonic subcarrier sidebands envelope, when only a steady state left (or right) signal exists, shall not exceed plus

or minus 3 degrees for audio modulating frequencies from 50 to 15,000 cycles.

NOTE: If the stereophonic separation between left and right stereophonic channels is better than 29.7 decibels at audio modulating frequencies between 50 and 15,000 cycles, it will be assumed that paragraphs (l) and (m) of this section have been complied with.

(n) Cross-talk into the main channel caused by a signal in the stereophonic subchannel shall be attenuated at least 40 decibels below 90 percent modulation.

(o) Cross-talk into the stereophonic subchannel caused by a signal in the main channel shall be attenuated at least 40 decibels below 90 percent modulation.

(p) For required transmitter performance, all of the requirements of § 73.254 shall apply with the exception that the maximum modulation to be employed is 90 percent (excluding pilot subcarrier) rather than 100 percent.

(q) For electrical performance standards of the transmitter and associated equipment, the requirements of § 73.317(a) (2), (3), (4), and (5) shall apply to the main channel and stereophonic subchannel alike, except that where 100 percent modulation is referred to, this figure shall include the pilot subcarrier.

§ 73.330 Frequency and modulation monitors at auxiliary transmitters.

(a) The following shall govern the installation of approved frequency and modulation monitors at auxiliary transmitters of FM broadcast stations in compliance with these rules:

(1) In case the auxiliary transmitter location is at a site different from that of the main transmitter, an approved frequency monitor shall be installed at the auxiliary transmitter except when the frequency of the auxiliary transmitter can be monitored by means of the frequency monitor at the main transmitter. When the auxiliary transmitter is operated without a frequency monitor under this exemption, it shall be monitored by means of the frequency monitor at the main transmitter.

(2) The licensee will be held strictly responsible for any center frequency deviation of the auxiliary transmitter in excess of 2,000 cycles from the assigned frequency, even though exempted by the above from installing an approved frequency monitor.

(3) Installation of an approved modulation monitor at the location of the auxiliary transmitter, when different from that of the main transmitter, is optional with the licensee. However, when it is necessary to operate the auxiliary transmitter beyond two calendar days, a modulation monitor shall be installed and operated at the auxiliary transmitter. The monitor (if taken from the main transmitter) shall be reinstalled at the main transmitter immediately upon resumption of operation of the main transmitter.

(4) In all cases where the auxiliary transmitter and the main transmitter have the same location, the same frequency and modulation monitors may be used for monitoring both transmitters, provided they are so arranged as to be readily switched from one transmitter to the other.

§ 73.331 Requirements for type approval of frequency monitors.

(a) *General requirements.* (1) Any manufacturer desiring to submit a monitor for type approval shall supply the Commission with full specification details (two sworn copies) as well as the test data specified in paragraph (c) of this section. If this information appears to meet the requirements of the rules, shipping instructions will be issued to the manufacturer. The shipping charges to and from the Laboratory at Laurel, Maryland, shall be paid for by the manufacturer. Approval of a monitor will only be given on the basis of the data obtained from the sample monitor submitted to the Commission for test.

(2) In approving a monitor upon the basis of the tests conducted by the Laboratory, the Commission merely recognizes that the type of monitor has the inherent capability of functioning in compliance with the rules, if properly constructed, maintained, and operated. The Commission realizes that the frequency monitor may have limited range over which the visual indicator will determine deviations. Accordingly, it may be necessary that adjunct equipment be used to determine major deviations.

(3) Additional rules with respect to withdrawal of type approval, modification of type approval equipment and limitations of the findings upon which type approval is based are set forth in Part 2, Subpart F, of this chapter.

(b) *General specifications.* The general specifications that frequency monitors shall meet before they will be approved by the Commission are as follows:

(1) The unit shall have an accuracy of at least ±1000 cycles under ordinary conditions (temperature, humidity, power supply variations and other conditions which may affect its accuracy) encountered in FM broadcast stations throughout the United States, for any channel within the FM broadcast band.

(2) The range of the indicating device shall be at least from 2000 cycles below to 2000 cycles above the assigned center frequency.

(3) The scale of the indicating device shall be so calibrated as to be accurately read within at least 100 cycles.

(4) Means shall be provided for adjustment of the monitor indication to agree with an external standard.

(5) The monitor shall be capable of continuous operation and its circuit shall be such as to permit continuous monitoring of the transmitter center frequency.

(6) Operation of the monitor shall have no deleterious effect on the operation of the transmitter or the signal emitted therefrom.

(c) *Tests to be made for approval of FM broadcast frequency monitors.* The manufacturer of a monitor shall submit data on the following at the time of requesting approval:

(1) Constancy of oscillator frequency as measured several times in 1 month.

(2) Constancy of oscillator frequency when subjected to vibration tests which would correspond to the treatment received in shipping, handling and installing the instrument.

(3) Accuracy of readings of the frequency deviation instrument.

(4) Functioning of frequency adjustment device.

(5) Effects on frequency and readings, of the changing of tubes, of voltage variations, and of variations of room temperature through a range not to exceed 10° to 40° C.

(6) Response of indicating instrument to small changes of frequency.

(7) General information on the effect of tilting or tipping or other tests to determine ability of equipment to withstand shipment.

(d) Various other tests may be made or required, such as effects of variation of input from the transmitter depending upon the character of the apparatus.

(e) Tests shall be conducted in such a manner as to approximate actual operating conditions as nearly as possible. The equipment under test shall be operated on any channel in the FM broadcast band.

§ 73.332 Requirements for type approval of modulation monitors.

(a) Any manufacturer desiring to submit a monitor for type approval shall supply the Commission with full specification details (two sworn copies) specified in paragraph (b) of this section. If this information appears to meet the requirements of the rules, shipping instructions will be issued to the manufacturer. The shipping charges to and from the Laboratory at Laurel, Maryland, shall be paid for by the manufacturer. Approval of a monitor will only be given on the basis of the data obtained from the sample monitor submitted to the Commission for test.

(1) In approving a monitor upon the basis of the tests conducted by the Laboratory, the Commission merely recognizes that the type of monitor has the inherent capability of functioning in compliance with the rules, if properly constructed, maintained and operated.

(2) Additional rules with respect to withdrawal of type approval, modification of type approval equipment and limitations on the findings upon which type approval is based are set forth in Part 2, Subpart F, of this chapter.

(b) The specifications that a non-multiplex modulation monitor shall meet before it will be approved by the Commission are as follows:

(1) A means for insuring that the transmitter input to the modulation monitor is proper.

(2) A modulation peak indicating device that can be set at any predetermined value from 50 to 120 percent modulation (±75 kc/s swing is defined as 100 percent modulation) and for either positive or negative swings (i. e., either above or below transmitter center frequency).

(3) A semi-peak indicator with a meter having the characteristics given below shall be used with a circuit such that peaks of modulation of duration between 40 and 90 milliseconds are indicated to 90 percent of full value and the discharge rate adjusted so that the pointer returns from full reading to 10 percent of zero within 500 to 800 milliseconds. A switch shall be provided so that this meter will read either positive or negative swings.

(i) The characteristics of the indicating meter are: (*a*) *Damping factor.* The damping factor shall be between 16 and 200. (*b*) *Scale.* The meter scale shall be similar in appearance to that of a standard VU meter. The scale length between 0 and 100 percent modulation markings should be at least 2.3 inches. In addition to other markings a small mark for 133 percent modulation and designated as such should be included for the purpose of testing transmitters with 100 kc/s swing.

(4) The accuracy of reading of percentage of modulation shall be within ±5 percent modulation percentage at any percentage of modulation up to 100 percent modulation.

(5) The frequency characteristic curve shall not depart from a straight line more than ±½ db from 50 to 15,000 cycles. Distortion shall be kept to a minimum.

(6) The monitor shall not absorb appreciable power from the transmitter.

(7) Operation of the monitor shall have no deleterious effect on the operation of the transmitter.

(8) General design, construction, and operation shall be in accordance with good engineering practice.

(c) The modulation monitor may be a part of the frequency monitor.

(d) The specifications that a modulation monitor shall meet before it will be type approved for monitoring stereophonic operation are as follows:

(1) A means for measuring the modulation percentage of the carrier produced by the main channel signal. For this purpose the instrument shall comply with the provisions of paragraph (b) of this section except that no peak preset indicator need be provided, and the accuracy indication shall be ± 5 percent in modulation percentage for all frequencies from 50 to 15,000 cycles per second. The frequency characteristic, in addition to satisfying the modulation accuracy requirement, must be such that the attenuation at 19 kilocycles per second shall be at least 26 decibels, and the attenuation at 23 kilocycles per second and above shall be at least 46 decibels. These ratios are with respect to the minimum response in the frequency range 50 to 15,000 cycles per second.

(2) A means for measuring the modulation percentage of the carrier produced by the stereophonic subcarrier (38 kilocycles per second) and its sidebands. For this purpose the instrument shall comply with the provisions of paragraph (b) of this section except that no peak preset indicator need be provided and the accuracy of the indication shall be within ±5 percent in modulation percentage for frequencies 23 to 53 kilocycles per second. The frequency characteristic, in addition to satisfying the modulation accuracy requirement, must be such that the attenuation at 19 kilocycles per second and 57 kilocycles per second be at least 26 decibels, and at least 46 decibels at 15 kilocycles per second and below, and 59 kilocycles per second and above. All these ratios are with respect to the minimum response in the band from 23 to 53 kilocycles per second.

(3) A means for measuring the modulation percentage of the carrier by the pilot subcarrier (19 kilocycles per second). For this purpose the indicating meter shall have a scale with length of at least 2.3 inches. Markings shall be provided for 6 percent, 8 percent, 10 percent, and 12 percent modulation with the range between 6 percent and 12 percent occupying at least 50 percent of this scale length. The accuracy of reading at the 8 percent and 10 percent limits shall be ±½ percent in modulation percentage.

(4) A means for measuring total modulation percentage of the carrier by the main channel, stereophonic subchannel, pilot subcarrier, and all SCA subcarriers simultaneously. For this purpose the instrument shall comply with the provisions of paragraph (b) of this section except that the frequency characteristic shall not have more than a one decibel difference for any frequencies from 50 cycles per second to 75 kilocycles per second. The accuracy of the modulation percentage reading must hold when the modulation consists of complete composite stereophonic signals (main channel, pilot subcarrier and stereophonic subchannel). Left and right signals used to produce this composite signal shall include sinusoidal tones from 50 to 15,000 cycles per second. The peak preset indicator must also respond correctly to tone bursts at repetition rates from one to ten bursts per second with the following composition of the bursts: (i) Ten consecutive cycles of a constant amplitude 10,000 cycles per second sinusoid; and (ii) five consecutive cycles of a constant amplitude 1,000 cycles per second sinusoid. In addition, each response of the peak preset indicator shall persist for a minimum of 2 and a maximum of 4 seconds and be independent of the direction of frequency deviation.

(5) A means for measuring individually the amplitudes of the left and the right stereophonic channels. For this purpose the instrument shall have, for all frequencies in the range 50 to 15,000 cycles per second:

(i) A frequency characteristic permitting a 1 decibel maximum variation.

(ii) A harmonic distortion of 1 percent or less.

(iii) A capability of reading stereophonic channel separation of at least 35 decibels with an accuracy of ±3 decibels.

(iv) An internal means of ensuring that the proper phase relationship exists between the incoming 19 kilocycles per second pilot carrier and regenerated stereophonic subcarrier in the monitor.

(6) A means for accurately indicating cross talk from the main channel and SCA operation into the stereophonic subchannel, and from the stereophonic subchannel into the main channel. (With stereophonic operation, SCA operation shall be considered as from 59 to 75 kilocycles per second.) For this purpose the monitor must have:

(i) A provision for indicating a cross talk ratio of at least 70 decibels.

(ii) A characteristic not exceeding 46 decibels of internal cross talk for any single main channel signal or for any single stereophonic subchannel signal that modulates the main carrier 90 percent.

(iii) A characteristic not exceeding 66 decibels of internal cross talk (with respect to 100 percent modu-

lation) for any SCA operation from 59 to 75 kilocycles per second that modulates the main carrier 10 percent. The SCA cross talk shall be evaluated for the main channel frequency range from 50 to 15,000 cycles per second and the stereophonic subchannel range from 23,000 to 53,000 cycles per second.

NOTE: The meaning of "accurately" appropriate for application of this subparagraph is a matter for future consideration.

(7) The requirements of subparagraphs (5) and (6) of this paragraph contemplate the use of sinusoidal test signals.

(8) A means for accurately indicating a suppression of the stereophonic subcarrier of at least 46 decibels with respect to 100 percent modulation of the carrier. The means must be valid for 90 percent subchannel modulation for signals from 5,000 to 15,000 cycles per second.

(9) When signals are brought out for external metering or monitoring, they shall have all the characteristics stipulated for internal metering purposes, and any loading by external circuitry shall have no effect on the monitor's indications.

(e) The stereophonic subchannel modulation display may be a part of the main channel modulation display. However, if switching of functions is utilized, the peak preset indicator of total modulation must be independent of this switching and afford a continuous display of total modulation.

(f) The specifications that a modulation monitor shall meet before it will be type approved for monitoring SCA operation are as follows:

(1) A means for measuring the modulation percentage of the carrier produced by the main channel signal. For this purpose the instrument shall comply with the provisions of paragraph (b) of this section except that no peak preset indicator need be provided, and the accuracy of indication shall be ±5 percent in modulation percentage for all frequencies from 50 to 15,000 cycles per second. The frequency characteristic, in addition to satisfying the modulation accuracy requirement, must be such that the attenuation from 20 kilocycles per second to 75 kilocycles per second shall be at least 46 decibels with respect to the minimum response in the frequency range 50 to 15,000 cycles per second.

(2) A means for measuring the modulation of the main carrier by each unmodulated subcarrier separated by a minimum of 5 kilocycles from an adjacent unmodulated subcarrier to an accuracy of one percent in modulation percentage. For SCA subcarriers from 59 to 75 kilocycles per second, the monitor characteristic shall be such as to ignore any signal of 53 kilocycles per second and below, the amplitude of which is +40 decibels with respect to the subcarrier being measured. For SCA subcarriers from 20 to 75 kilocycles per second (no stereophonic service), the monitor characteristic shall be such as to ignore a +40 decibel signal at 15 kilocycles per second or below.

(3) A means for measuring total modulation percentage of carrier by the main channel and all SCA subcarriers simultaneously. For this purpose the instrument shall comply with the provisions of paragraph (b) of this section except that the frequency characteristic shall not have more than a one decibel difference for any frequencies from 50 cycles per second to 75 kilocycles per second. The accuracy of the modulation percentage reading must hold when the modulation consists of main channel and SCA subcarrier signals. The peak preset indicator must also respond correctly to tone bursts at repetition rates from one to ten bursts per second with the following composition of the bursts: (i) Ten consecutive cycles of a constant amplitude 10,000 cycles per second sinusoid; and (ii) five consecutive cycles of a constant amplitude 1,000 cycles per second sinusoid. In addition, each response of the peak preset indicator shall persist for a minimum of 2 and a maximum of 4 seconds and be independent of the direction of frequency deviation.

(4) A means for measuring the deviation of each subcarrier under modulation to an accuracy of 1,000 cycles per second.

(5) A means for accurately measuring the cross talk of SCA operation (20 to 75 kilocycles per second) into the main channel (50 to 15,000 cycles per second). The monitor's internal cross talk characteristic must be at least 66 decibels (100 percent modulation) and the monitor must be capable of indicating at least 70 decibels.

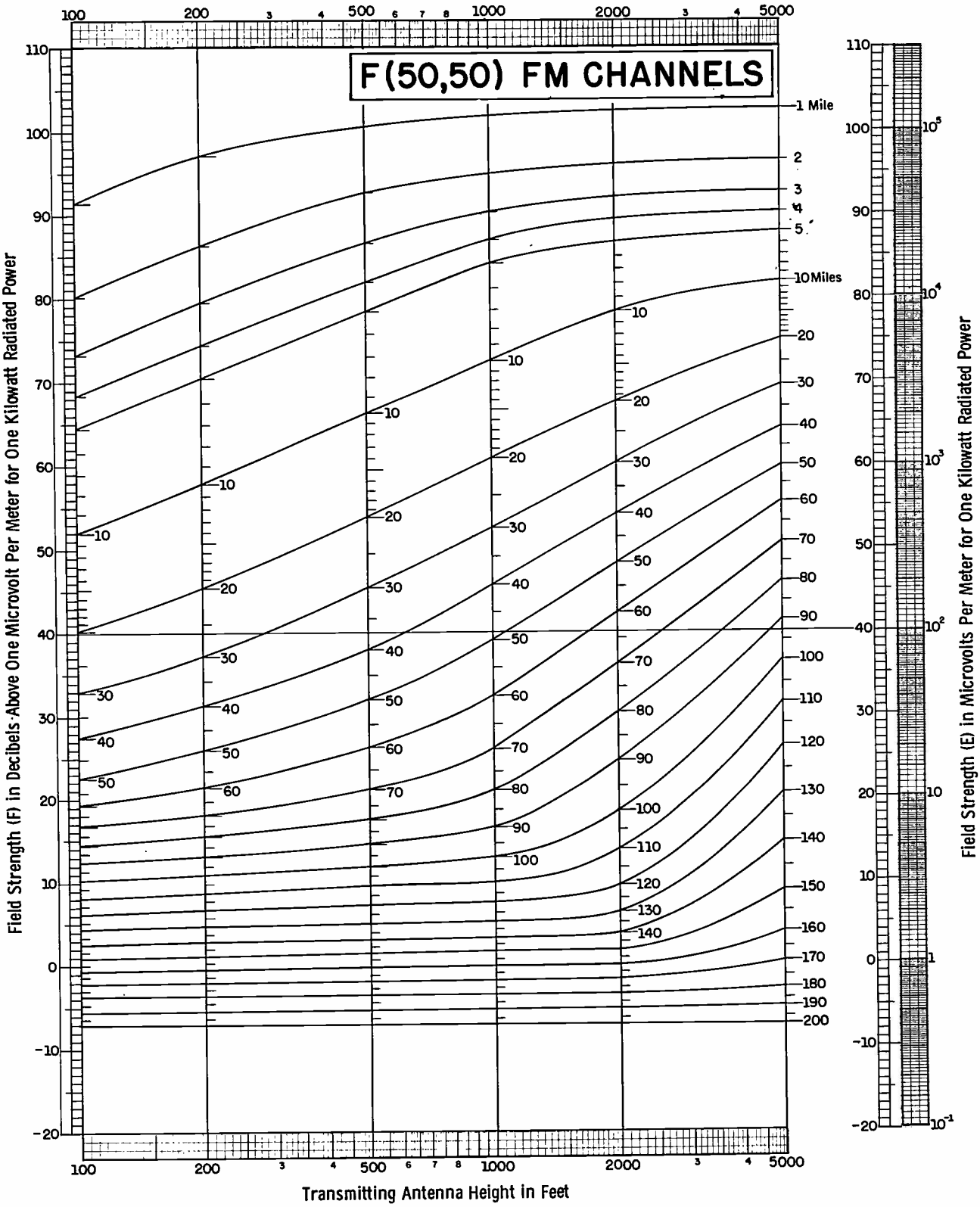
(6) When signals are brought out for external metering or monitoring, they shall have all the characteristics stipulated for internal metering purposes, and any loading by external circuitry shall have no effect on the monitor's indication.

(g) The SCA modulation display may be part of the main channel modulation display but the peak preset indicator of total modulation must be independent of any switching functions and afford a continuous display.

[*§ 73.332 amended in III(64)–13; (d) (6) Note adopted eff. 3–22–67; III(64)–17*]

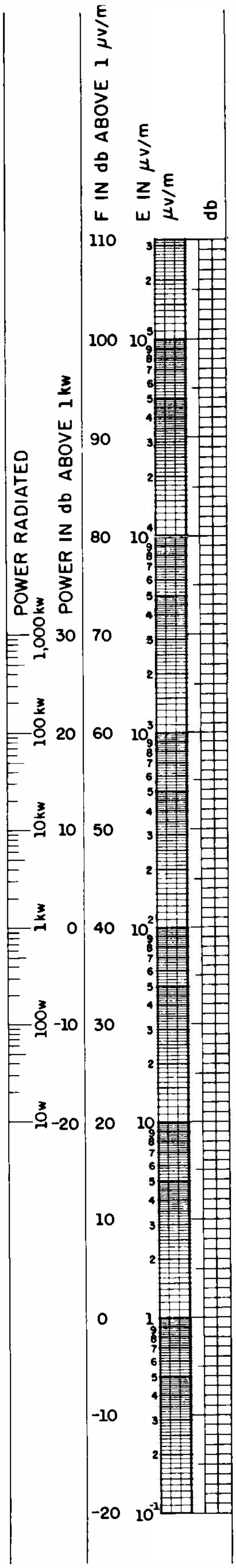
§ 73.333 Engineering charts.

This section consists of the following Figures 1, 2, and 3.

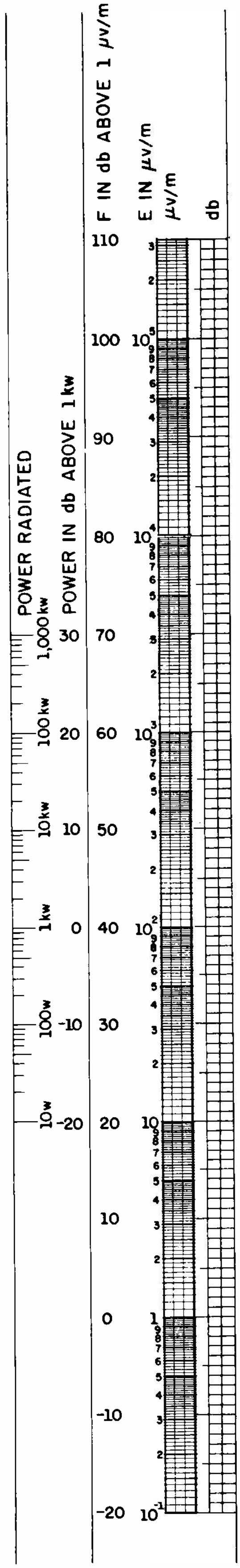


FM CHANNELS
ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT OF THE POTENTIAL
RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT OF THE TIME
AT A RECEIVING ANTENNA HEIGHT OF 30 FEET

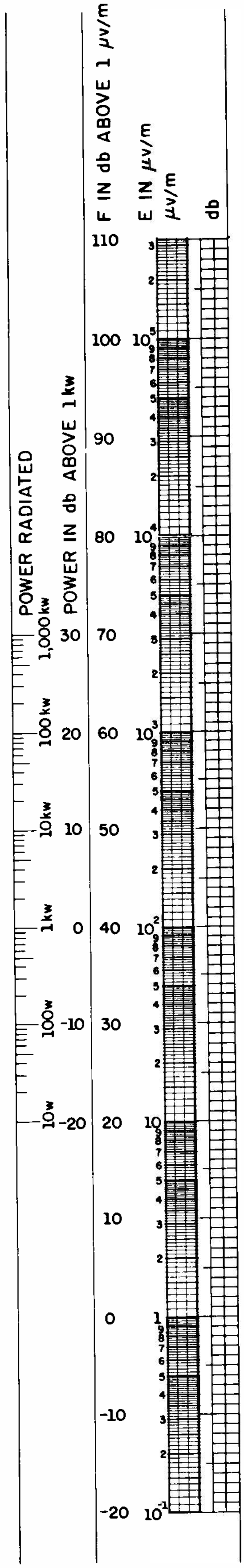
[Sliding scale for use with Figure 1, § 73.333]



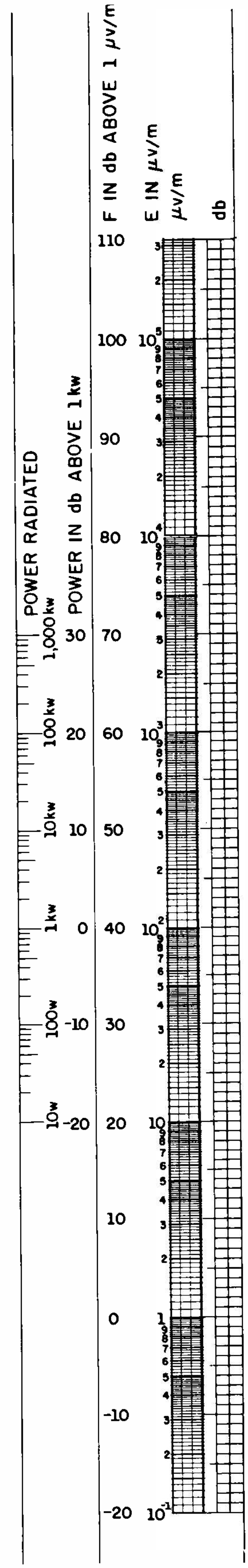
Sliding scale for use with Figure 1, § 73.333.



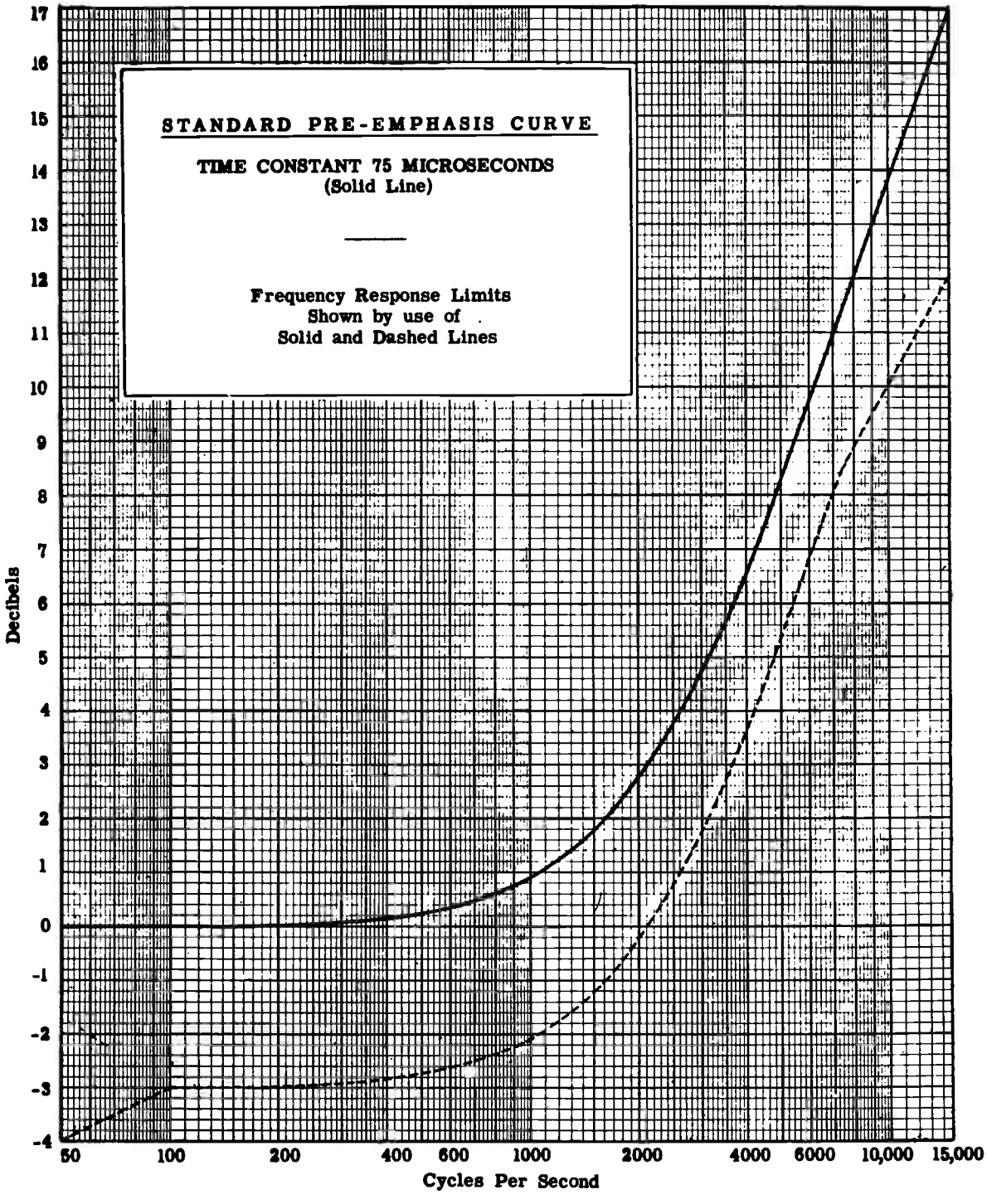
Sliding scale for use with Figure 1, § 73.333.



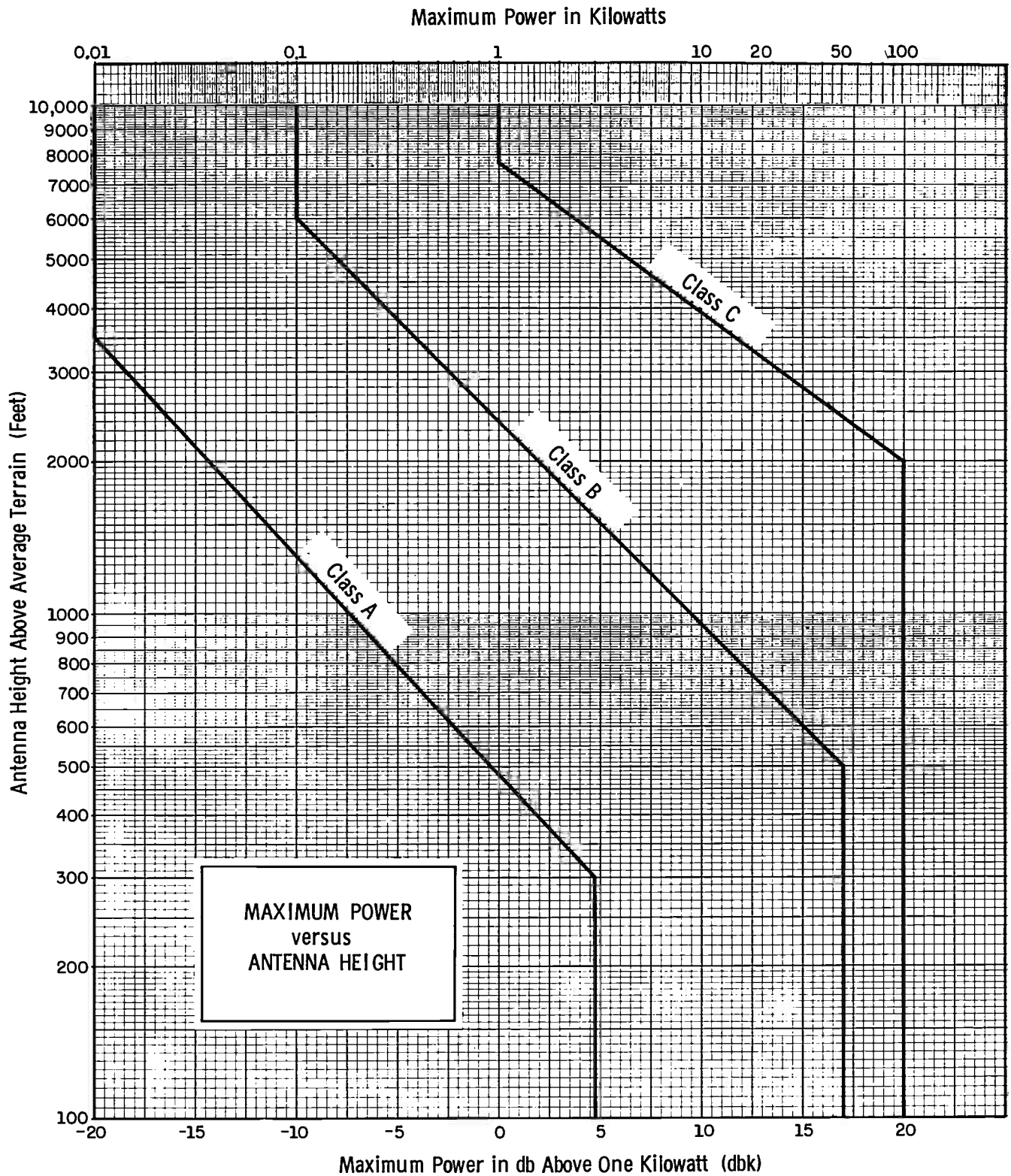
Sliding scale for use with Figure 1, § 73.333.



Sliding scale for use with Figure 1, § 73.333.



FCC § 73.333, FIGURE 2


Maximum Power in Kilowatts
0.01
0.1
1
10
20
50
100
10,000
9000
8000
7000
6000
5000
4000
3000
2000
1000
900
800
700
600
500
400
300
200
100
Antenna Height Above Average Terrain (Feet)
Class C
Class B
Class A
MAXIMUM POWER
versus
ANTENNA HEIGHT
-20
-15
-10
-5
0
5
10
15
20
Maximum Power in db Above One Kilowatt (dbk)

SUBPART C—NONCOMMERCIAL EDUCATIONAL FM BROADCAST STATIONS

CLASSIFICATION OF STATIONS AND ALLOCATION OF FREQUENCIES

§ 73.501 Channels available for assignment.

(a) The following frequencies, except as provided in paragraph (b) of this section, are available for noncommercial educational FM broadcasting:

Frequency (Mc/s):	*Channel No.*	Frequency (Mc/s):	*Channel No.*
88.1	201	90.1	211
88.3	202	90.3	212
88.5	203	90.5	213
88.7	204	90.7	214
88.9	205	90.9	215
89.1	[1] 206	91.1	216
89.3	207	91.3	217
89.5	208	91.5	218
89.7	209	91.7	219
89.9	210	91.9	220

[1] The frequency 89.1 Mc/s, Channel No. 206 in the New York City metropolitan area, is reserved for the use of the United Nations with the equivalent of an antenna height of 500 feet above average terrain and effective radiated power of 20 kw, and the Commission will make no assignments which would cause objectionable interference with such use.

(b) In Alaska, the frequency band 88–100 Mc/s is allocated exclusively to Government radio services and the non-Government fixed service. The frequencies 88.1 Mc/s through 91.9 Mc/s (Channels 201 through 220, inclusive) will not be assigned in Alaska for use by noncommercial educational FM broadcast stations; however, the frequencies 100.1–107.9 Mc/s (Channels 261 through 300, inclusive) are available for such use.

§ 73.502 State-wide plans.

In considering the assignment of a channel for a noncommercial educational FM broadcast station, the Commission will take into consideration the extent to which each application meets the requirements of any state-wide plan for noncommercial educational FM broadcast stations filed with the Commission, provided that such plans afford fair treatment to public and private educational institutions, urban and rural, at the primary, secondary, higher, and adult educational levels, and appear otherwise fair and equitable.

§ 73.503 Licensing requirements and service.

The operation of, and the service furnished by noncommercial educational FM broadcast stations shall be governed by the following:

(a) A noncommercial educational FM broadcast station will be licensed only to a nonprofit educational organization and upon showing that the station will be used for the advancement of an educational program.

(1) In determining the eligibility of publicly supported educational organizations, the accreditation of their respective state departments of education shall be taken into consideration.

(2) In determining the eligibility of privately controlled educational organizations, the accreditation of state departments of education and/or recognized regional and national educational accrediting organizations shall be taken into consideration.

(b) Each station may transmit programs directed to specific schools in a system or systems for use in connection with the regular courses as well as routine and administrative material pertaining thereto and may transmit educational, cultural, and entertainment programs to the public.

(c) Each station shall furnish a non-profit and noncommercial broadcast service. No sponsored or commercial programs shall be transmitted nor shall commercial announcements of any character be made. A station shall not transmit the programs of other classes of broadcast stations unless all commercial announcements and commercial references in the continuity are eliminated. The provisions of this paragraph shall not be considered to prohibit the broadcast of programs (without commercial announcements or references) where the only consideration received by the licensee is the furnishing of the program material and/or the payment of line charges.

§ 73.504 Zones, classes of stations, use of channels, facilities, and minimum mileage separations between stations.

(a) *Zones.* For the purpose of assignment of noncommercial educational FM stations, the United States is divided into three zones, Zone I, Zone I–A, and Zone II, having the boundaries specified in § 73.205.

(b) *Classes of stations.* Noncommercial educational stations operating on the channels specified in § 73.501 are divided into four classes, as follows:

(1) A Class D educational station is one operating with no more than 10 watts transmitter power output. Class D stations may be assigned in all zones, on any of the channels specified in § 73.501.

(2) Noncommercial educational stations with more than 10 watts transmitter output are classified as Class A, Class B, or Class C, depending on the effective radiated power and antenna height above average terrain, and the zone in which the station's transmitter is located, on the same basis as provided in §§ 73.205, 73.206, and 73.211 for stations on the non-reserved FM channels. Where a station is authorized with more than 3 kilowatts (4.8 dbk) effective radiated power, or coverage greater than that obtained by the equivalent of 3 kilowatts effective radiated power and 300-foot antenna height above average terrain, it is classified as a Class B station if its transmitter is located in Zone I or Zone I–A, and as a Class C station if its transmitter is located in Zone II. Class A stations may be assigned in all zones.

(c) *Use of channels.* All classes of noncommercial educational stations may be assigned to any of the channels set forth in § 73.501.

(d) *Facilities.* (1) No minimum effective radiated power or antenna height is specified for stations operating on the channels specified in § 73.501.

(2) On Channels 218, 219, and 220 specified in § 73.501, no Class B or Class C educational station will be authorized with effective radiated power greater than that specified in § 73.211(b)(1) for the respective class of station, and the maximum effective radiated power permissible shall also be subject to the provisions of § 73.211(b)(2).

(e) *Minimum mileage separations.* No application for a new station, or change in channel or transmitter site or increase in facilities of an existing station, will be granted unless the proposed facilities will be located so as to meet the adjacent channel mileage separations specified in § 73.207(a) for the class of station involved with respect to assignment on Channels 221, 222, and 223 listed in § 73.201 (except where in the case of an existing station the proposed facilities fall within the provisions of § 73.207(b)).

(f) *Existing stations.* Stations authorized as of September 10, 1962, which do not meet the requirements of paragraphs (d) and (e) of this section, may continue to operate as authorized; but any application to change facilities will be subject to the provisions of this section.

(g) Stations separated in frequency by 10.6 or 10.8 Mc/s (53 or 54 channels) from stations or assignments on commercial channels will not be authorized unless they conform to the following separation table:

Class of stations	*Required spacing (miles)*
A to A	5
B to A	10
B to B	15
C to A	20
C to B	25
C to C	30

[§ 73.504(g) *as adopted eff. 8-9-65; III(64)-9*]

§ 73.505 Standards of good engineering practice.

All noncommercial educational stations operating with more than 10 watts transmitter output power shall be subject to all of the provisions of the FM Technical Standards contained in Subpart B of this part. Class D educational stations shall be subject to the definitions contained in § 73.310 of Subpart B of this part, and also to those other provisions of the FM Technical Standards which are specifically made applicable to them by the provisions of this subpart.

Administrative Procedure

§ 73.514 Cross reference.

See Subpart D of Part 1 of this chapter, for general requirements as to applications, filing of applications and description of application forms, other forms and information to be filed with the Commission, the manner in which applications are processed, and provisions applying to action on applications. See § 1.1111 of Subpart G of that part for the fees to be paid in connection with applications for facilities in the service covered in this subpart.

§ 73.515 Notification of filing of applications.

(a) *Radio Astronomy and Radio Research Installations.* In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new noncommercial educational FM broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by 39°15′ N on the

north, 78°30′ W on the east, 37°30′ N on the south, and 80°30′ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P. O. Box No. 2, Green Bank, West Virginia, 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(b) *Location on Government land.* Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

[*The text of § 73.515 redesignated (a) and (b) added eff. 3-20-67; III(64)-16*]

§ 73.516 Equipment tests.

(a) During the process of construction of a noncommercial educational FM broadcast station, the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations, and the applicable engineering standards.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of the program test. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations and the applicable engineering standards, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 73.517 Program tests.

(a) Upon completion of construction of a noncommercial educational FM broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and applicable engineering

north, 78°30′ W on the east, 37°30′ N on the south, and 80°30′ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P. O. Box No. 2, Green Bank, West Virginia, 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

§ 73.516 Equipment tests.

(a) During the process of construction of a noncommercial educational FM broadcast station, the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations, and the applicable engineering standards.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of the program test. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations and the applicable engineering standards, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 73.517 Program tests.

(a) Upon completion of construction of a noncommercial educational FM broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and applicable engineering

standards, and when an application for station license has been filed showing the station to be in satisfactory operating condition, the permittee may request authority to conduct program tests: *Provided*, That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified. (All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application.)

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests, or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation under program test authority shall be in strict compliance with the rules governing noncommercial educational FM broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized.

(e) The grant of program test authority shall not be construed as approval by the Commission of the application for station license.

§ 73.518 Normal license period.

(a) Licenses for noncommercial educational FM broadcast stations ordinarily will be issued for a period of three years and, when regularly renewed, at three year intervals thereafter: *Provided, however*, That, if the Commission finds that the public interest, convenience, and necessity will be served thereby, it may issue either an initial license or a renewal thereof for a lesser term. When regularly issued or renewed, licenses will be issued to expire at the hour of 3:00 a.m., eastern standard time, in accordance with the following schedule, and at three year intervals thereafter.

(1) For stations located in Florida, Puerto Rico, and Virgin Islands, February 1, 1964.

(2) For stations located in Alabama and Georgia, April 1, 1964.

(3) For stations located in Arkansas, Louisiana, and Mississippi, June 1, 1964.

(4) For stations located in Tennessee, Kentucky, and Indiana, August 1, 1964.

(5) For stations located in Ohio and Michigan, October 1, 1964.

(6) For stations located in Illinois and Wisconsin, December 1, 1964.

(7) For stations located in Iowa and Missouri, February 1, 1965.

(8) For stations located in Minnesota, North Dakota, South Dakota, Montana, and Colorado, April 1, 1965.

(9) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1965.

(10) For stations located in Texas, August 1, 1965.

(11) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico, and Idaho, October 1, 1965.

(12) For stations located in California, December 1, 1965.

(13) For stations located in Washington, Oregon, Alaska, and Hawaii, February 1, 1966.

(14) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, April 1, 1966.

(15) For stations located in New Jersey and New York, June 1, 1966.

(16) For stations located in Delaware and Pennsylvania, August 1, 1966.

(17) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1966.

(18) For stations located in North Carolina, South Carolina, December 1, 1966.

EQUIPMENT

§ 73.550 Acceptability of broadcast transmitters for licensing.

(a) In order to facilitate the filing of, and action on, applications for station authorizations, transmitters will be accepted for licensing by the Commission under one of the following conditions:

(1) A transmitter may be type-accepted upon the request of any manufacturer of transmitters built in quantity by following the type acceptance procedure set forth in Part 2 of this chapter, provided that the data and information submitted indicates that the transmitter meets the requirements of § 73.317. If accepted, such transmitter will be included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment". Applicants specifying transmitters included on such a list need not submit detailed descriptions and diagrams where the correct type number is specified, provided that the equipment proposed is identical with that accepted. Copies of this list are available for inspection at the Commission's office in Washington, D.C., and at each of its field offices.

(2) An application specifying a transmitter not included on the Radio Equipment List, Part B, may be accepted upon the request of a prospective licensee submitting with the application for construction permit a complete description of the transmitter, including the circuit diagram, listing of all tubes used, function of each, multiplication in each stage, plate current and voltage applied to each tube, a description of the oscillator circuit together with any devices installed for the purpose of frequency stabilization and the means of varying output power to compensate for power supply voltage variations. However, if this data has been filed with the Commission by a manufacturer in connection with a request for type acceptance, it need not be submitted with the application for construction permit but may be referred to as "on file". Measurement data for type acceptance made in accordance with subparagraph (1) of this paragraph shall be submitted with the license application.

(3) A transmitter shown on an instrument of authorization by manufacturer and type number, or as a composite, and which was in use prior to June 30, 1955, may continue to be used by the licensee, his successors or assignees, provided such transmitter continues to comply with the rules and regulations.

(4) A permittee may, without further authority, install and utilize a transmitter other than that specifically authorized in its construction permit if such transmitter is listed in the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment" as acceptable for the transmitter output power authorized and, if operation under § 73.595 or § 73.596 is included, such transmitter is listed in the said "Radio Equipment List" as acceptable for the appropriate type of operation.

(5) A licensee may, without further authority, install and utilize a transmitter other than that specifically authorized in its station license if the transmitter so installed and so utilized is listed in the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment" as acceptable for the transmitter output power authorized and, if operation under § 73.595 or § 73.596 is included, such transmitter is listed in the said "Radio Equipment List" as acceptable for the appropriate type of operation. In the event of such a transmitter substitution, the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified within three days after the date of installation of the transmitter. Such notice shall specify the manufacturer and type number of the transmitter and shall include a certification by the licensee that the transmitter as installed complies with the appropriate technical provisions of this subpart.

(b) Additional rules with respect to withdrawal of type-acceptance, modification of type-accepted equipment and limitations on the findings upon which type acceptance is based are set forth in Part 2 of this chapter.

§ 73.552 Frequency monitor.

(a) The licensee of each station licensed for transmitter power output above 10 watts shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a frequency monitor of a type approved by the Commission which shall be independent of the frequency control of the transmitter.

NOTE: Approved frequency monitors are included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment". Copies of this list are available for inspection at the Commission's office in Washington, D. C., and at each of its field offices.

(b) In the event that the frequency monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement instrument has been installed and is functioning properly.

(3) The frequency of the station shall be compared with an external frequency source of known accuracy at sufficiently frequent intervals to insure that the frequency is maintained within the tolerance prescribed in § 73.568. An entry shall be made in the station log as to the method used and the results thereof.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above-allowed period, informal request may be filed in accordance with § 1.549 of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

(d) The licensee of each noncommercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall provide for the measurement of the station frequency by a means independent of the frequency control of the transmitter. The station frequency shall be measured (1) when the transmitter is initially installed, (2) at any time the frequency determining elements are changed, and (3) at any time the licensee may have reason to believe the frequency has shifted beyond the tolerance specified by the Commission's rules.

§ 73.553 Modulation monitors.

(a) The licensee of each station licensed for transmitter power output above 10 watts shall have in operation, either at the transmitter or the place the transmitter is controlled, a modulation monitor of a type approved by the Commission for non-multiplex operation: *Provided*, That: (1) If the station is engaged in stereophonic operation, as contemplated by § 73.596, the licensee shall have in operation a modulation monitor of a type approved by the Commission for monitoring stereophonic operation, and (2) if the station is engaged in operation with a Subsidiary Communications Authorization, as contemplated by § 73.595, the licensee shall have in operation a modulation monitor of a type approved by the Commission for monitoring SCA operation.

NOTE 1: Approved modulation monitors (non-multiplex, stereophonic and SCA) are included on the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment." Copies of this list are available for inspection at the Commission's office in Washington, D.C., and at its field offices.

NOTE 2: The provisions of this subpart shall become effective September 1, 1967, for stereophonic modulation monitors and March 1, 1968, for SCA modulation monitors.

[*§73.553 amended in III(64)-13; (a) Note 2 amended eff. 5-26-67; III(64)-18*]

(b) In the event that the modulation monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) During the period when the station is operated without the modulation monitor the licensee shall provide other suitable means for insuring that the modulation is maintained within the tolerance prescribed in § 73.568.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request may be filed in accordance with § 1.549 of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

(d) The licensee of each non-commercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall provide a percentage modulation indicator or a calibrated program level meter from which a satisfactory indication of the percentage of modulation of the transmitter can be determined.

§ 73.554 Transmitter performance.

(a) The transmitter proper and associated transmitting equipment of each noncommercial educational FM broadcast station licensed for transmitter power output above 10 watts shall be designed, constructed and operated in accordance with § 73.317.

(b) The transmitter proper and associated transmitting equipment of each noncommercial educational FM broadcast station licensed for transmitter power output of 10 watts or less, although not required to meet all requirements of § 73.317 shall be constructed with safety features in accordance with the specifications of article 810 of the current National Electrical Code as approved by the American Standards Association and shall be so operated, tuned, and adjusted that emissions are not radiated outside the authorized band which cause or which are capable of causing interference to the communications of other stations. The audio distortion, audio frequency range, carrier hum, noise level, and other essential phases of the operation which control the external effects, shall at all times be capable of providing satisfactory broadcast service. Studio equipment properly covered by an underwriter's certificate will be considered as satisfying safety requirements.

§ 73.555 Auxiliary transmitter.

Upon showing that a need exists for the use of an auxiliary transmitter in addition to the regular transmitter of a broadcast station, a license therefor may be issued: *Provided,* That:

(a) An auxiliary transmitter may be installed either at the same location as the main transmitter or at another location.

(b) A licensed operator shall be in control whenever an auxiliary transmitter is placed in operation.

(c) The auxiliary transmitter shall be maintained so that it may be placed into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitter.

(2) The transmission of regular programs during maintenance or modification work on the main transmitter, necessitating discontinuance of its operation for a period not to exceed 5 days. (This includes the equipment changes which may be made without authority as set forth elsewhere in the rules and regulations or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.542 of this chapter.)

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitter shall be tested at least once each week to determine that it is in proper operating condition and that it is adjusted to the proper frequency, except that in case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) is satisfactory. A record shall be kept of the time and result of each test. Such records shall be retained for a period of two years.

(e) The auxiliary transmitter shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitter, but in no event shall it be greater than such power.

§ 73.556 Alternate main transmitters.

The licensee of a noncommercial educational FM broadcast station may be licensed for alternate main transmitters provided that a technical need for such alternate transmitters is shown (such as licensees maintaining 24-hour schedule and needing alternate operation for maintenance, or where developmental work requires alternate operation) and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the requirements of § 73.554.

§ 73.557 Changes in equipment and antenna system.

Licensees of noncommercial educational FM broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(2) That would result in the external performance of the transmitter being in disagreement with § 73.554.

(b) Specific authority, upon filing formal application (FCC Form 340) therefor, is required for a change in service area or for any of the following changes:

(1) Changes involving an increase or decrease in the power rating of the transmitter.

(2) A replacement of the transmitter as a whole, unless such transmitter is one which may be installed and utilized in accordance with the provisions of § 73.550(a)(5).

(3) Change in the location of the transmitting antenna.

(4) Change in antenna system, including transmission line.

(5) Change in location of main studio, if it is proposed to move the main studio to a different city from that specified in the license.

(6) Change in the power delivered to the antenna.

(7) Change in frequency control and/or modulation system.

(8) Change in the authorized transmitter remote control point(s).

(c) Other changes, except as above provided for in this section, may be made at any time without the authority of the Commission, provided that the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

[*§ 73.557(b)(2) as amended eff. 1-20-64; III(64)-1*]

§ 73.558 Indicating instruments.

(a) Each noncommercial FM broadcast station licensed for transmitter power above 10 watts shall be equipped with indicating instruments, which conform with the specifications set forth in § 73.320 for measuring the direct plate voltage and current of the last radio stage and the transmission line radio frequency current, voltage, or power.

(b) In the event that any one of these indicating instruments becomes defective when no substitute which conforms with the required specifications is available. the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days: *Provided*, That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the instrument is found to be de-

fective and immediately after the repaired or replaced instrument has been installed and functioning properly.

(3) If the defective instrument is a plate voltmeter or plate ammeter in the last radio stage, the operating power shall be maintained by means of the radio frequency transmission line meter.

(c) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request may be filed in accordance with § 1.549 of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

TECHNICAL OPERATION AND OPERATORS

§ 73.561 Operating schedule.

Noncommercial educational FM broadcast stations are not required to operate on a regular schedule and no minimum number of hours of operation is specified; but the hours of actual operation during a license period shall be taken into consideration in considering the renewal of noncommercial educational FM broadcast licenses wherever it appears that the channels available for such stations are insufficient to meet the demand.

§ 73.562 Experimental operation.

The period between 1:00 a.m., and 6:00 a.m., local standard time, may be used for experimental purposes in testing and maintaining apparatus by the licensee of any noncommercial educational FM broadcast station on its assigned frequency and not in excess of its authorized power, without specific authorization from the Commission.

§ 73.563 Station inspection.

The licensee of any noncommercial educational FM broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 73.564 Station and operator licenses; posting of.

(a) The station license and any other instrument of station authorization shall be posted in a conspicuous place and in such manner that all terms are visible at the place the licensee considers to be the principal control point of the transmitter. At all other control points listed on the station authorization, a photocopy of the station license and other instruments of station authorization shall be posted.

(b) The original operator license, or FCC Form 759, of each station operator shall be posted at the place where he is on duty as an operator.

§ 73.565 Operator requirements.

(a) One or more radio operators holding a valid radiotelephone first-class operator license, except as provided in paragraph (b) of this section, shall be in actual charge of the transmitting apparatus and shall be on duty either at the transmitter location or remote control point. If operation by remote control has not been authorized, the transmitter shall be readily accessible and clearly visible to the operator at his normal operating position. If operation by remote control is authorized, the control and monitoring equipment shall be readily accessible and clearly visible to the operator at his normal operating position.

(b) In cases where a station is authorized to operate with transmitter power output not in excess of 25 kilowatts, the routine operation of the transmitter may be performed by an operator holding a valid first-class or second-class radiotelephone or radiotelegraph operator license or a radiotelephone third-class operator permit which has been endorsed for broadcast station operation. The operator shall be on duty at the transmitter or authorized remote control point and in actual charge thereof. Except at times when the operation of the station is under the immediate supervision of an operator holding a valid operator license of the grade indicated for the station in subparagraphs (1), (2), or (3) of paragraph (c) of this section, adjustments of the transmitter shall be limited to the following:

(1) Those necessary to turn the transmitter on and off.

(2) Adjustments of external controls as may be necessary to compensate for voltage fluctuations in the power supply.

(3) Adjustments of external control to maintain modulation of the transmitter within prescribed limits.

It shall be the responsibility of the licensee to insure that the person who may be required to perform these tasks, as well as to perform other duties (such as read-

ing meters and making log entries), is properly instructed so as to be capable of performing the duties required of him at times when not under the immediate supervision of an operator of the grade indicated for the station in subparagraphs (1), (2), or (3) of paragraph (c) of this section. Where necessary, printed step-by-step instructions shall be posted for those transmitter adjustments which the lesser grade operator is authorized to make. Should the transmitting apparatus be observed to be operating in any manner inconsistent with this subpart or the current instrument of authorization for the station at any time when an operator of the grade indicated for the station in subparagraphs (1), (2), or (3) of paragraph (c) of this section is not immediately available, and none of the above adjustments is effective in correcting the condition of improper operation, the emissions of the station shall be immediately terminated.

[*§ 73.565(a) and (b) as amended eff. 5-14-65; III(64)-8*]

(c) If the routine operation of the transmitting apparatus at a noncommercial educational FM broadcast station is performed by a lesser grade operator pursuant to the provisions of paragraph (b) of this section, the licensee shall employ as a full-time member of the station staff (in the alternative, the licensee may contract in writing for the services on a part-time basis) one or more operators holding:

(1) A valid radiotelephone first-class operator license if the station is authorized to operate with transmitter power output of more than 1 kw but not in excess of 25 kw.

(2) A valid radiotelephone first-class or second-class operator license if the station is authorized to operate with transmitter power output of more than 10 watts but not in excess of 1 kw.

(3) A valid first-class or second-class radiotelephone or radiotelegraph operator license if the station is authorized to operate with transmitter power output of not more than 10 watts.

The operators specified in subparagraphs (1), (2), and (3) of this paragraph shall perform transmitter maintenance and shall be promptly available at all times to correct conditions of improper operation beyond the scope of authority of the lesser grade operator on duty. If the services of the operator or the operators indicated in subparagraphs (1), (2), and (3) of this paragraph are on a contract part-time basis, a signed copy of the agreement shall be kept in the files of the station and at the transmitter or control point and shall be made available for inspection upon request by any authorized representative of the Commission. A signed copy of the agreement shall also be forwarded to the Commission and to the Engineer in Charge of the radio district in which the station is located within 3 days after the agreement is signed.

[*§ 73.565(c)(3) Note deleted eff. 11-26-65; III(64)-11*]

(d) The licensed operator on duty and in charge of a noncommercial educational FM broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another radio station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such other stations: *Provided, however,* That such duties shall in nowise interfere with the proper operation of the FM broadcast transmitter.

(e) At all noncommercial educational FM broadcast stations, a complete inspection of all transmitting equipment in use shall be made by an operator holding a valid radiotelephone first-class operator license at least once each day, 5 days each week, with an interval of no less than 12 hours between successive inspections. This inspection shall include such tests, adjustments, and repairs as may be necessary to insure operation in conformance with the provisions of this subpart and the current instrument of authorization for the station: *Provided,* That if the transmitter power output is in excess of 10 watts but not greater than 1 kw, an operator holding a radiotelephone second-class operator license may perform the required inspection: *Provided, further,* That if the transmitter power output is 10 watts or less, no such daily inspection need be made, although this shall in no way relieve

such stations from the duty to operate in conformance with the provisions of this subpart and the current instrument of authorization.

(Sec. 318, 48 Stat, 1089, as amended; 47 U.S.C. 318)

§ 73.566 Facsimile broadcasting and multiplex transmission.

(a) Noncommercial educational FM broadcast stations may transmit simplex facsimile in accordance with transmission standards set forth in § 73.318 during periods not devoted to FM aural broadcasting. Such transmissions may not exceed one hour during the period between 7 a.m. and midnight (no limit is placed upon the hours between midnight and 7 a.m.). The Commission shall be notified by the licensee of the noncommercial educational FM broadcast station of its intent to transmit such facsimile.

(b) Noncommercial educational FM broadcast stations may, upon securing authorization from the Commission, transmit multiplex facsimile in accordance with transmission standards set forth in § 73.318: *Provided,* That the transmission of such facsimile does not reduce the quality of the aural program simultaneously transmitted by the licensee below that required by the FM Technical Standards in Subpart B of this part and that no degradation of such aural programs will result from such facsimile transmissions when received on FM receivers not equipped with filters or other additional equipment.

§ 73.567 Operating power; determination and maintenance of.

(a) *Determination.* The operating power of each station shall be determined by either the direct or indirect method.

(1) Using the direct method, the power shall be measured at the output terminals of the transmitter while operating into a dummy load of substantially zero reactance and a resistance equal to the transmission line characteristic impedance. The transmitter shall be unmodulated during this measurement. If electrical devices are used to determine the power output, such devices shall permit determination of this power to within an accuracy of ±5 percent of the power indicated by the full scale reading of the electrical indicating instrument of the device. If temperature and coolant flow indicating devices are used to determine the power output, such devices shall permit determination of this power to within an accuracy of 4 percent of measured average power output. During this measurement the direct plate voltage and current of the last radio stage and the transmission line meter shall be read and compared with similar readings taken with the dummy load replaced by the antenna. These readings shall be in substantial agreement.

(2) Using the indirect method, the operating power is the product of the plate voltage (E_p) and the plate current (I_p) of the last radio stage, and an efficiency factor, F, as follows:

$$\text{Operating power} = E_p \times I_p \times F$$

(3) The efficiency factor, F, shall be established by the transmitter manufacturer for each type of transmitter for which he submits data to the Commission, and shall be shown in the instruction books supplied to the customer with each transmitter. In the case of composite equipment, the factor F shall be furnished to the Commission with a statement of the basis used in determining such factor.

(b) *Maintenance.* The operating power of stations licensed for transmitter power output greater than 10 watts shall be maintained in accordance with subparagraph (1) of this paragraph and the operating power of stations licensed for transmitter output power of 10 watts or less shall be maintained in accordance with subparagraph (2) of this paragraph.

(1) The operating power of stations licensed for transmitter output power greater than 10 watts shall be maintained as near as practicable to the authorized power and shall not be less than 90 percent nor greater than 105 percent of authorized power except as indicated in paragraph (c) of this section.

(i) When determined by the direct method, the operating power of the transmitter shall be monitored by a transmission line meter which reads proportional to the voltage, current, or power at the output terminals of the transmitter, the meter to be calibrated at intervals not exceeding 6 months. The calibration shall cover, as a minimum, the range from 90 to 105 percent of authorized power and the meter shall provide clear indications which will permit maintaining the operating power within the prescribed tolerance or the meter shall be calibrated to read directly in power units.

(2) Stations licensed to operate with a transmitter output power of 10 watts or less may be operated at less than authorized power but in no event shall the operating power be greater than 5 percent above the authorized power. The transmitter of each such station shall be so maintained as to be capable of operation at maximum licensed power.

(c) *Reduced power.* If a station licensed for transmitter power output greater than 10 watts finds it impossible to operate with authorized power, the station may operate with reduced power for a period not to exceed 10 days. In the event the period of reduced power operation exceeds 10 days, the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing on the eleventh day and shall also be notified when operation with authorized power is resumed.

§ 73.568 Modulation.

The percentage of modulation of all stations shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice and in no case less than 85 percent or more than 100 percent on peaks of frequent recurrence during any selection which normally is transmitted at the highest level of the program under consideration.

§ 73.569 Frequency tolerance.

(a) The center frequency of each noncommercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall be maintained within 3,000 cycles of the assigned center frequency.

(b) The center frequency of each noncommercial educational FM broadcast station licensed for transmitter power output above 10 watts shall be maintained within 2,000 cycles of the assigned center frequency.

§ 73.570 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of that part.

§ 73.571 Discontinuance of operation.

The licensee of each station shall notify the Commission in Washington, D.C., and the Engineer in Charge of the radio district in which the station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D.C., office of the Commission for cancellation.

§ 73.572 Remote control authorization.

(a) Application to operate a station by remote control may be made as a part of the application for construction permit for a new station. Application to operate an authorized station shall be made on FCC Form 301–A.

(b) An authorization for remote control will be issued only after a satisfactory showing has been made, including, among other things, the location of the remote control point(s).

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

[*§ 73.572(b) amended eff. 3–22–67; III(64)–17*]

§ 73.573 Remote control operation.

(a) Operation by remote control shall be subject to the following conditions:

(1) The equipment at the operating and transmitting positions shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by the licensee.

(2) The control circuits from the operating position to the transmitter shall provide positive on and off control and shall be such that open circuits, short circuits, grounds or other line faults will not actuate the transmitter and any fault causing loss of such control will automatically place the transmitter in an inoperative position.

(3) A malfunction of any part of the remote control equipment and associated line circuits resulting in improper control or inaccurate meter readings shall be cause for the immediate cessation of operation by remote control.

(4) Control and monitoring equipment shall be installed so as to allow the licensed operator at the remote control point to perform all the functions in a manner required by the Commission's rules.

(b) All stations with a transmitter output power of over 10 watts, whether operating by remote control or direct control, shall be equipped so as to be able to follow the prescribed procedure set forth in § 73.921 (b). Stations with a transmitter output of 10 watts or less shall be equipped so as to be able to follow the prescribed procedure set forth in § 73.921(c).

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

OTHER OPERATING REQUIREMENTS

§ 73.581 General requirements relating to logs.

(a) The licensee or permittee of each noncommercial Educational FM broadcast station shall maintain program, operating and maintenance logs as set forth in §§ 73.582, 73.583, and 73.584. Each log shall be kept by the station employee or employees (or contract operator) competent to do so, having actual knowledge of the facts required, who in the case of program and operating logs shall sign the appropriate log when starting duty, and again when going off duty.

(b) The logs shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required for the particular class of station concerned is readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log. Each sheet shall be numbered and dated. Time entries shall be either in local standard or daylight saving time and shall be indicated accordingly.

(c) No log or preprinted log or schedule which upon completion becomes a log, or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention provided by the provisions of this part. Any necessary correction shall be made only pursuant to §§ 73.582, 73.583, and 73.584, and only by striking out the erroneous portion, or by making a corrective explanation on the log, or attachment to it as provided in those sections.

(d) Entries shall be made in the logs as required by §§ 73.582, 73.583, and 73.584. Additional information such as that needed for the cuing of automatic equipment may be entered on the logs. Such additional information, so entered shall not be subject to the restrictions and limitations in the Commission's rules on the making of corrections and changes in logs.

[*§ 73.581 (a), (c), and (d) as amended eff. 2-21-66; III(64)-12*]

§ 73.582. Program log.

(a) The following entries shall be made in the program log:

(1) An entry of the time each station identification announcement (call letters and location) is made.

(2) An entry briefly describing each program broadcast, such as "music," "drama," "speech," etc., together with the name or title thereof and the sponsor's name, with the time of the beginning and ending of the complete program. If a mechanical record is used, the entry shall show the exact nature thereof, such as "record," "transcription," etc., and the time it is announced as a mechanical reproduction. If a speech is made by a political candidate, the name and political affiliations of such speaker shall be entered.

(b) No provision of this section shall be construed as prohibiting the recording or other automatic maintenance of data required for program logs. However, where such automatic logging is used, the licensee must comply with the following requirements:

(1) The licensee, whether employing manual or automatic logging or a combination thereof, must be able accurately to furnish the Commission with all information required to be logged;

(2) Each recording, tape, or other means employed shall be accompanied by a certificate of the operator or other responsible person on duty at the time or other duly authorized agent of the licensee, to the effect that it accurately reflects what was actually broadcast. Any information required to be logged which cannot be incorporated in the automatic process shall be maintained in a separate record which shall be similarly authenticated.

(3) The licensee shall extract any required information from the recording for the days specified by the Commission or its duly authorized representative and submit it in written log form, together with the underlying recording, tape or other means employed.

(c) Program logs shall be changed or corrected only in the manner prescribed in § 73.581(c) and only in accordance with the following:

(1) *Manually kept log.* Where, in any program log, or preprinted program log, or program schedule which upon completion is used as a program log, a correction is made before the person keeping the log has signed the log upon going off duty, such correction, no matter by whom made, shall be initialed by the person keeping the log prior to his signing of the log when going off duty, as attesting to the fact that the log as corrected is an accurate representation of what was broadcast. If corrections or additions are made on the log after it has been so signed, explanation must be made on the log or on an attachment to it, dated and signed by either the person who kept the log, the station program director, or manager, or an officer of the licensee.

[*§ 73.582(c) as adopted eff. 2-21-66; III(64)-12*]

§ 73.583 Operating log.

(a) The following entries shall be made in the operating log by the properly licensed operator in actual charge of the transmitting apparatus only.

(1) An entry of the time the station begins to supply power to the antenna and the time it stops.

(2) An entry of each interruption of the carrier wave, where restoration is not automatic, its cause and duration followed by the signature of the person restoring operation (if licensed operator other than the licensed operator on duty).

(3) For each station licensed for transmitter power output above 10 watts, an entry, at the beginning of operation and at intervals not exceeding one-half hour, of the following (actual readings observed prior to making any adjustments to the equipment) and, when appropriate, an indication of corrections made to restore parameters to normal operating values:

(i) Operating constants of last radio stage (total plate voltage and plate current).

(ii) RF transmission line meter reading.

(iii) Frequency monitor reading.

(4) Any other entries required by the instrument of authorization or the provisions of this part.

(5) The entries required by § 17.38 (a), (b), and (c) of this chapter.

(6) An entry, where applicable, describing the results obtained in determining the pilot subcarrier frequency for stereophonic broadcasting.

(b) Automatic devices accurately calibrated and with appropriate time, date and circuit functions may be utilized to record the entries in the operating log: *Provided*, That:

(1) They do not affect the operation of circuits or accuracy of indicating instruments of the equipment being recorded;

(2) The recording devices have an accuracy equivalent to the accuracy of the indicating instruments;

(3) The calibration is checked against the original indicators at least once a week and the results noted in the maintenance log;

(4) Provision is made to actuate automatically an aural alarm circuit located near the operator on duty if any of the automatic log readings are not within the tolerances or other requirements specified in the rules or instrument of authorization;

(5) Unless the alarm circuit operates continuously, devices which record each parameter in sequence must read each parameter at least once during each 10-minute period and clearly indicate the parameter being recorded;

(6) The automatic logging equipment is located at the remote control point if the transmitter is remotely controlled, or at the transmitter location if the transmitter is manually controlled;

(7) The automatic logging equipment is located in the near vicinity of the operator on duty and is inspected by him periodically during the broadcast day; and

(8) The indicating equipment conforms to the requirements of § 73.320 except that the scales need not exceed 2 inches in length. Arbitrary scales may not be used.

(c) In preparing the operating log, original data may be recorded in rough form and later transcribed into the log, but in such a case all portions of the original memoranda shall be preserved as a part of the complete log.

(d) Operating logs shall be changed or corrected only in the manner prescribed in § 73.581(c) and only in accordance with the following:

(1) *Manually kept log.* Any necessary corrections in a manually kept operating log shall be made only by the person making the original entry who shall make and initial each correction prior to signing the log when going off duty in accordance with § 73.581(a). If corrections or additions are made on the operating log after it has been so signed explanation must be made on the log or on an attachment to it, dated and signed by either the operator who kept the log, the station technical supervisor or an officer of the licensee.

(2) *Automatic logging.* No automatically kept operating log shall be altered in any way after entries have been recorded. Any errors or omissions found in an automatically kept operating log shall be noted and explained in a memorandum signed by the operator on duty (who, under the provisions of paragraph (b)(7) of this section, is required to inspect the automatic equipment) or by the station technical supervisor or an officer of the licensee. Such memorandum shall be affixed to the original log in question

[*§ 73.583 amended in III(64)-3 and III(64)-12, as further amended re par. (a)(6) as adopted eff. 7-5-66; III(64)-13*]

§ 73.584 Maintenance log.

(a) The following entries shall be made in the maintenance log:

(1) An entry each week of the time and result of test of auxiliary transmitter.

(2) A notation of all frequency checks and measurements made independently of the frequency monitor and of the correlation of these measurements with frequency monitor indications.

(3) A notation each week of the calibration check of automatic recording devices as required by § 73.583(b)(3).

(4) An entry of the date and time of removal from and restoration to service of any of the following equipment in the event it becomes defective:

(i) Modulation monitor.

(ii) Frequency monitor.

(iii) Final stage plate voltmeter.

(iv) Final stage plate ammeter.

(v) Transmission line radio frequency voltage, current, or power meter.

(5) Record of tower light inspections where required by § 17.38(d) of this chapter (Part 17—Construction, Marking, and Lighting of Antenna Structures).

(6) Entries shall be made so as to describe fully any experimental operation pursuant to § 73.562.

(7) Any other entries required by the current instrument of authorization of the station and the provisions of this subpart.

(b) Upon completion of the inspection required by § 73.565(e), the inspecting operator shall enter a signed statement that the required inspection has been made, noting in detail the tests, adjustments, and repairs which were accomplished in order to assure operation in accordance with the provisions of this subpart and the current instrument of authorization of the station. The statement shall also specify the amount of time, exclusive of travel time to and from the transmitter, which was devoted to such inspection duties. If complete repair could not be effected, the statement shall set forth in detail the items of equipment concerned, the manner and degree in which they are defective, and the reasons for failure to make satisfactory repairs.

(c) The inspecting operator shall sign and date the mantenance log at the conclusion of each inspection. In preparing the maintenance log, original data may be recorded in rough form and later transcribed into the log, but in such cases all portions of the original memorandum shall be preserved as a part of the complete log.

(d) Any necessary corrections in the maintenance log shall be made only by the inspecting operator who shall initial and date all changes prior to signing the log. If corrections or additions are made on the log after the log has been so signed, explanation must be made the subject of a separate memorandum, dated and signed by the operator who made the entry in question or the station technical supervisor or by an officer of the licensee. Such memorandum shall explain fully the circumstances surrounding the errors or ambiguities, and shall be affixed to the original log in question. If written and signed by other than the inspecting operator who made the entry the memorandum shall contain a satisfactory explanation of why such signature is lacking.

[*§ 73.584 as amended eff. 2-21-66; III(64)-12*]

§ 73.585 Retention of logs.

Logs of noncommercial educational FM broadcast stations shall be retained by the licensee or permittee for a period of 2 years: *Provided, however,* That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further,* That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 73.586 Availability of logs and records.

The following shall be made available upon request by an authorized representative of the Commission:

(a) Program, operating and maintenance logs.

(b) Equipment performance measurements required by § 73.554.

§ 73.587 Station identification.

(a) A licensee of a noncommercial educational FM broadcast station shall make at least the following

station identification announcements (call letters and location): (1) at the beginning and ending of each time of operation; and (2) within 2 minutes of each hour and each half hour during operation: *Provided,*

(b) Such identification announcement need not be made on the hour or half hour when to make such announcement would interrupt a single continuous program of longer duration than 30 minutes. In such cases the identification announcement shall be made at the beginning of the program, at the first interruption of the continuity, and at the conclusion of the program.

(c) In making the identification announcement, the call letters shall be given only on the channel of the station identified thereby.

§ 73.588 Mechanical reproductions.

(a) No mechanically reproduced program consisting of a speech, news event, news commentator, forum, panel discussion, or special event in which the element of time is of special significance, or any other program in which the element of time is of special significance and presentation of which would create, either intentionally or otherwise, the impression or belief on the part of the listening audience that the event or program being broadcast is in fact occurring simultaneously with the broadcast, shall be broadcast without an appropriate announcement being made either at the beginning or end of such reproduction or at the beginning or end of the program in which such reproduction is used that it is a mechanical reproduction or a mechanically reproduced program: *Provided, however,* That each such program of one minute or less need not be announced as such.

(b) The exact form of identifying announcement is not prescribed, but the language shall be clear and in terms commonly used and understood. Any other program mechanically reproduced or series of mechanical reproductions, including a mechanical reproduction used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of sponsorship of the program proper, need not be announced as provided in paragraph (a) of this section, but the licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

(c) The requirements of paragraph (a) of this section are waived with respect to network programs, transcribed and rebroadcast at a later hour because of the time zone differential between the place where the program originates and where it is rebroadcast, this waiver being applicable whether the off-the-line recording is made by the network itself at one of its key stations or by an individual station, but only when the off-the-line recording is for broadcast at an hour not exceeding the time zone differential between the place where the program originates and where it is rebroadcast. Each station which broadcasts network programs at a later hour in accordance with this waiver shall make an appropriate announcement at least once each day between the hours of 10:00 a.m., and 10:00 p.m., stating that some or all of the network programs which are broadcast by that station are delayed broadcasts by means of transcription. This waiver provision also applies during the annual periods in which daylight saving time will be effective with respect to network programs transcribed and rebroadcast one hour later because of the time differential resulting from the adoption of daylight saving time in some areas.

§ 73.590 Broadcasts by candidates for public office.

(a) *Definitions.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, state or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who—

(1) Has qualified for a place on the ballot or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other such candidates for that office to use such facilities: *Provided,* That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Practices.* No licensee shall make any discrimination in practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Records; inspection.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests. Such records shall be retained for a period of two years.

NOTE: See § 1.526 of this chapter.

(e) *Time of request.* A request for equal opportunities must be submitted to the licensee within one week of the day on which the prior use occurred.

(f) *Burden of proof.* A candidate requesting such equal opportunities of the licensee, or complaining of non-compliance to the Commission shall have the burden of proving that he and his opponent are legally qualified candidates for the same public office.

(Sec. 315, 48 Stat. 1088, as amended; 47 U.S.C. 315.)

[*§ 73.590(d) Note as adopted eff. 5-14-65; III(64)-7*]

§ 73.591 Rebroadcast.

(a) The term "rebroadcast" means reception by radio of the program of a radio station, and the simultaneous or subsequent retransmission of such program by a broadcast station. The broadcasting of a program relayed by a remote pick-up broadcast station or studio transmitter link is not considered a rebroadcast. In case a program is transmitted from its point of origin to a broadcast station entirely by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast.

NOTE: As used in this section, program includes any complete program or part thereof.

(b) The licensee of a noncommercial educational FM broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard, FM, noncommercial educational, or international broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program. The foregoing requirements concerning notification of call letters and certification of authority shall not apply to a station when rebroadcasting Defense Network (FM) programs. (Blanket authorizations for the rebroadcast of such programs have been filed with the Commission by all Defense Network (FM) stations.)

NOTE 1: The notice and certification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

NOTE 2: See § 73.503(c).

(c) No licensee of a noncommercial educational FM broadcast station shall rebroadcast the program of any United States radio station not designated in paragraph (b) of this section without written authority having first been obtained from the Commission upon application (informal) accompanied by written consent or certification of consent of the licensee of the station originating the program.

NOTE: By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 73.591(c) is suspended only insofar as it requires prior written authority of the Commission for the rebroadcasting of programs originated for the express purpose by U.S. Government radio stations.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325.)

§ 73.593 Subsidiary Communications Authorizations.

(a) A noncommercial educational FM broadcast licensee or permittee may apply for a Subsidiary Communications Authorization (SCA) to provide limited types of subsidiary service on a multiplex basis. Any use of SCA by such licensee or permittee must be consistent with the limitation on the purpose and operation of noncommercial educational FM stations contained in § 73.503: *Provided*, That uses permitted under this paragraph will not be considered "commercial" as long as no consideration for such use (other than the furnishing of the material transmitted and/or payment of line charges) is received by the licensee, directly or indirectly, and no commercial announcements or references are contained in the material transmitted under the SCA. Permissible uses must fall within one or both of the following categories:

(1) Transmission of programs which are noncommercial and in furtherance of an educational

purpose, and which are of a broadcast nature but of interest primarily to limited segments of the station's audience. Illustrative services include: programs for presentation in classrooms, programs designed for specialized audiences such as doctors or other professional groups, and any use which would be permitted for a commercial FM station under § 73.293(a)(1), subject to the prohibitions against commercial operations and limitation as to purpose contained in this section and in § 73.503.

(2) Transmission of signals which are directly related to the operation of FM broadcast stations; for example, relaying of broadcast material to other broadcast stations, remote cueing and order circuits, remote control telemetering functions associated with authorized STL operation, and similar uses.

(b) Applications for Subsidiary Communications Authorization shall be submitted on FCC Form 318. An applicant for SCA shall specify the particular nature or purpose of the proposed use.

(c) SCA operations may be conducted without restriction as to time so long as the main channel is programmed simultaneously.

§ 73.594 Nature of the SCA.

(a) The SCA is of a subsidiary or secondary nature and shall not exist apart from the noncommercial educational FM license or permit. No transfer or assignment of it shall be made separate from the FM license or permit, and failure to transfer the SCA (through application on FCC Form 318) with the FM license or permit renders the SCA void. The license or permittee must seek renewal of FM license or permit; failure to renew the latter automatically terminates the SCA.

(b) The grant or renewal of a noncommercial educational FM license or permit will not be furthered or promoted by the proposed or past operation under an SCA; the licensee must establish that its broadcast operation is in the public interest wholly apart from the SCA activities. (Violation of rules applicable to the SCA operation would, of course, reflect on the licensee's qualifications to hold its broadcast license or permit.)

§ 73.595 Operation under Subsidiary Communications Authorizations.

(a) Operations conducted under a Subsidiary Communications Authorization (SCA) shall conform to the uses and purposes authorized by the Commission in granting the SCA application. Prior permission to engage in any new or additional activity must be obtained from the Commission pursuant to application therefor.

(b) Superaudible and subaudible tones and pulses may, when authorized by the Commission, be employed by SCA holders to activate and deactivate subscribers' multiplex receivers. The use of these or any other control techniques to delete main channel material is specifically forbidden.

(c) In all arrangements entered into with outside parties affecting SCA operation, the licensee or permittee must retain control over all material transmitted over the station's facilities, with the right to reject any material which it deems inappropriate or undesirable. Subchannel leasing agreements shall be reduced to writing and filed with the Commission pursuant to § 1.613(d) of this chapter.

(d) The logging, announcement, and other requirements imposed by §§ 73.582, 73.583, 73.584, 73.587, and 73.588 are not applicable to material transmitted on authorized subcarrier frequencies.

(e) To the extent that SCA circuits are used for the transmission of program material, each licensee or permittee shall maintain a daily program log in which a general description of the material transmitted shall be entered once during each broadcast day: *Provided, however,* That in the event of a change in the general description of the material transmitted, an entry shall be made in the SCA program log indicating the time of

each such change and a description thereof.

(f) Each licensee or permittee shall maintain a daily operating log of SCA operation in which the following entries shall be made (excluding subcarrier interruptions of five minutes or less) :

(1) Time subcarrier generator is turned on.

(2) Time modulation is applied to subcarrier.

(3) Time modulation is removed from subcarrier.

(4) Time subcarrier generator is turned off.

(5) An entry describing the results obtained in determining the frequency of each SCA subcarrier.

(g) Program and operating logs for SCA operation may be kept on special columns provided on the station's regular program and operating log sheets.

(h) Technical standards governing SCA operation (§ 73.319) shall be observed by all noncommercial educational FM broadcast stations engaging in such operation.

(i) The subcarrier frequency of each SCA subcarrier shall be checked as often as necessary to insure that it is kept at all times within 500 cycles per second of the authorized frequency. At least one check shall be made each day. The choice of method of performing the daily frequency check is left to the discretion of the licensee. However, whatever method is used shall be capable of sufficient accuracy to reveal deviations of the operating frequency in excess of the 500 cycle per second tolerance.

[*§ 73.595 amended in III(64)–12, pars (f)(5) and (i) as adopted eff. 7–5–66; eff. date for making measurements under par. (i) stayed until 10–31–66; III(64)–13*]

§ 73.596 Stereophonic broadcasting.

(a) Noncommercial educational FM broadcast stations may, without further authority, transmit stereophonic programs in accordance with the technical standards set forth in § 73.322: *Provided, however,* That the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified within 10 days, of the installation of type-accepted stereophonic transmission equipment or any change therein, and of the commencement of stereophonic programing.

(b) The pilot subcarrier frequency shall be checked as often as necessary to insure that it is kept at all times within the prescribed tolerance. At least one check shall be made each day. The choice of method for performing the daily frequency check is left to the discretion of the licensee. However, whatever method is used shall be capable of sufficient accuracy to reveal deviation of the pilot subcarrier frequency in excess of the prescribed 2 cycle per second tolerance.

[*§ 73.596 as amended eff. 7–5–66; eff. date for making measurements under par. (b) stayed until 10–31–66; III(64)–13*]

§ 73.597 Operation during emergency.

(a) The licensee of a noncommercial educational FM broadcast station or the permittee of such a station operating under program test authority is authorized only to disseminate radio communications intended to be received by the public. However, during a period of emergency or imminent emergency in the area in which the station is located such a licensee or permittee may also utilize its station for transmitting communications directly related to the emergency which are intended to be received by specific individuals for the purpose of dispatching aid, assisting in rescue operations or otherwise promoting the safety of life and property or alleviating hardship. In the course of such operation a station may communicate with stations of other classes and in other services. For the purposes of this section, an emergency shall mean a situation that would generally and seriously endanger life and property or cause substantial hardship as a result of events such as hurricane or other severe weather conditions, flood, earthquake or wide-area forest fire. The terms shall not include situations resulting from frosts, or localized fires which are not a source of general danger.

(b) The decision to operate under the provisions of this section lies solely with the licensee or permittee of the station, requests by governmental or other officials not being controlling. However, such emergency operations shall terminate upon order of the Commission.

(c) When engaged in operation under the provisions of this section a station shall use the frequency specified in and power not in excess of that specified in its instrument of authorization.

(d) A licensee or permittee operating under the provisions of this section shall (1) as soon as possible after the beginning of such emergency use, send notice to the Commission at Washington, D.C., and to the Engineer in Charge of the district in which the station is located, stating the nature of the emergency and the use to which the station is being put; (2) discontinue such emergency operation as soon as the conditions requiring such operation are no longer present or the public has had an opportunity to be adequately informed; and (3) immediately upon cessation of such emergency operation notify the Commission in Washington, D.C., and the Engineer in Charge of the district in which the station is located, and shall in such notice justify the operation by stating the nature of the emergency, the exact times of operation, the type of emergency information transmitted, the total amount of time devoted to the transmission of emergency information, and other pertinent details.

(e) No operation under this section shall be permitted if an Emergency Action Condition, under the provisions of Subpart G of this part, is in effect. If a station is operating under this section and an Emergency Action Condition is declared, compliance with the Emergency Action Notification shall take precedence.

§ 73.598 Personal attacks; political editorials.

(a) When, during the presentation of views on a controversial issue of public importance, an attack is made upon the honesty, character, integrity or like personal qualities of an identified person or group, the licensee shall, within a reasonable time and in no event later than 1 week after the attack, transmit to the person or group attacked (1) notification of the date, time and identification of the broadcast; (2) a script or tape (or an accurate summary if a script or tape is not available) of the attack; and (3) an offer of a reasonable opportunity to respond over the licensee's facilities.

(b) The provisions of paragraph (a) of this section shall be inapplicable to attacks on foreign groups or foreign public figures or where personal attacks are made by legally qualified candidates, their authorized spokesmen, or those associated with them in the campaign, on other such candidates, their authorized spokesman, or persons associated with the candidates in the campaign.

NOTE: In a specific factual situation, the fairness doctrine may be applicable in this general area of political broadcasts. See section 315(a) of the Act (47 U.S.C. 315(a)); public notice: Applicability of the Fairness Doctrine in the Handling of Controversial Issues of Public Importance. 29 F.R. 10415.

(c) Where a licensee, in an editorial, (i) endorses or (ii) opposes a legally qualified candidate or candidates, the licensee shall, within 24 hours after the editorial, transmit to respectively (i) the other qualified candidate or candidates for the same office or (ii) the candidate opposed in the editorial (1) notification of the date and the time of the editorial; (2) a script or tape of the editorial; and (3) an offer of a reasonable opportunity for a candidate or a spokesman of the candidate to respond over the licensee's facilities: *Provided, however,* That where such editorials are broadcast within 72 hours prior to the day of the election, the licensee shall comply with the provisions of this paragraph sufficiently far in advance of the broadcast to enable the candidate or candidates to have a reasonable opportunity to prepare a response and to present it in a timely fashion.

[§ 73.598 *adopted eff. 8–14–67; III(64)–18*]

SUBPART D—[RESERVED]

SUBPART E—TELEVISION BROADCAST STATIONS

GENERAL

§ 73.601 Scope of subpart.

This subpart contains the rules and regulations (including engineering standards) governing television broadcast stations, including noncommercial educational television broadcast stations, in the United States, its Territories and possessions.

§ 73.602 Other pertinent rules.

Other pertinent provisions of the Commission's rules and regulations relating to the television broadcast service are included in the following parts of this chapter:

Part 1—Practice and Procedure.

Part 2—Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

Part 17—Construction, Marking, and Lighting of Antenna Structures.

Part 74—Experimental, Auxiliary, and Special Broadcast Services.

§ 73.603 Numerical designation of television channels.

(a)

Channel No.	Frequency band (megacycles)	Channel No.	Frequency band (megacycles)
2	54–60	16	482–488
3	60–66	17	488–494
4	66–72	18	494–500
5	76–82	19	500–506
6	82–88	20	506–512
7	174–180	21	512–518
8	180–186	22	518–524
9	186–192	23	524–530
10	192–198	24	530–536
11	198–204	25	536–542
12	204–210	26	542–548
13	210–216	27	548–554
14	470–476	28	554–560
15	476–482	29	560–566
30	566–572	57	728–734
31	572–578	58	734–740
32	578–584	59	740–746
33	584–590	60	746–752
34	590–596	61	752–758
35	596–602	62	758–764
36	602–608	63	764–770
37	608–614	64	770–776
38	614–620	65	776–782
39	620–626	66	782–788
40	626–632	67	788–794
41	632–638	68	794–800
42	638–644	69	800–806
43	644–650	70	806–812
44	650–656	71	812–818
45	656–662	72	818–824
46	662–668	73	824–830
47	668–674	74	830–836
48	674–680	75	836–842
49	680–686	76	842–848
50	686–692	77	848–854
51	692–698	78	854–860
52	698–704	79	860–866
53	704–710	80	866–872
54	710–716	81	872–878
55	716–722	82	878–884
56	722–728	83	884–890

(b) In Alaska and Hawaii, the frequency bands 76–82 Mc/s and 82–88 Mc/s are allocated for nonbroadcast use. These frequency bands (Channels 5 and 6) will not be assigned in Alaska or Hawaii for use by television broadcast stations.

(c) Channel 37, 608–614 Mc/s, is not available for assignment prior to January 1, 1974.

(d) In Guam, Mariana Islands, the frequency band 66–72 Mc/s (Television Channel 4) is not available for use by television broadcast stations prior to July 1, 1970. Subject to agreement by the Commission, frequencies within this band may be authorized until July 1, 1970, for use by Government stations in the maritime mobile service in the Mariana Islands and vicinity.

[*§ 73.603(d) as adopted, eff. 10–8–64; III(64)–3*]

CHANNEL UTILIZATION

§ 73.606 Table of assignments.

(a) *General.* The following table of assignments contains the channels assigned to the listed communities in the United States, its Territories, and possessions. Channels designated with an asterisk are assigned for use by noncommercial educational broadcast stations only. A station on a channel identified by a plus or minus mark is required to operate with its carrier frequencies offset 10 kc/s above or below, respectively, the normal carrier frequencies.

(b) *Table of assignments.*

[§ 73.606(b) table as revised eff. 3-28-66 (except as otherwise noted under particular cities); III(64)-12]

NOTE: Offset designators for UHF channels are not shown in the table below but will be added in a subsequent order. The appropriate offset will be shown on any construction permit or license which may be issued prior thereto.

	Channel No.
Alabama:	
Andalusia	*2—
Anniston	40
Birmingham	6—, *10—, 13—, 21, 42, *62, 68
Decatur	23
Demopolis	*41
Dothan	4, 18, *39, 60
Florence	15, 26, *36
Gadsden	44, 60
Huntsville	19, *25, 31, 48
Louisville	*43
Mobile	5+, 10+, 15, 21, *31, *42
Montgomery	12, 20, *26, 32, 45
Munford	*7—, *16
Selma	8—, 29
Tuscaloosa	17, 33, *39
Tuscumbia	47
Alaska:	
Anchorage	2—, *7—, 11, 13—
Fairbanks	2+, 4+, 7+, *9+, 11+, 13+
Juneau	*3, 8, 10
Ketchikan	2, 4, *9
Seward	4—, 9—
Sitka	13
Arizona:	
Ajo	*23
Douglas	3, *28
Flagstaff	9, 13, *16
Globe	*14
Holbrook	*18
Kingman	6—, *14
McNary	*22
Mesa	12—
Nogales	11, *16
Page	*17
Parker	*17
Phoenix	3+, 5—, *8+, 10—, 15, 21, 33, *39
Prescott	7, *19
Safford	*23
Tucson	4—, *6+, 9—, 13—, 18, *27, 40
Yuma	11—, 13+, *16
Arkansas:	
Arkadelphia	*9+
Batesville	*17
El Dorado	10—, 18, *30
Fayetteville	*13—, 36
[Fayetteville—eff. 11-21-66; III(64)-14]	
Fort Smith	5—, 24
Harrison	*14
Hot Springs	*20, 26
Jonesboro	8—, *19
Little Rock	*2—, 4, 7—, 11+, 16, *29
Pine Bluff	25, 38
Russellville	*28
California:	
Alturas	13+
Anaheim	56
[Anaheim—eff. 8-7-67; III(64)-18]	
Bakersfield	17, 23, 29, *39
Barstow	*35
Bishop	*14
Blythe	*22

California—Continued	Channel No.
Brawley	*26
Chico	12—, *18
Coalinga	*27
Corona	52
Cotati	*22
El Centro	7+, 9+
Eureka	3—, 6—, 13—
Fort Bragg	*17
Fresno	*18, 24, 30, 47, 53
Hanford	21
Indio	*19
Los Angeles	2, 4, 5, 7, 9, 11, 13, 22, *28, 34, *58
Modesto	19—, *23
[*Modesto—eff. 6-10-66; III(64)-18*]	
Palm Springs	36, 42
[*Palm Springs—eff. 10-31-66; III(64)-14*]	
Pittsburg	42
Redding	7, *9, 16
Ridgecrest	*25
Riverside	40, 46
Sacramento	3, *6, 10, 15, 40
Salinas-Monterey	8+, 46, *56, 67
San Bernardino	18, *24, 30
San Diego	8, 10, *15, 39, 51
San Francisco	2+, 4—, 5+, 7—, *9+, 20, 26, 32, 38, 44, *60
San Jose	11+, 36, 48, *54
San Luis Obispo	6+, *15
San Mateo	*14
Santa Ana	*50
Santa Barbara	3—, 14, *20
Santa Cruz	*16
Santa Maria	12+
Santa Rosa	50, *62

California—Continued	Channel No.
Stockton	13+, 31, 58
[*Stockton—eff. 6-10-66; III(64)-15*]	
Susanville	*14
Ventura	16
Visalia	43
Watsonville	*25
Yreka City	*20
Colorado:	
Alamosa	3—, *16
Boulder	*12, 14
Colorado Springs	11, 13, 21
Craig	*16
Denver	2, 4—, *6—, 7, 9—, 20, 31, *41
Durango	6+, *20
Fort Collins	22
Glenwood Springs	*19
Grand Junction	5—, *18
Gunnison	*17
La Junta	*22
Lamar	12—, *14
Leadville	*15
Montrose	10+, *22
Pueblo	5, *8, 26, 32
Salida	*23
Sterling	3, *18
Trinidad	*24
Connecticut:	
Bridgeport	43, *49
Hartford	3+, 18, *24, 61
New Britain	30
New Haven	8+, 59, *65
New London	26
Norwich	*53
Waterbury	20

Delaware:	Channel No.
Dover	*34
Seaford	*22
Wilmington	12, 61
[*Wilmington—eff. 5-23-66; III(64)-13*]	
District of Columbia:	
Washington	4—, 5—, 7+, 9, 14, 20, *26, *32, 50
Florida:	
Boca Raton	*14
Bradenton	*19
Clearwater	22
Cocoa	*18, 52
Daytona Beach	2—, 26
Fort Lauderdale	51
Fort Meyers	11+, *30
Fort Pierce	*21, 34
Gainesville	*5—, 20
Jacksonville	4+, *7, 12—, 17, 30, 47, *59
Key West	16, 22
Lake City	*41
[*Lake City—eff. 5-22-67; III(64)-17*]	
Lakeland	32
Leesburg	*45
Madison	*36
Marianna	*16
Melbourne	31, 43
Miami	*2, 4, 6, 7—, 10+, *17, 23, 33, 39, 45
New Smyrna Beach	*15
Ocala	*29, 51
Orlando	6—, 9, *24, 35
Palatka	*42
Panama City	7+, 13, *22, 28

	Channel No.
Florida—Continued	
Pensacola	3—, *23, 33, 44
St. Petersburg	10—, 38, 44
Sarasota	40
Sebring	*27
Tallahassee	*11—, 27, 40
Tampa	*3, 8—, 13—, *16, 28
West Palm Beach	5, 12, 25, *42, 53
Georgia:	
Albany	10, 19, 31
Ashburn	*23
Athens	*8, 34
Atlanta	2, 5—, 11+, 17, *30, 36, 46, *57
Augusta	6+, 12+, 26, 54
Chatsworth	*18
Cochran	*15
Columbus	3, 9+, *28, 38, 54
Dawson	*25
Draketown	*27
Macon	13+, 24, 41, *47
Pelham	*14
Rome	14
Savannah	3+, *9—, 11, 22
Thomasville	6
Toccoa	32
Valdosta	*33, 44
Vidalia	*18
Warm Springs	*22
Waycross	*8+
Wrens	*20
Hawaii:	
Hilo	2, *4, 9, 11, 13
Honolulu	2+, 4—, 9—, *11+, 13—
Lihue	3+, *8—, 10+, 12—
Wailuku	3, 7, *10, 12

	Channel No.
Idaho:	
Boise	2, *4+, 7, 14
Burley	*17
Caldwell	9—
Coeur d'Alene	*26
Grangeville	*15
Idaho Falls	3, 8+, 20, *33
Filer	*19
Lewiston	3—
Moscow	*12—
Nampa	6, 12+
Preston	*28
Pocatello	6—, *10, 15, 25, 31
[*Pocatello—eff. 7-17-67; III(64)-18*]	
Sandpoint	*16
Twin Falls	11, 13—
Weiser	*17
Illinois:	
Aurora	60
Bloomington	43
[*Bloomington—eff. 5-31-66; III(64)-13*]	
Carbondale	*8
Champaign	3+, 15—
[*Champaign—eff. 5-31-66; III(64)-13*]	
Chicago	2—, 5, 7, 9+, *11, *20, 26, 32, 38, 44
Danville	68
Decatur	17, 23
DeKalb	*48
Edwardsville	*18
Elgin	66
Freeport	23, *65
Galesburg	63
Harrisburg	3
Jacksonville	14
Joliet	14
Kankakee	*54
LaSalle	35

	Channel No.
Illinois—Continued	
Macomb	*22
Moline	8, *24
Olney	*16
Peoria	19, 25, 31, 47, *59
Quincy	10—, 16, *27
Rockford	13, 17, 39
Rock Island	4+
Springfield	20, 49, 55, *65
Streator	*64
Urbana	*12—, 27
Vandalia	*21
Indiana:	
Anderson	67
Bloomington	4, *30, 63
Elkhart	28
Evansville	7, *9+, 14, 25, 44
Fort Wayne	15, 21, 33, *39, 55
Gary	*50, 56
[*Gary—eff. 7-25-66; III(64)-14*]	
Hammond	62
Indianapolis	6, 8—, 13—, *20, 40, 59, *69
Kokomo	29
Lafayette	18, *24
Madison	*60
Marion	31
Muncie	23, 49, *61
Richmond	43
[*Richmond—eff. 7-25-66; III(64)-14*]	
South Bend	16, 22, *34, 46
Terre Haute	2+, 10, *26, 66
Vincennes	*22
Iowa:	
Ames	5, 23, *34
Burlington	26, *58
Carroll	*18
Cedar Rapids	2, 9—, 28

	Channel No.
Iowa—Continued	
Council Bluffs	*32
Davenport	6+, 18, 30, *36
Decorah	*14
Des Moines	8−, *11+, 13−, 17, *43, 63, 69
Dubuque	16, *29, 40
Estherville	*28
Fort Dodge	21
Iowa City	*12+, 20
Mason City	3+, *24
Ottumwa	15, *33
Red Oak	*36
Sioux City	4−, 9, 14, *27
Waterloo	7+, 22, *32
Kansas:	
Chanute	*30
Colby	4
[*Colby—eff. 7-11-66; III(64)-18*	
Columbus	*34
Dodge City	6+, *21
Emporia	*25
Garden City	11+, 13−
Goodland	10
Great Bend	2
Hays	7−, *14
Hutchinson	*8, 12, 36
Lakin	*3
Lincoln Center	*9
Manhattan	*21
Oakley	*15
Phillipsburg	*22
Pittsburg	7+
Pratt	*32
Salina	18, 34, 44
Sedan	*28
Topeka	*11, 13+, 27, 43, 49
[*Topeka—eff. 9-6-66; III(64)-14*]	
Wichita	3−, 10−, *15, 24, 33, *42

	Channel No.
Kentucky:	
Ashland	*25, 61
Bowling Green	13, 40, *53
Covington	*54
Elizabethtown	*23
Hazard	*35, 57
[*Hazard—eff. 6-19-67; III(64)-18*]	
Hopkinsville	51
[*Hopkinsville—eff. 6-5-67; III(64)-17*]	
Lexington	18, 27, *46, 62
Louisville	3−, 11+, *15, 21, 32, 41, *68
Madisonville	*35
Morehead	*38
Murray	*21
Owensboro	19, 31
Owenton	*52
[*Owenton—eff. 7-25-66; III(64)-14*]	
Paducah	6+, 29
Pikeville	*22, 51
Somerset	16, *29
[*Somerset—eff. 10-3-66; III(64)-14*]	
Louisiana:	
Alexandria	5, 25, 31, *41
Baton Rouge	2, 9−, *27, 33
De Ridder	*23
Houma	11
Lafayette	3, 10, 15, *24
Lake Charles	7−, *18, 29
Monroe	8+, *13, 14, 39
Morgan City	*14
Natchitoches	*28
New Iberia	36
New Orleans	4+, 6+, *S, 12, 20, 26, *32,38
[*New Orleans—eff. 3-6-67; III(64)-16*]	
Shreveport	3−, 12, *24, 33
Tallulah	*19
Maine:	
Augusta	*10−
Bangor	2−, 5+, 7−
Calais	*13−

	Channel No.
Maine—Continued	
Fort Kent	*46
Fryeburg	*18
Houlton	*25
Kittery	*34
Lewiston	8−, 35
Millinocket	*44
Orono	*12−
Portland	6−, 13+, 26, *51
Presque Isle	8, *10+
Rumford	*43
Maryland:	
Baltimore	2+, 11−, 13+, 24, 45, 54, *67
Cumberland	*36, 52, 65
Frederick	*62
Hagerstown	25, *68
[*Hagerstown—eff. 7-5-67; III(64)-18*]	
Salisbury	16, *28
Waldorf	*56
Massachusetts:	
Boston	*2+, 4−, 5−, 7+, 25, 38, *44, 56, 68
Greenfield	32
New Bedford	6+, 28, *47
North Adams	19, *35
Pittsfield	51
Springfield	22, 40, *57
Worcester	14, 27, *48, 66
Michigan:	
Alpena	*6, 11
Ann Arbor	*58
Bad Axe	*15
Battle Creek	41
Bay City	5−, *19, 61
Cadillac	9, *27
Calumet	5, *22
Cheboygan	4+
Detroit	2+, 4, 7−, 20, 50, *56, 62
East Lansing	23, *69

Michigan—Continued	Channel No.
Escanaba	3+
Flint	12–, *31, 66
[*Flint—eff. 7-25-66; III(64)-14*]	
Grand Rapids	8+, 13+, 17, *35
Iron Mountain	8–, *14
Ironwood	*15
Jackson	18
Kalamazoo	3–, *52
Lansing	6–, 36, 53
[*Lansing—eff. 5-22-67; III(64)-17*]	
Manistee	*21
Manistique	*15
Marquette	6–, 13, *19
Mount Clemens	22
[*Mount Clemens—eff. 2-27-67; III(64)-16*]	
Mount Pleasant	*14
Muskegon	54
Parma	10–
Petoskey	*23
[*Pontiac—deleted eff. 2-27-67; III(64)-16*]	
Port Huron	44
Saginaw	25, 42
Sault Ste. Marie	8, 10+, *32
Traverse City	7+, 29
West Branch	*24
Minnesota:	
Alexandria	7, *24
Appleton	*10–
Austin	6–, *15
Bemidji	*9, 26
[*Bemidji—eff. 7-11-66; III (64)-13*]	
Brainerd	*22
Crookston	*33
Duluth	3, *8, 10+, 21, 27
Ely	*17
Fairmont	*16

Minnesota—Continued	Channel No.
Hibbing	13–, *18
International Falls	11, *35
Mankato	12, *26
Marshall	*30
Minneapolis-St. Paul	*2–, 4, 5–, 9+, 11–, *17, 23, 29
Rochester	10, 47
St. Cloud	19, *25, 41
St. James	38
[*St. James—eff. 3-6-67; III(64)-16*]	
Thief River Falls	10
Wadena	*20
Walker	12–
Willmar	*14
Winona	*35
Worthington	*20
Mississippi:	
Biloxi	13+, *19, 25
Booneville	*18
Bude	*17
Cleveland	*31
Columbia	*34
Columbus	4–
Greenville	15, 21
Greenwood	6, *23
Hattiesburg	22, *28
Jackson	3+, 12+, 16, *29, 40
Laurel	7, 18
Meridian	11–, *14, 24, 30
Senatobia	*22
State College	*2+
Tupelo	9–
Vicksburg	35
Yazoo City	*32

Missouri:	Channel No.
Birchtree	*20
Bowling Green	*35
Cape Girardeau	12, 23, *39
Carrollton	*18
Columbia	8+, 17
Flat River	*22
Hannibal	7–
Jefferson City	13, 25, *36
Joplin	12+, 16, *22
Kansas City	4, 5+, 9+, *19, 41, 50, 62, *68
King City	*28
Kirksville	3–
LaPlata	*21
Lowry City	*15
Poplar Bluff	15, *26
Rolla	*28
St. Joseph	2–, 16, 22
St. Louis	2, 4–, 5–, *9, 11–, 24, 30, *40
Sedalia	6–
Springfield	3+, 10, *21, 27
Montana:	
Anaconda	2+
Billings	2, 8, *11, 14, 20
Bozeman	*9
Butte	4, 6+, *7–, 18, 24
Cut Bank	*14
Dillon	*14
Glendive	5+, *16
Great Falls	3+, 5+, 16, 26, *32
Hardin	4+
Havre	9+, 11+, *18
Helena	10+, 12, *15
Kalispell	9–, *29

	Channel No.
Montana—Continued	
Lewistown	13
Miles City	3—, *6, 10
Missoula	8—, *11—, 13—, 17, 23
Wolf Point	*17
Nebraska:	
Albion	8+, *21
Alliance	*13—
Bassett	*7—
Grand Island	11—, 17
Hastings	5—
Hayes Center	6
Hay Springs	4+
Kearney	13
Lexington	*3+
Lincoln	10+, *12—, 45, 51
McCook	8—
Norfolk	*19
[*Norfolk—eff. 5-5-67; III(64)-17*]	
North Platte	2—, *9+
Omaha	3, 6+, 7, 15, *26, 42, *48
Scottsbluff	10—
Superior	4+
Nevada:	
Boulder City	5+
[*Boulder City—eff. 6-13-66; III(64)-13*]	
Elko	10—, *14
Ely	3—, 6+
Fallon	*25
Goldfield	2—
[*Goldfield—eff. 6-13-66; III(64)-13*]	
Las Vegas	3, 8—, *10+, 13—, 21
[*Las Vegas—eff. 6-13-66; III(64)-13*]	
McGill	8+
Reno	2, 4, *5, 8, 21, 27
Tonopah	9—, *17
Winnemucca	7+, *15
Yerington	*16

	Channel No.
New Hampshire:	
Berlin	*40
Concord	21
Durham	*11
Hanover	*15, 31
Keene	*52
Littleton	*49
Manchester	9—, 50, 60
Portsmouth	17
New Jersey:	
Asbury Park	58
Atlantic City	*18, 53
Burlington	48
Glen Ridge	*77
Newark	13—, 68
New Brunswick	*19, 47
Paterson	41
Trenton	*52
Vineland	65
Wildwood	40
New Mexico:	
Alamogordo	*18
Albuquerque	4+, *5+, 7+, 13+, 14, 23, *32
Carlsbad	6—, *15, 25
Clayton	*17
Clovis	12+
Deming	*16
Farmington	12+, *15
Gallup	3, *8—, 10
Hatch	*12
Hobbs	29
Las Cruces	22
Lovington	*19

	Channel No.
New Mexico—Continued	
Portales	*3+
Raton	*18
Roswell	8, 10—, 21, 27, *33
Santa Fe	2+, *9+, 11—, 19
Silver City	6, *10+
Socorro	*15
Tucumcari	*15
New York:	
Albany-Schnectady	6, 10—, 13, *17, 23, *29, 45
Amsterdam	*39, 55
Binghamton	12—, 34, 40, *46
Buffalo	2, 4—, 7+, 17, *23, 29, 49
Carthage	7—
Corning	*30
Elmira	18, 36
Glens Falls	*58
Ithaca	*14, 52
Jamestown	26, *46
Kingston	63
Lake Placid	5, *34
Levittown	*21
Massena	*18
New York	2, 4, 5+, 7, 9+, 11+, *25, 31
Oneonta	15, *42
[*Oneonta—eff. 4-10-67; III(64)-17*]	
Patchogue	67
Plattsburg	*57
Poughkeepsie	54
Riverhead	55
Rochester	8, 10+, 13—, *21, 31, 61
Syracuse	3—, 5—, 9—, *24, 43, 62
Utica	2—, 20, 33, *59
[*Utica—eff. 4-10-67; III(64)-17*]	
Watertown	16, *50

	Channel No.
North Carolina:	
Asheville	13−, 21, *33, 62
Burlington	16
Chapel Hill	*4+
Charlotte	3, 9+, 18, 36, *42
Columbia	*2
Concord	*58
Durham	11+, 28
[*Durham—eff. 7-25-66; III(64)-14*]	
Fayetteville	40, 62
Franklin	*56
Goldsboro	17
Greensboro	2−, 48, 61
Greenville	9−, 14, *25
Hickory	14
High Point	8−, *32
Kannapolis	64
Lexington	20
Linville	*17
Morganton	23
New Bern	12+
Raleigh	5, 22, *34
[*Raleigh—eff. 7-25-66; III(64)-14*]	
Rocky Mount	47
Washington	7
Waynesville	59
[*Waynesville—eff. 10-3-66; III(64)-14*]	
Wilmington	3−, 6, 29, *39
Wilson	30
Winston-Salem	12, *26, 45
North Dakota:	
Bismarck	*3, 5, 12−, 17, 26
Devils Lake	8+, *22
Dickinson	2+, *4−, 7
[*Dickinson—eff. 6-12-67; III(64)-17*]	
Ellendale	*19
Fargo	6, 11+, *13, 15
Grand Forks	*2, 14, 27
Jamestown	7−, *23
Minot	*6+, 10−, 13−, 14, 24
Pembina	12
Valley City	4−
Williston	8−, 11−, *15

	Channel No.
Ohio:	
Akron	23, *49, 55
[*Akron—eff. 9-6-66; III(64)-14*]	
Ashtabula	15
Athens	*20
Bowling Green	*70
Bryan	*27
Canton	17, 67
[*Canton—eff. 9-6-66; III(64)-14*]	
Chillicothe	53
Cincinnati	5−, 9, 12, 19, *48, 64
Cleveland	3, 5+, 8, 19, *25, 61
Columbus	4−, 6+, 10+, *34, 47, *56
Dayton	2, 7+, 16, 22, *45
Defiance	65
[*Defiance—eff. 12-21-66; III(64)-15*]	
Hillsboro	*24
Lima	35, 44, *57
Lorain	43
Mansfield	*31
Marion	68
Newark	*28, 52
Oxford	*14
Portsmouth	30, 36, *42
Sandusky	51
Springfield	26, *66
Steubenville	9+, *62
Toledo	11−, 13, 24, *30, 54, 60
Woodsfield	*44
Youngstown	21, 27, 33, 45, *58
Zanesville	18
Oklahoma:	
Ada	10+, *22
Altus	*19
Ardmore	12−, *17
Bartlesville	17
Elk City	8+, *15
Enid	20, *26
Guymon	*16
Hugo	*15
Lawton	7+, 16, *36
[*Lawton—eff. 1-23-67; III(64)-15*]	

	Channel No.
Oklahoma—Continued	
McAlester	*32
Miami	*18
Muskogee	19
Oklahoma City	4−, 5, 9−, *13, 14, 25, 34, 43
Tulsa	2+, 6, 8−, *11−, 23, 29, *35, 41
Woodward	*17
Oregon:	
Astoria	*21
Bend	*15, 21
[*Bend—eff. 10-3-66; III(64)-14*]	
Brookings	*14
[*Brookings—eff. 7-11-66; III(64)-13*]	
Burns	*18
Corvallis	*7−
Eugene	9+, 13, 16, *28
Klamath Falls	2−, *22
La Grande	13+, *16
Medford	5, 8+, 10+, *18
[*Medford—eff. 7-11-66; III(64)-15*]	
North Bend	11, *17
Portland	2, 6+, 8−, *10, 12, 24, *30
Roseburg	4+
Salem	3+, *22, 32
The Dalles	*17
Pennsylvania:	
Allentown	*39, 69
Altoona	10−, 31, 47, *57
[*Altoona—eff. 7-5-67, III(64)-18*]	
Bethlehem	60
Clearfield	*3+
Erie	12, 24, 35, *54, 66
Greensburg	40
Harrisburg	21, 27, *33
Hazleton	56
Johnstown	6, 19, *28
Lancaster	8−, 15
Lebanon	59
Philadelphia	3, 6−, 10, 17, 23, 29, *35, *57
Pittsburgh	2−, 4+, 11, *13−, *16, 22, 53

	Channel No.
Pennsylvania—Continued	
Reading	51
Scranton	16, 22, 38, *44, 64
State College	*55
[*State College—eff. 7-5-67; III(64)-18*]	
Wilkes-Barre	28
Williamsport	66
York	43, 49
Rhode Island:	
Providence	10+, 12+, 16, *36, 64
South Carolina:	
Aiken	*44
Allendale	*14
Anderson	40
Beaufort	*16
Charleston	2+, 4, 5+, *7−
Columbia	10−, 19, 25, *35, 57
Conway	*23
Florence	13+, 15, 21, *33
Georgetown	*41
Greenville	4−, 16, *29
Greenwood	*38
Rock Hill	30, *55
Spartanburg	7+, 49
Sumter	*27
South Dakota:	
Aberdeen	9−, *16
Brookings	*8
Huron	12+
Lead	5−, 11+
Mitchell	5+
Pierre	4, *10+
[*Pierre—eff. 6-12-67; III(64)-17*]	
Rapid City	3+, 7+, *9, 15, 21
Reliance	6−
Seneca	*2−
Sioux Falls	11, 13+, 17, *23, 36
Vermillion	*2+
Watertown	3−

	Channel No.
Tennessee:	
Athens	*24
Chattanooga	3+, 9, 12−, *45, 61
Cookeville	*22
Crossville	*20, 55
[*Crossville—eff. 6-19-67; III(64)-18*]	
Fayetteville	*28
Greeneville	39
Jackson	7+, 16, *32
Johnson City	11−, *41
Kingsport	19
Knoxville	6, 10+, *15, 26−, *43
[*Knoxville—eff. 5-29-67; III(64)-17*]	
Lexington	*11
Memphis	3−, 5+, *10+, 13+, *14, 24, 30
Murfreesboro	39
Nashville	*2−, 4+, 5, 8+, 17, 30, *42
Sneedville	*2+
Texas:	
Abilene	9+, 15, *26, 32
Alpine	12−
Amarillo	*2−, 4, 7, 10, 14
Austin	7+, *18, 24, 36, 42
Bay City	*27
Beaumont	6−, 12−, 21, *34
Big Spring	4−, *14
Boquillas	8−
Brady	13
Brownsville	23
Bryan	3+, *15
Childress	*21
Corpus Christi	3−, 6+, 10−, 28, *38
Dallas	4+, 8, *13+, 27, 33, 39
[*Dallas—eff. 1-23-67; III(64)-15*]	
Del Rio	10, *24
Denton	*2
El Paso	4, *7, 9, 13, 14, 26, *38
Fort Stockton	5+
Fort Worth	5+, 11−, 21, *31
Galveston	16, *22
Harlingen	4+, *44, 60

	Channel No.
Texas—Continued	
Houston	2−, *8, 11+, 13−, *14, 20, 26, 39
Laredo	8, 13, 27, *39
Longview	16
Lubbock	*5−, 11, 13−, 28, 34
Lufkin	9
McAllen	48
Marfa	3
Marshall	*22, 35
Midland	2+, 18
Monohans	9−
Nacogdoches	19, *32
Odessa	7−, 24, 30, *36
Port Arthur	4−
Presidio	7+
Richardson	23
Rosenberg	45
[*Rosenberg—eff. 12-12-66; III(64)-15*]	
San Angelo	3−, 6+, 8+, *21
San Antonio	4, 5, *9−, 12+, *23, 29, 41
Sherman	20, *26
Sonora	11+
Sweetwater	12
Temple	6, 46
[*Temple—eff. 5-22-67; III(64)-17*]	
Texarkana	6+, 17, *34
Tyler	7, 14, *38
[*Tyler—eff. 1-23-67; III(64)-15*]	
Victoria	19, 25
Waco	10+, 25, *34, 44
Weslaco	5−
Wichita Falls	3, 6−, 18, *24
Utah:	
Cedar City	4, *16
[*Cedar City—eff. 6-13-66; III(64)-15*]	
Logan	12−, *22
Moab	*14
Monticello	*16
Ogden	*9+, *18, 24, 30
Price	6, *15

Utah—Continued	Channel No.
Provo	*11+, 16
Richfield	13+, *19
Salt Lake City	2−, 4−, 5+, *7−, 14, 20, *26
St. George	*18
Vernal	3+, *17
Vermont:	
Burlington	3, 22, *33
[*Burlington—eff. 5-31-66; III(64)-13*]	
Rutland	*28
St. Johnsbury	*20
Windsor	*41
Virginia:	
Blacksburg	*43
Bluefield	*63
Bristol	5+, *28
Charlottesville	29, *41, 64
Courtland	*52
[*Courtland—eff. 1-10-67; III(64)-16*]	
Danville	24, 44, *56
Fredericksburg	*53
Front Royal	*42
Hampton	13−, *15
Harrisonburg	3−
Kenbridge	*31
Lynchburg	13, 21, *33
Norfolk-Portsmouth-Newport News	3+, 10+, 27, 33, 49, *55
Norton	*47
Onancock	*25
Petersburg	8
Richmond	6+, 12−, *23, 35, *57, 63
Roanoke	7−, 10, *15, 27
Staunton	*51
[*Staunton—eff. 12-12-66; III(64)-15*]	
West Point	*46
Washington:	
Bellingham	12+, 24, *34, 64
Centralia	*15
Everett	16
Kennewick	42
[*Kennewick—eff. 7-25-66; III(64)-14*]	
Pasco	19

Washington—Continued	Channel No.
Pullman	*10−
Richland	25, *31
Seattle	4, 5+, 7, *9, 22, *28
Spokane	2−, 4−, 6−, *7+, 22, 28
Tacoma	11+, 13−, 20, *56, *62
Vancouver	*14
Walla Walla	14
Wenatchee	*18
Yakima	23, 29, 35, *47
West Virginia:	
Beckley	4
Bluefield	6−, 40
Charleston	8+, 23, 29, *49
Clarksburg	12+, 46
Fairmont	66
Grandview	*9−
Huntington	3+, 13+, *67
Martinsburg	*44
Morgantown	*24
Parkersburg	15, 39, *57
Weirton	*50
Weston	5
Wheeling	7, 14, 41
Williamson	*31
Wisconsin:	
Appleton	32
Colfax	*28
Eau Claire	13+, 18
Fond du Lac	34
Green Bay	2+, 5+, 11+, 26, *38
Janesville	57
Kenosha	55
[*Kenosha—eff. 6-19-67; III(64)-18*]	
LaCrosse	8+, 19, 25, *31
Madison	3, 15, *21, 27, 47
Manitowoc	16
Milwaukee	4−, 6, *10+, 12, 18, 24, 30, *36
Oskosh	22
Racine	49
Rhinelander	12+
Sheboygan	28
Superior	6+, 40
Wausau	7−, 9, *20, 33

Wyoming:	Channel No.
Casper	2+, *6+, 14, 20
Cheyenne	5+, *17, 27, 33
Lander	4
Laramie	*8+
Rawlins	11−
Riverton	10+
Rock Springs	13
Sheridan	7, 12+

U.S. Territories and Possessions

Guam:	
Agana	*3, 8, *10
[*Agana—eff. 6-12-67; III(64)-17*]	
Puerto Rico:	
Aguadilla	*32, 44
Arecibo-Aguadilla	12+
Arecibo	54, 80
Bayamon	36
Caguas	11−, *58
Carolina	52
Cayey	76
Fajardo	13+, *40
Guayama	46
Humacoa	68
Mayaguez	3+, 5−, 16, 22
Ponce	7+, 9−, 14, 20, *26, 48
San Juan	2+, 4−, *6+, 18, 24, 30, *74
San Sebastian	38
Utuado	*70
Vega Baja	64
Yauco	42
Virgin Islands:	
Charlotte Amalie	10−, 17, *23, 43
Christiansted	8+, 15, *21, 27

[*§ 73.606(b) table as revised eff. 3-28-66 (except as otherwise noted under particular cities); III(64)-12*]

§ 73.607 Availability of channels.

(a) Subject to the provisions of paragraph (b) of this section, applications may be filed to construct television broadcast stations only on the channels assigned in the Table of Assignments (§ 73.606(b)) and only in communities listed therein. Applications which fail to comply with this requirement, whether or not accompanied by a petition to amend the Table, will not be accepted for filing: *Provided, however,* That applications specifying channels which accord with publicly announced Commission Orders changing the Table of Assignments will be accepted for filing even though such applications are tendered before the effective dates of such channel changes.

(b) A channel assigned to a community listed in the Table of Assignments is available upon application in any unlisted community which is located within 15 miles of the listed community. In addition, a channel assigned to a community listed in the Table of Assignments and not designated for use by noncommercial educational stations only, is available upon application in any other community within 15 miles thereof which, although listed in the Table, is assigned only a channel designated for use only by noncommercial educational stations. Where channels are assigned to two or more communities listed in combination in the Table of Assignments the provisions of this paragraph shall apply separately to each community so listed. The distance between communities shall be determined by the distance between the respective coordinates thereof as set forth in the publication of the United States Department of Commerce entitled "Air Line Distance Between Cities in the United States." (This publication may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.) If said publication does not contain the coordinates of either or both communities, the coordinates of the main post office in either or both of such communities shall be used. The method to be followed in making the measurements is set forth in § 73.611(d).

§ 73.608 International agreements.

Authorizations issued by the Commission for television broadcast facilities will be subject to the provisions of any agreements entered into by the United States with Canada and Mexico concerning television assignments and authorizations. Where, pursuant to such an agreement, timely objection is received from the foreign country involved to an authorization granted by the Commission, the Commission may, on its own motion, set aside such authorization pending consideration of such objection. Upon receipt of such objection, the Commission will notify the person to whom such authorization has been issued.

§ 73.609 Zones.

(a) For the purpose of allocation and assignment, the United States is divided into three zones as follows:

(1) Zone I consists of that portion of the United States located within the confines of the following lines drawn on the United States Albers Equal Area Projection Map (based on standard parallels 29½° and 45½°; North American datum): Beginning at the most easterly point on the State boundary line between North Carolina and Virginia; thence in a straight line to a point on the Virginia-West Virginia boundary line located at North Latitude 37° 49′ and West Longitude 80° 12′ 30″; thence westerly along the southern boundary lines of the States of West Virginia, Ohio, Indiana and Illinois to a point at the junction of the Illinois, Kentucky, and Missouri State boundary lines; thence northerly along the western boundary line of the State of Illinois to a point at the junction of the Illinois, Iowa, and Wisconsin State boundary lines; thence easterly along the northern State boundary line of Illinois to the 90th meridian; thence north along this meridian to the 43.5° parallel; thence east along this parallel to the 71st meridian; thence in a straight line to the intersection of the 69th meridian and the 45th parallel; thence east along the 45th parallel to the Atlantic Ocean. When any of the above lines pass through a city, the city shall be considered to be located in Zone I. (See Figure 1 of § 73.699.)

(2) Zone II consists of that portion of the United States which is not located in either Zone I or Zone III, and Puerto Rico, Alaska, Hawaiian Islands and the Virgin Islands.

(3) Zone III consists of that portion of the United States located south of a line, drawn on the United States Albers Equal Area Projection Map (based on standard parallels 29½° and 45½°; North American datum), beginning at a point on the east coast of Georgia and the 31st parallel and ending at the United States-Mexican border, consisting of arcs drawn with a 150 mile radius to the north from the following specified points:

	North latitude	*West longitude*
(a)	29°40′00″	83°24′00″
(b)	30°07′00″	84°12′00″
(c)	30°31′00″	86°30′00″
(d)	30°48′00″	87°58′30″
(e)	30°00′00″	90°38′30″
(f)	30°04′30″	93°19′00″
(g)	29°46′00″	95°05′00″
(h)	28°43′00″	96°39′30″
(i)	27°52′30″	97°32′00″

When any of the above arcs pass through a city, the city shall be considered to be located in Zone II. (See Figure 2 of § 73.699.)

§ 73.610 Separations.

(a) The provisions of this section relate to assignment separations and station separations. Petitions to amend the Table of Assignments (§ 73.606(b)) (other than those also expressly requesting amendment of this section or § 73.609) will be dismissed and all applications for new television broadcast stations or for changes in the transmitter sites of existing stations will not be accepted for filing if they

fail to comply with the requirements specified in paragraphs (b), (c) and (d) of this section.

NOTE: Licensees and permittees of television broadcast stations which were operating on April 14, 1952 pursuant to one or more separations below those set forth in § 73.610 may continue to so operate, but in no event may they further reduce the separations below the minimum. As the existing separations of such stations are increased, the new separations will become the required minimum separations until separations are reached which comply with the requirements of § 73.610. Thereafter, the provisions of said section shall be applicable.

(b) Minimum co-channel assignment and station separations:

(1)

Zone	Channels 2–13	Channels 14–83
	Miles	*Miles*
I	170	155
II	190	175
III	220	205

(2) The minimum co-channel mileage separation between a station in one zone and a station in another zone shall be that of the zone requiring the lower separation.

(c) Minimum assignment and station adjacent channel separations applicable to all zones:

(1) Channels 2–13	Channels 14–83
60 miles	55 miles

(2) Due to the frequency spacing which exists between Channels 4 and 5, between Channels 6 and 7, and between Channels 13 and 14, the minimum adjacent channel separations specified above shall not be applicable to these pairs of channels (see § 73.603).

(d) In addition to the requirements of paragraphs (a), (b) and (c) of this section, the minimum assignment and station separations between stations on Channels 14–83, inclusive, as set forth in Table IV of § 73.698 must be met in either rule-making proceedings looking towards the amendment of the Table of Assignments (§ 73.606 (b)) or in licensing procedings. No channel listed in column (1) of Table IV of § 73.698 will be assigned to any city, and no application for an authorization to operate on such a channel will be granted, unless the mileage separations indicated at the top of columns (2)–(7), inclusive, are met with respect to each of the channels listed in those columns and parallel with the channel in column (1).

(e) The zone in which the transmitter of a television station is located or proposed to be located determines the applicable rules with respect to co-channel mileage separations where the transmitter is located in a different zone from that in which the channel to be employed is located.

§ 73.611 Reference points and distance computations.

(a) In considering petitions to amend the Table of Assignments (§ 73.606 (b)), the following reference points shall be used by the Commission in determining assignment separations between communities:

(1) Where transmitter sites for the pertinent channels have been authorized in communities involved in a petition to amend the Table of Assignments, separations between such communities shall be determined by the distance between the coordinates of the authorized transmitter sites in the respective communities as set forth in the Commission's authorizations therefor.

(2) Where an authorized transmitter site is available for use as a reference point in one community but not in the other for the pertinent channels, separations shall be determined by the distance between the coordinates of the transmitter site as set forth in the Commission's authorization therefor and the coordinates of the other community as set forth in the publication of the United States Department of Commerce, entitled "Air Line Distances Between Cities in the United States." If said publication does not contain the coordinates for said other community, the coordinates of the main post office thereof shall be used.

(3) Where no authorized transmitter sites are available for use as reference points in both communities for the pertinent channels, the distance between the two communities listed in the above publication shall be used. If said publication does not contain such distance, the separation between the two communities shall be determined by the distance between the coordinates thereof as set forth in said publication. Where such coordinates are not contained in said publication, the coordinates of the main post offices of said communities shall be used.

(4) Where the distance between the reference point in a community to which a channel is proposed to be assigned and the reference point in another community or communities does not meet the minimum separation requirements of § 73.610, the channel may be assigned to such community upon a showing that a transmitter site is available that would meet the minimum separation requirements of § 73.610 and the minimum field intensity requirements of § 73.685. In such cases, where a station is not authorized in the community or communities to which measurements from the proposed channel assignment must be made pursuant to § 73.610, a showing should also be made that the distance between suitable transmitter sites in such other community or communities and the proposed transmitter site for the new channel meet the Commission's minimum spacing and coverage requirements.

(b) Station separations in licensing proceedings shall be determined by the distance between the coordinates of the proposed transmitter site in one community and

(1) The coordinates of an authorized transmitter site for the pertinent channel in the other community; or, where such transmitter site is not available for use as a reference point,

(2) The coordinates of the other community as set forth in the above-described publication of the United States Department of Commerce; or, if not contained therein,

(3) The coordinates of the main post office of such other community,

(4) In addition, where there are pending applications in other communities which, if granted, would have to be considered in determining station separations, the coordinates of the transmitter sites proposed in such applications must be used to determine whether the requirements with respect to minimum separations between the proposed stations in the respective cities have been met.

(c) In measuring assignment and station separations involving cities listed in the Table in combination, where there is no authorized transmitter site in any of the combination cities on the channel involved, separation measurements shall be made from the reference point which will result in the lowest separation.

(d) The distance between reference points is considered to be the length of the hypotenuse of a right triangle, one side of which is the difference in latitude of the reference points and the other side the difference in longitude of the two reference points, and shall be computed as follows. This method is appropriate for determining distances up to 220 miles, and for such distances will normally be more accurate than using spherical trigonometry without correction for the spheroidal shape of the earth. However, its accuracy deteriorates rapidly at distances beyond 300 miles and this method should not be used to compute greater distances.

(1) Determine the difference in latitude and the difference in longitude between the two reference points. Convert these two differences into degrees and decimal parts of a degree in accordance with Table I of § 73.698.

(2) Determine the middle latitude of the two reference points to the nearest second of latitude (average the latitudes of the two points).

(3) Multiply the difference in latitude by the number of miles per degree of latitude difference obtained from Table II of § 73.698 for the appropriate middle latitude (interpolate linearly). This determines the North-South distance in statute miles.

NOTE: In determining necessary distance computations for Alaska, Hawaii, and the Territories, the appropriate mileage per degree may be obtained by linear interpolation of the data given on pages 1246 and 1247 of the tables in publication H. O. No. 9 (Bowditch-American Practical Navigator—1958 Edition) of the U.S. Navy Department, Hydrographic Office. This publication may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.

(4) Multiply the difference in longitude by the number of miles per degree of longitude difference obtained from Table III of § 73.698, for the appropriate middle latitude (interpolate linearly). This determines the East-West distance in statute miles.

(5) Determine the distance between the two reference points by the square root of the sum of the squares of the distances obtained in subparagraphs (3) and (4) of this paragraph, that is:

$$D=(L_a^2+L_o^2)^{1/2}$$

where:

D=Distance in statute miles

L_a=North-South distance in miles (from subparagraph (3) of this paragraph)

L_o=East-West distance in miles (from subparagraph (4) of this paragraph)

In computing the above, sufficient decimal figures shall be used to determine the distance to the nearest mile.

§ 73.612 Protection from interference.

(a) Permittees and licensees of television broadcast stations are not protected from any interference which may be caused by the grant of a new station or of authority to modify the facilities of an existing station in accordance with the provisions of this subpart. The nature and extent of the protection from interference accorded to television broadcast stations is limited solely to the protection which results from the minimum assignment and station separation re-

quirements and the rules and regulations with respect to maximum powers and antenna heights set forth in this subpart.

(b) When the Commission determines that grant of an application would serve the public interest, convenience, and necessity and the instrument of authorization specifies an antenna location in a designated antenna farm area which results in mileage separation less than those specified in this subpart, TV broadcast station permittees and licensees shall be afforded protection from interference equivalent to the protection afforded under the minimum mileage separation specified in this subpart.

NOTE: The nature and extent of the protection from interference accorded to television broadcast stations which were authorized prior to April 14, 1952, and which were operating on said date is limited not only as specified above but is further limited by any smaller separations existing between such stations on said date. Where, as a result of the adoption of the Table of Assignments, or of changes in transmitter sites made by such stations after said date, separations smaller than the required minimum are increased but still remain lower than the required minimum, protection accorded such stations will be limited to the new separations.

[*The text of § 73.612 redesignated (a) and (b) adopted eff. 7-24-67; III(64)-18*]

§ 73.613 Main studio location.

(a) The main studio of a television broadcast station shall be located in the principal community to be served. Where the principal community to be served is a city, town, village or other political subdivision, the main studio shall be located within the corporate boundaries of such city, town, village or other political subdivision. Where the principal community to be served does not have specifically defined political boundaries, applications will be considered on a case-to-case basis in the light of the particular facts involved to determine whether the main studio is located within the principal community to be served.

(b) Where an adequate showing is made that there is good cause for locating a main studio outside the principal community to be served and that to do so would not be inconsistent with the operation of the station in the public interest, the Commission will permit the use of a main studio location other than that specified in paragraph (a) of this section. The licensee or permittee of a television broadcast station shall not move his main studio outside the principal community in which it is located without first securing a modification of construction permit or license. Such licensee or permittee shall notify the Commission promptly of any change of the location of the main studio within the community. In any case where the main studio is located outside the principal community to be served, the licensee or permittee of a television broadcast station shall not move his main studio without first securing a modification of construction permit or license.

§ 73.614 Power and antenna height requirements.

(a) *Minimum requirements.* Applications will not be accepted for filing if they specify less than −10 dbk (100 watts) visual effective radiated power in any horizontal direction. No minimum antenna height above average terrain is specified.

(b) *Maximum power.* Applications will not be accepted for filing if they specify a power in excess of that provided for in this paragraph. Except as provided in subparagraph (1) of this paragraph, the maximum effective radiated powers of television broadcast stations operating on the channels set forth below with antenna heights not in excess of 2,000 feet above average terrain shall be as follows:

Channel Nos.	Maximum visual effective radiated power in db above one kilowatt (dbk)
2-6	20 dbk (100 kw).
7-13	25 dbk (316 kw).
14-83	37 dbk (5000 kw).[1]

[1] The maximum visual effective radiated power of television broadcast stations operating on Channels 14-83 within 250 miles of the Canadian-United States border may not be in excess of 30 dbk (1000 kw).

(1) In Zone I, on Channels 2-13, inclusive, the maximum powers specified above for these channels

may be used only with antenna heights not in excess of 1,000 feet above average terrain. Where antenna heights exceeding 1,000 feet above average terrain are used on Channels 2–13, or antenna heights exceeding 2,000 feet above average terrain are used on Channels 14–83, the maximum power shall be based on the chart designated as Figure 3 of § 73.699.

NOTE: This limitation shall not apply to any licensee or permittee in Zone I who received an authorization after March 22, 1951, to relocate its transmitter site and construct a new tower and antenna to a height in excess of 1000 feet above average terrain and who constructed or who had substantially completed construction of said tower and antenna prior to April 14, 1952. In such case, maximum power may be utilized at the height above average terrain specified in the authorization. The limitation shall apply, however, where the tower or other principal supporting structure had been constructed prior to the date of such authorization.

(2) In Zones II and III, the maximum powers which may be used by television broadcast stations operating on the respective channels set forth in the above table with antenna heights exceeding 2,000 feet above average terrain shall be based on the chart designated as Figure 4 of § 73.699.

(3) The effective radiated power in any horizontal or vertical direction may not exceed the maximum values permitted by this section and Figures 3 and 4 of § 73.699.

(4) The maximum effective radiated power in any direction above the horizontal plane shall be as low as the state of the art permits and may not exceed the effective radiated power in the horizontal direction in the same vertical plane.

(c) *Determination of applicable rules.* The zone in which the transmitter of a television station is located or proposed to be located determines the applicable rules with respect to maximum antenna heights and powers for VHF stations when the transmitter is located in Zone I and the channel to be employed is located in Zone II, or the transmitter is located in Zone II and the channel to be employed is located in Zone I.

§ 73.615 Administrative changes in authorizations.

In the issuance of television broadcast station authorizations, the Commission will specify the transmitter output power and effective radiated power to the nearest 0.1 dbk. Powers specified by kilowatts shall be obtained by converting dbk to kilowatts to 3 significant figures. Antenna heights above average terrain will be specified to the nearest 10 feet. Midway figures will be authorized in the lower alternative.

APPLICATIONS AND AUTHORIZATIONS

§ 73.620 Cross reference.

See Subpart D of Part 1 of this chapter, for general requirements as to applications, filing of applications and description of application forms, other forms and information to be filed with the Commission, the manner in which applications are processed, and provisions applying to action on applications. See § 1.1111 of Subpart G of that part for the fees to be paid in connection with applications for facilities in the service covered in this subpart.

§ 73.621 Noncommercial educational stations.

In addition to the other provisions of this subpart, the following shall be applicable to noncommercial educational television broadcast stations:

(a) Except as provided in paragraph (b) of this section, noncommercial educational broadcast stations will be licensed only to nonprofit educational organizations upon a showing that the proposed stations will be used primarily to serve the educational needs of the community; for the advancement of educational programs; and to furnish a nonprofit and noncommercial television broadcast service.

(1) In determining the eligibility of publicly supported educational organizations, the accreditation of their respective state departments of education shall be taken into consideration.

(2) In determining the eligibility of privately controlled educational organizations, the accreditation of state departments of education or recognized regional

and national educational accrediting organizations shall be taken into consideration.

(b) Where a municipality or other political subdivision has no independently constituted educational organization such as, for example, a board of education having autonomy with respect to carrying out the municipality's educational program, such municipality shall be eligible for a noncommercial educational television broadcast station. In such circumstances, a full and detailed showing must be made that a grant of the application will be consistent with the intent and purpose of the Commission's rules and regulations relating to such stations.

(c) Noncommercial educational television broadcast stations may transmit educational, cultural and entertainment programs, and programs designed for use by schools and school systems in connection with regular school courses, as well as routine and administrative material pertaining thereto.

(d) An educational station may not broadcast programs for which a consideration is received, except programs produced by or at the expense of or furnished by others than the licensee for which no other consideration than the furnishing of the program is received by the licensee. The payment of line charges by another station or network shall not be considered as being prohibited by this paragraph.

(e) To the extent applicable to programs broadcast by a noncommercial educational station produced by or at the expense of or furnished by others than the licensee of said station, the provisions of §73.654 relating to announcements regarding sponsored programs shall be applicable, except that no announcements (visual or aural) promoting the sale of a product or service shall be transmitted in connection with any program: *Provided, however,* That where a sponsor's name or product appears on the visual image during the course of a simultaneous or rebroadcast program either on the backdrop or in similar form, the portions of the program showing such information need not be deleted.

§ 73.622 Applications for sharing of television channels.

Separate applications shall be filed by each applicant for the voluntary sharing of television channels. Such applications shall be accompanied by copies of the time-sharing agreement under which the applicants propose to operate.

§ 73.623 Notification of filing of applications.

(a) *Radio Astronomy and Radio Research Installations.* In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new television broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by 39°15′ N on the north, 78°30′ W on the east, 37°30′ N on the south, and 80°30′ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box No. 2, Green Bank, West Virginia, 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity, if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such application, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(b) *Location on Government land.* Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

[*The text of § 73.623 redesignated (a) and (b) added eff. 3-20-67; III(64)-16*]

§ 73.628 Equipment tests.

(a) During the process of construction of a television broadcast station, the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may, without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations.

(b) The Commission may notify the permittee not to conduct tests or may cancel, suspend, or change the date for the beginning of equipment tests if and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of program tests. After construc-

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tion and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 73.629 Program tests.

(a) Upon completion of construction of a television broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations, and when an application for station license has been filed showing the station to be in satisfactory operating condition, the permittee may request authority to conduct program tests: *Provided,* That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified. (All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application.)

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked, the program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation under program test authority shall be in strict compliance with the rules governing television broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized.

(e) The granting of program test authority shall not be construed as approval by the Commission of the application for station license.

§ 73.630 Normal license period.

(a) The license for a television broadcast station ordinarily will be issued for a period of three years and, when regularly renewed, at three year intervals thereafter: *Provided, however,* That, if the Commission finds that the public interest, convenience, and necessity will be served thereby, it may issue either an initial license or a renewal thereof for a lesser term. When regularly issued or renewed, licenses will be issued to expire at the hour of 3:00 a.m., eastern standard time, in accordance with the following schedule, and at three year intervals thereafter.

(1) For stations located in Florida, Puerto Rico, and Virgin Islands, February 1, 1964.

(2) For stations located in Alabama and Georgia, April 1, 1964.

(3) For stations located in Arkansas, Louisiana, and Mississippi, June 1, 1964.

(4) For stations located in Tennessee, Kentucky, and Indiana, August 1, 1964.

(5) For stations located in Ohio and Michigan, October 1, 1964.

(6) For stations located in Illinois and Wisconsin, December 1, 1964.

(7) For stations located in Iowa and Missouri, February 1, 1965.

(8) For stations located in Minnesota, North Dakota, South Dakota, Montana, and Colorado, April 1, 1965.

(9) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1965.

(10) For stations located in Texas, August 1, 1965.

(11) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico, and Idaho, October 1, 1965.

(12) For stations located in California, December 1, 1965.

(13) For stations located in Washington, Oregon, Alaska, Guam, and Hawaii, February 1, 1966.

(14) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, April 1, 1966.

(15) For stations located in New Jersey, and New York, June 1, 1966.

(16) For stations located in Delaware, and Pennsylvania, August 1, 1966.

(17) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1966.

(18) For stations located in North Carolina, South Carolina, December 1, 1966.

§ 73.632 Emergency Weather Warnings.

Upon receipt of notification from the United States Weather Bureau of an Emergency Weather Warning of a condition of immediate danger to life and property, all television broadcast stations may, at their option, broadcast Emergency Action Notification Signal (two 5-second carrier breaks and 15 seconds of 1,000 CPS tone sound carrier only) followed by the Emergency Weather Warning.

(Sec. 606, 48 Stat. 1104, as amended; 47 U.S.C. 606, E.O. 11092, 28 F.R. 1847)

§ 73.635 Use of common antenna site.

No television license or renewal of a television license will be granted to any person who owns, leases, or controls a particular site which is peculiarly suitable for television broadcasting in a particular area and (a) which is not available for use by other television licensees; and (b) no other comparable site is available in the area; and (c) where the exclusive use of such site by the applicant or licensee would unduly limit the number of television stations that can be authorized in a particular area or would unduly restrict competition among television stations.

§ 73.636 Multiple ownership.

(a) No license for a television broadcast station shall be granted to any party (including all parties under common control) if:

(1) Such party directly or indirectly owns, operates, or controls one or more television broadcast stations and the grant of such license will result in overlap of the Grade B contours of the existing and proposed stations, computed in accordance with § 73.684; or

(2) Such party, or any stockholder, officer or director of such party, directly or indirectly owns, operates, controls, or has any interest in, or is an officer or director of any other television broadcast station if the grant of such license would result in a concentration of control of television broadcasting in a manner inconsistent with public interest, convenience, or necessity. In determining whether there is such a concentration of control, consideration will be given to the facts of each case with particular reference to such factors as the size, extent and location of area served, the number of people served, and the extent of other competitive service to the areas in question. The Commission, however, will in any event consider that there would be such a concentration of control contrary to the public interest, convenience or necessity for any party or any of its stockholders, officers or directors to have a direct or indirect interest in, or be stockholders, officers, or directors of, more than seven television broadcast stations, no more than five of which may be in the VHF band.

(b) Paragraph (a) of this section is not applicable to noncommercial educational stations.

NOTE 1: The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

NOTE 2: In applying the provisions of paragraph (a) of this section to the stockholders of a corporation which has more than 50 voting stockholders, only those stockholders need be considered who are officers or directors or who directly or indirectly own 1 percent or more of the outstanding voting stock.

NOTE 3: Paragraph (a)(1) of this section will not be applied so as to require divestiture, by any licensee, of existing facilities. Said paragraph will not apply to applications for assignment of licensee or transfer of control filed in accordance with §§ 1.540(b) or 1.541(b) of this chapter, or to applications for assignment of license or transfer of control to heirs or legatees by will or intestacy where no new or increased overlap would be created between commonly owned stations. Said paragraph will not apply to major changes in UHF television broadcast stations authorized as of September 30, 1964, which will result in Grade B overlap with another television broadcast station that was commonly owned, operated, or controlled as of September 30, 1964. Such major changes will be considered on a case-by-case basis to determine whether such overlap exists with a commonly owned, operated, or controlled station as to be against the public interest. Said paragraph will apply to all applications for new stations, to all other applications for assignment or transfer, and to all applications for major changes in existing stations except major changes that will result in overlap no greater than that already existing. (The resulting overlap areas in such major change cases may consist partly or entirely of new terrain. However, if the population in the resulting overlap areas substantially exceeds that in the previously existing overlap areas, the Commission will not grant the application if it finds that to do so would be against the public interest, convenience, and necessity.) Commonly owned stations with overlapping contours prohibited by paragraph (a)(1) of this section may not be assigned or transferred to a single person, group, or entity, except as provided in this Note.

NOTE 4: Paragraph (a)(1) of this section will not be applied to television stations which are primarily "satellite" operations. Television "satellite" operatons will be considered a case by case basis in order to determine whether such overlap exists with a commonly owned, operated, or controlled station as to be against the public interest. Whether or not a particular station which does not present a substantial amount of locally originated programming is primarily a satellite operation will be determined on the facts of the particular case. An authorized and operating "satellite" television station the Grade B contour of which overlaps that of a commonly owned, operated, or controlled "non-satellite" parent television station may subsequently become a "non-satellite" station with local studios and locally originated programming. However, such commonly owned "non-satellite" stations with Grade B overlap may not be transferred or assigned to a single person, group, or entity.

[*§ 73.636, amended in III(64)–1 and III(64)–3, as further amended re Note 3 eff. 12–28–64; III(64)–5*]

§ 73.637 Alternate main transmitters.

The licensee of a television broadcast station may be licensed for alternate main transmitters provided that a technical need for such alternate transmitters is shown and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the construction, installation, operation and performance requirements of this subpart.

§ 73.638 Auxiliary transmitter.

Upon showing that a need exists for the use of auxiliary transmitters in addition to the regular

transmitters of a television station, a license therefor may be issued: *Provided*, that:

(a) Auxiliary transmitters may be installed either at the same location as the main transmitters or at another location.

(b) A licensed operator shall be in control whenever auxiliary transmitters are placed in operation.

(c) The auxiliary transmitters shall be maintained so that they may be put into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitters.

(2) The transmission of regular programs during maintenance or modification work on the main transmitters necessitating discontinuance of their operation for a period not to exceed 5 days.

NOTE: This includes the equipment changes which may be made without authority as set forth elsewhere in the rules and regulations or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.542 of the Commission's rules and regulations.

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitters shall be tested at least once each week to determine that they are in proper operating condition and that they are adjusted to the proper frequency, except that in the case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) of this section is satisfactory. A record shall be kept of the time and result of each test. Such records shall be retained for a period of two years.

(e) The auxiliary transmitters shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this subpart.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitters, but in no event shall it be greater than such power.

§ 73.639 Changes in equipment and antenna system.

Licensees of television broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(2) That would result in the external performance of the transmitter being in disagreement with that prescribed in this subpart.

(b) Specific authority, upon filing formal application therefor (FCC Form 301 or such other form as is provided therefor), is required for any of the following:

(1) Changes involving an increase or decrease in the power rating of the transmitters.

(2) A replacement of the transmitters as a whole.

(3) Change in the location of the transmitting antenna.

(4) Change in antenna system, including transmission line.

(5) Change in the power delivered to the antenna.

(6) Change in frequency control and/or modulation system.

(c) Other changes, except as above provided for in this section or in the provisions of this subpart, may be made at any time without the authority of the Commission, provided that the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

§ 73.640 Acceptability of broadcast transmitters for licensing.

(a) In order to facilitate the filing of, and action on, applications for station authorizations, transmitters will be accepted for licensing by the Commission under one of the following conditions:

(1) A transmitter may be type-accepted upon the request of any manufacturer of transmitters built in quantity by following the type acceptance procedure set forth in Part 2 of this chapter, provided that the date and information submitted indicates that the transmitter meets the requirements of § 73.687. If accepted, such transmitter will be included on the Commission's "Radio Equipment List, Part A, Television Broadcast Equipment." Applicants specifying transmitters included on such a list need not submit detailed descriptions and diagrams where the correct type number is specified, if the equipment proposed is identical with that accepted. Copies of this list are available for inspection at the Commission's office in Washington, D.C., and at each of its field offices.

(2) An application specifying a transmitter not included on the Radio Equipment List, Part A, may be accepted upon the request of a prospective licensee submitting with the application for construction permit a complete description of the transmitter, including the circuit diagram, listing of all tubes used, function of each, multiplication in each stage, plate

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current and voltage applied to each tube, a description of the oscillator circuit together with any devices installed for the purpose of frequency stabilization and the means of varying output power to compensate for power supply voltage variations. However, if this data has been filed with the Commission by a manufacturer in connection with a request for type acceptance, it need not be submitted with the application for construction permit but may be referred to as "on file." Measurement data for type acceptance made in accordance with subparagraph (1) of this paragraph shall be submitted with the license application.

(3) A transmitter shown on an instrument of authorization by manufacturer and type number, or as a composite, and which was in use prior to June 30, 1955, may continue to be used by the licensee, his successors or assignees, provided such transmitter continues to comply with the rules and regulations.

(b) Additional rules with respect to withdrawal of type-acceptance, modification of type-accepted equipment and limitations on the findings upon which type acceptance is based are set forth in Part 2 of this chapter.

GENERAL OPERATING REQUIREMENTS

§ 73.651 Time of operation.

(a) (1) All television broadcast stations will be licensed for unlimited time operation. Each such station shall maintain a regular program operating schedule as follows: Not less than 2 hours daily in any 5 broadcast days per week and not less than a total of 12 hours per week during the first 18 months of the station's operation; not less than 2 hours daily in any 5 broadcast days per week and not less than a total of 16 hours, 20 hours and 24 hours per week for each successive 6-month period of operation, respectively; and not less than 2 hours in each of the 7 days of the week and not less than a total of 28 hours per week thereafter.

(2) "Operation" includes the period during which a station is operated pursuant to temporary authorization or during program tests, as well as during the license period. Time devoted to test patterns, or to aural presentations accompanied by the incidental use of fixed visual images which have no substantial relationship to the subject matter of such aural presentations, shall not be considered in computing periods of program service.

(3) In the event that causes beyond a licensee's control make it impossible to adhere to the operating schedule in subparagraph (1) of this paragraph or to continue operating, the station may limit or discontinue operation for a period of not more than 10 days, without further authority of the Commission. However, the Commission and the Engineer in Charge of the radio district in which the station is located shall be immediately notified in writing if the station is unable to maintain the minimum operating schedule and shall be subsequently notified when the station resumes regular operation.

(b) Noncommercial educational television broadcast stations are not required to operate on a regular schedule and no minimum number of hours of operation is specified; but the hours of actual operation during a license period shall be taken into consideration in considering the renewal of noncommercial educational television broadcast licenses.

(c) (1) The aural transmitter of a television station shall not be operated separately from the visual transmitter except for the following purposes:

(i) For actual tests of station equipment or actual experimentation in accordance with § 73.666; and

(ii) For emergency "fills" in case of visual equipment failure or unscheduled and unavoidable delays in presenting visual programs. In such situations the aural transmitter may be used to advise the audience of difficulties and to transmit for a short period program material of such nature that the audience will be enabled to remain tuned to the station; for example, music or news accompanying a test pattern or other visual presentation.

(2) During periods of transmission of a test pattern on the visual transmitter of a television station, aural transmission shall consist only of a single tone or series of variable tones. During periods when still pictures or slides are employed to produce visual transmissions which are accompanied by aural transmissions, the aural and visual transmissions shall be integral parts of a program or announcement and shall have a substantial relationship to each other: *Provided*, That nothing herein shall preclude the transmission of a

test pattern, still pictures or slides for the following purposes and periods:

(i) To accompany aural announcements of the station's program schedule and aural news broadcasts or news commentaries, for a total period not to exceed one hour in any broadcast day.

(ii) To accompany aural transmissions for a period of time not to exceed fifteen minutes immediately prior to the commencement of a programming schedule.

Examples. (1) Duplication of AM or FM programs on the aural transmitter of a television station while the same program is broadcast on the visual transmitter (i. e., a "simulcast") is consistent with this paragraph.

(2) Duplication of AM or FM programs on the aural transmitter of a television station while a test pattern is broadcast on the visual transmitter is not consistent with this paragraph, except for the specific purposes and periods specified in paragraph (c)(2).

(3) A travel lecture in which the words of the lecturer are broadcast simultaneously with still pictures or slides of scenes illustrating the lecture, and a newscast in which the words of the newscaster are broadcast simultaneously with still pictures or slides of the news events, are examples of programs in which the aural and visual transmissions are integral parts of the same program having a substantial relationship to each other, within the meaning of paragraph (c)(2). Mood music unrelated to the visual transmission is not consistent with this paragraph.

(4) The broadcast of a test pattern accompanied by a musical composition for the purpose of demonstration, sale, installation or orientation of television receivers, or receiving antennas is not consistent with this paragraph.

(5) Music accompanying the transmission of a test pattern upon which is visually imposed a moving text consisting of continuous program material, such as a running newscast or news commentary, is consistent with this paragraph.

(6) Music accompanying the transmission of a test pattern upon which is visually imposed a clock indicating the time of day, or a text that is changed at spaced intervals, is not consistent with this paragraph.

§ 73.652 Station identification.

(a) A licensee of a television broadcast station shall make station identification announcement (call letters and location) at the beginning and ending of each time of operation and during the operation on the hour. The announcement at the beginning and ending of each time of operation shall be by both aural and visual means. Other announcements may be by either aural or visual means.

(b) Identification announcements during operation need not be made when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or any type of production. In such cases, the identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion thereof.

§ 73.653 Mechanical reproductions.

(a) No mechanically reproduced program, whether visual or aural, consisting of a speech, news event, news commentator, forum, panel discussion, or special event in which the element of time is of special significance, or any other program in which the element of time is of special significance and presentation of which would create, either intentionally or otherwise, the impression or belief on the part of the listening audience that the event or program being broadcast is in fact occurring simultaneously with the broadcast, shall be broadcast without an appropriate announcement being made either at the beginning or end of such reproduction or at the beginning or end of the program in which such reproduction is used that it is a mechanical reproduction or a mechanically reproduced program: *Provided, however,* That each such program of one minute or less need not be announced as such.

(b) The exact form of identifying announcement is not prescribed, but the language shall be clear and in terms commonly used and understood. Any other program mechanically reproduced or series of mechanical reproductions, including a mechanical reproduction used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of sponsorship of the program proper, need not be announced as provided in paragraph (a) of this section, but the licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

(c) The requirements of paragraph (a) of this section are waived with respect to network programs, transcribed and rebroadcast at a later hour because of the time zone differential between the place where the program originates and where it is rebroadcast, this waiver being applicable whether the off-the-line recording is made by the network itself at one of its key stations or by an individual station, but only when the off-the-line recording is for broadcast at an hour not exceeding the time zone differential between the place where the program originates and where it is rebroadcast. Each station which broadcasts network programs at a later hour in accordance with this waiver shall make an appropriate announcement at least once each day between the hours of 10:00 a.m., and 10:00 p.m., stating that some or all of the network programs which are broadcast by that station are delayed broadcasts by means of transcription. This waiver provision also applies during the annual periods in which daylight saving time will be effective with respect to network programs transcribed and rebroadcast one hour later because of the time differential resulting from the adoption of daylight saving time in some areas.

§ 73.654 Sponsored programs, announcement of.

(a) When a television broadcast station transmits any matter for which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, such station, the station shall broadcast an announcement that such matter is sponsored, paid for, or furnished, either in whole or in part, and by whom or on whose behalf such consideration was supplied: *Provided, however,* That "service or other valuable consideration" shall not include any service or property furnished without charge or at a nominal charge for use on, or in connection with, a broadcast unless it is so furnished in consideration for an identification in a broadcast of any person, product, service, trademark, or brand name beyond an identification which is reasonably related to the use of such service or property on the broadcast.

(b) The licensee of each television broadcast station shall exercise reasonable diligence to obtain from its employees, and from other persons with whom it deals

directly in connection with any program matter for broadcast, information to enable such licensee to make the announcement required by this section.

(c) In any case where a report (concerning the providing or accepting of valuable consideration by any person for inclusion of any matter in a program intended for broadcasting) has been made to a television broadcast station, as required by section 508 of the Communications Act of 1934, as amended, of circumstances which would have required an announcement under this section had the consideration been received by such television broadcast station, an appropriate announcement shall be made by such station.

(d) In the case of any political program or any program involving the discussion of public controversial issues for which any films, records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which such material or services are used that such films, records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such program: *Provided, however,* That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or conclusion of the program.

(e) The announcements required by section 317(b) of the Communications Act of 1934, as amended, are waived with respect to feature motion picture films produced initially and primarily for theatre exhibition.

NOTE: The waiver heretofore granted by the Commission in its Report and Order of November 21, 1960 (FCC 60-1369; 25 F.R. 11224, Nov. 26, 1960), continues to apply to programs filmed or recorded on or before June 20, 1963.

(f) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received, or by whom the material or services referred to in paragraph (d) of this section are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

(g) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for, or furnished, either in whole or in part, or for which material or services referred to in paragraph (d) of this section are furnished, by a corporation, committee, association, or other unincorporated group, the announcement required by this section shall disclose the name of such corporation, committee, association, or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association or other unincorporated group shall be made available for public inspection at the studios or general offices of one of the television broadcast stations carrying the program in each community in which the program is broadcast.

(h) In the case of broadcast matter advertising commercial products or services, an announcement

stating the sponsor's corporate or trade name, or the name of the sponsor's product, when it is clear that the mention of the name of the product constitutes a sponsorship identification, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

(i) The announcements required by section 317(a) of the Communications Act of 1934, as amended, are waived with respect to the broadcast of "want ad" or classified advertisements sponsored by individuals. The waiver granted in this paragraph shall not extend to classified advertisements or want ads sponsored by any form of business enterprise, corporate or otherwise. Whenever sponsorship announcements are omitted pursuant to this paragraph the following conditions shall be observed:

(1) The licensee shall maintain a list showing the name, address, and (where available) the telephone number of each advertiser and shall attach this list to the program log for each day's operation; and

(2) Shall make this list available to members of the public who have a legitimate interest in obtaining the information contained in the list.

(j) Commission interpretations in connection with the provisions of this section may be found in the Commission's Public Notice entitled "Applicability of Sponsorship Identification Rules" (FCC 63-409; 28 F.R. 4732, May 10, 1963) and such supplements thereto as are issued from time to time.

(Sec. 317, 48 Stat. 1089, as amended; 47 U.S.C. 317)

[§ 73.654(i) *redesignated* (j) *and a new* (i) *adopted eff. 6-2-67; III(64)-18*]

§ 73.655 Rebroadcast.

(a) The term "rebroadcast" as used in this section means reception by radio of the program of a television broadcast station, and the simultaneous or subsequent retransmission of such program by a broadcast station. The broadcasting of a program relayed by an auxiliary broadcast station licensed to the television broadcast station is not considered a rebroadcast. (As used in this section, program includes any complete program or part thereof.)

(b) The licensee of a television broadcast station may, without further authority of the Commission, rebroadcast the program of a United States television broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program.

NOTE: The notice and certification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of a television broadcast station several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

(c) No licensee of a television broadcast station shall rebroadcast the program of any United States radio station not designated in paragraph (b) of this section without written authority having first been obtained from the Commission upon application (informal) accompanied by written consent or certification of consent of the licensee of the station originating the program. The foregoing requirements concerning notification of call letters and certification of authority shall not apply to a station when rebroadcasting Defense Network

(FM) programs. (Blanket authorizations for the rebroadcast of such programs have been filed with the Commission by all Defense Network (FM) stations.)

NOTE: By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 73.655(c) is suspended only insofar as it requires prior written authority of the Commission for the rebroadcasting of programs originated for that express purpose by U.S. Government radio stations.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

§ 73.656 Lotteries.

(a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of, any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U.S.C. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize, such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question.

(Sec. 1304, 62 Stat. 763; 18 U.S.C. 1304)

§ 73.657 Broadcasts by candidates for public office.

(a) *Legally qualified candidate.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, state or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who:

(1) Has qualified for a place on the ballot, or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method, and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other such candidates for that office to use such facilities: *Provided*, That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Rates and practices.* (1) The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means direct or indirect. A candidate shall, in each case, be charged no more than the rate the station would charge if the candidate were a commercial advertiser whose advertising was directed to promoting its business within the same area as that encompassed by the particular office for which such person is a candidate. All discount privileges otherwise offered by a station to commercial advertisers shall be available upon equal terms to all candidates for public office.

(2) In making time available to candidates for public office no licensee shall make any discrimination between candidates in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Inspection of records.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests, and the charges made, if any, if request is granted. Such records shall be retained for a period of two years.

NOTE: See § 1.526 of this chapter.

(e) *Time of request.* A request for equal opportunities must be submitted to the licensee within one week of the day on which the prior use occurred.

(f) *Burden of proof.* A candidate requesting such equal opportunities of the licensee, or complaining of non-compliance to the Commission shall have the burden of proving that he and his opponent are legally qualified candidates for the same public office.

(Sec. 315, 48 Stat. 1088, as amended; 47 U.S.C. 315)

[§ 73.657(d) *Note as adopted eff. 5-14-65; III(64)-7*]

§ 73.658 Affiliation agreements.

(a) *Exclusive affiliation of station.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, broadcasting the programs of any other network organization. (The term "network organization" as used in this section includes national and regional network organizations. See ch. VII, J, of Report on Chain Broadcasting.)

(b) *Territorial exclusivity.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which prevents or hinders another broadcast station located in the same community from broadcasting the network's programs not taken by the former station, or which prevents or hinders another broadcast station located in a different community from broadcasting any program of the network organization. This section shall not be construed to prohibit any contract, arrangement, or understanding between a station and a network organization pursuant to which the station is granted the first call in its community upon the programs of the network organization. As employed in this paragraph, the term "community" is defined as the community specified in the instrument of authorization as the location of the station.

(c) *Term of affiliation.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which provides, by original terms, provisions for renewal, or otherwise for the affiliation of the station with the network organization for a period longer than 2 years: *Provided*, That a contract, arrangement, or understanding for a period up to 2 years may be entered into within 6 months prior to the commencement of such period.

(d) *Station commitment of broadcast time.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with any network organization, which provides for optioning of the station's time to the network organization, or which has the same restraining effect as time optioning. As used in this section, time optioning is any contract, arrangement, or understanding, express or implied, between a station and a network organization which prevents or hinders

the station from scheduling programs before the network agrees to utilize the time during which such programs are scheduled, or which requires the station to clear time already scheduled when the network organization seeks to utilize the time.

(e) *Right to reject programs.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which, with respect to programs offered or already contracted for pursuant to an affiliation contract, prevents or hinders the station from (1) rejecting or refusing network programs which the station reasonably believes to be unsatisfactory or unsuitable or contrary to the public interest, or (2) substituting a program which, in the station's opinion, is of greater local or national importance.

(f) *Network ownership of stations.* No license shall be granted to a network organization, or to any person directly or indirectly controlled by or under common control of a network organization, for a television broadcast station in any locality where the existing television broadcast stations are so few or of such unequal desirability (in terms of coverage, power, frequency, or other related matters) that competition would be substantially restrained by such licensing. (The word "control" as used in this section, is not limited to full control but includes such a measure of control as would substantially affect the availability of the station to other networks.)

(g) *Dual network operation.* No license shall be issued to a television broadcast station affiliated with a network organization which maintains more than one network of television broadcast stations: *Provided,* That this section shall not be applicable if such networks are not operated simultaneously, or if there is no substantial overlap in the territory served by the group of stations comprising each such network.

(h) *Control by networks of station rates.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, fixing or altering its rates for t he sale of broadcast time for other than the network's programs.

(i) No license shall be granted to a television broadcast station which is represented for the sale of non-network time by a network organization or by an organization directly or indirectly controlled by or under common control with a network organization, if the station has any contract, arrangement or understanding, express or implied, which provides for the affiliation of the station with such network organization: *Provided, however,* That this rule shall not be applicable to stations licensed to a network organization or to a subsidiary of a network organization.

§ 73.659 Special rules relating to contracts providing for reservation of time upon sale of a station.

No license, renewal of license, assignment of license, or transfer of control of a corporate licensee shall be granted or authorized to a television broadcast station which has a contract, arrangement or understanding, express or implied, pursuant to which, as consideration or partial consideration for the assignment of license or transfer of control, the assignor of a station license or the transferor of stock, where transfer of a corporate licensee is involved, or the nominee of such assignor or transferor retains any right of reversion of the license or any right to the reassignment of the license in the future, or reserves the right to use the facilities of the station for any period whatsoever.

§ 73.660 Station license, posting of.

The original of each station license shall be posted in the transmitter room.

§ 73.661 Operator requirements.

One or more operators holding a valid radiotelephone first-class operator license shall be on duty at the place where the transmitting apparatus is located or at a remote control point established pursuant to the provisions of § 73.676, and in actual charge thereof whenever the transmitter is delivering power to the transmitting antenna. The original license (or FCC Form 759) of each station operator shall be posted at the place where he is on duty. The licensed operator on duty and in charge of television broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of license which he holds and the rules and regulations governing such other stations. However, such other duties shall in nowise impair or impede the required supervision of the television broadcast transmitter. If operation by remote control has not been authorized, the transmitter shall be readily accessible and clearly visible to the operator at his normal operating position. If operation by remote control is authorized, the control and monitoring equipment shall be readily accessible and clearly visible to the operator at his normal operating position.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

[§ 73.661 *as amended eff. 5-14-65; III(64)-8*]

§ 73.662 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of that part.

§ 73.665 Station inspection.

The licensee of a television broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 73.666 Experimental operations.

Television broadcast stations may (upon informal application) conduct technical experimentation directed to the improvement of technical phases of operation and for such purposes may utilize a signal other than the standard television signal subject to the following conditions:

(a) That the licensee complies with the provisions of § 73.651 with regard to the minimum number of hours of transmission with a standard television signal.

(b) That no transmissions are radiated outside of the authorized channel and subject to the condition that no interference is caused to the transmissions of a standard television signal by other television broadcast stations.

(c) No charges either direct or indirect shall be made by the licensee of a television broadcast station for the production or transmission of programs when conducting technical experimentation.

§ 73.667 Discontinuance of operation.

The licensee of each station shall notify the Commission in Washington, D.C., and the Engineer in Charge of the radio district where such station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D.C., office of the Commission for cancellation.

§ 73.668 Frequency tolerance.

(a) The carrier frequency of the visual transmitter shall be maintained within ±1000 cycles of the authorized carrier frequency.

(b) The center frequency of the aural transmitter shall be maintained 4.5 megacycles, ±1000 cycles, above the visual carrier frequency.

§ 73.669 General requirements relating to logs.

(a) The licensee or permittee of each television broadcast station shall maintain program, operating and maintenance logs as set forth in §§ 73.670, 73.671, and 73.672. Each log may be kept by the station employee or employees competent to do so, having actual knowledge of the facts required, who in the case of program and operating logs shall sign the appropriate log when starting duty, and again when going off duty.

(b) The logs shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required for the particular class of station concerned is readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log. Each sheet shall be numbered and dated. Time entries shall be either in local standard or daylight saving time and shall be indicated accordingly.

(c) No log or preprinted log or schedule which upon completion becomes a log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention provided by the provisions of this part. Any necessary correction shall be made only pursuant to §§ 73.670, 73.671, and 73.672, and only by striking out the erroneous portion, or by making a corrective explanation on the log or attachment to it as provided in those sections.

(d) Entries shall be made in the log as required by §§ 73.670, 73.671, and 73.672. Additional information such as that needed for billing purposes or for the cuing of automatic equipment may be entered on the logs. Such additional information, so entered, shall not be subject to the restrictions and limitations in the Commission's rules on the making of corrections and changes in logs.

[*§ 73.669 (a), (c), and (d) as amended eff. 2-21-66; III(64)-12*]

§ 73.670 Program log.

(a) The following entries shall be made in the program log:

(1) *For each program.* (i) An entry identifying the program by name or title.

(ii) An entry of the time each program begins and ends If programs are broadcast during which separately identifiable program units of a different type or source are presented, and if the licensee wishes to count such units separately, the beginning and ending time for the longer program need be entered only once for the entire program. The program units which the licensee wishes to count separately shall then be en-

tered underneath the entry for a longer program, with the beginning and ending time of each such unit, and with the entry indented or otherwise distinguished so as to make it clear that the program unit referred to was broadcast within the longer program.

(iii) An entry classifying each program as to type, using the definitions set forth in Note 1 at the end of this section.

(iv) An entry classifying each program as to source, using the definitions set forth in Note 2 at the end of this section. (For network programs, also give name or initials of network, e.g., ABC, CBS, NBC.)

(v) An entry for each program presenting a political candidate, showing the name and political affiliation of such candidate.

(2) *For commercial matter.* (i) An entry identifying (*a*) the sponsor(s) of the program; (*b*) the person(s) who paid for the announcement, or (*c*) the person(s) who furnished materials or services referred to in § 73.654(d). If the title of a sponsored program includes the name of the sponsor, e.g., XYZ News, a separate entry for the sponsor is not required. See Note 3 at the end of this section for definition of commercial matter.

(ii) An entry showing the total duration of commercial matter in each hourly time segment (beginning on the hour). See Note 5 at the end of this section for statement as to computation of commercial time.

(iii) An entry showing that the appropriate announcement(s) (sponsorship, furnishing material or services, etc.) have been made as required by section 317 of the Communications Act and § 73.654. A check mark (√) will suffice but shall be made in such a way as to indicate the matter to which it relates.

(3) *For public service announcements.* (i) An entry showing that a public service announcement (PSA) has been broadcast together with the name of the organization or interest on whose behalf it is made. See Note 4 at the end of this section for definition of a public service announcement.

(4) *For other announcements.* (i) An entry of the time that each required station identification announcement is made (call letters and licensed location; see § 73.652).

(ii) An entry for each announcement presenting a political candidate, showing the name and political affiliation of such candidate.

(iii) An entry for each announcement made pursuant to the local notice requirements of §§ 1.580 (pregrant) and 1.594 (designation for hearing) of this chapter, showing the time it was broadcast.

(iv) An entry showing that a mechanical reproduction announcement has been made in accordance with the provisions of § 73.653.

(b) Program log entries may be made either at the time of or prior to broadcast. A station broadcasting the programs of a national network which will supply it with all information as to such programs, commercial matter and other announcements for the composite week need not log such data but shall record in its log the time when it joins the network, the name of each network program broadcast, the time it leaves the network, and any nonnetwork matter broadcast required to be logged. The information supplied by the network shall be retained with the program logs and attached to log pages to which it relates.

(c) No provision of this section shall be construed as prohibiting the recording or other automatic maintenance of data required for program logs. However, where such automatic logging is used, the licensee must comply with the following requirements:

(1) The licensee, whether employing manual or automatic logging or a combination thereof, must be able accurately to furnish the Commission with all information required to be logged;

(2) Each recording, tape, or other means employed shall be accompanied by a certificate of the operator or other responsible person on duty at the time or other duly authorized agent of the licensee, to the effect that it accurately reflects what was actually broadcast. Any information required to be logged which cannot be incorporated in the automatic process shall be maintained in a separate record which shall be similarly authenticated;

(3) The licensee shall extract any required information from the recording for the days specified by the Commission or its duly authorized representative and submit it in written log form, together with the underlying recording, tape, or other means employed.

(d) Program logs shall be changed or corrected only in the manner prescribed in § 73.669(c) and only in accordance with the following:

(1) *Manually kept log.* Where, in any program log, or preprinted program log, or program schedule which upon completion is used as a program log, a correction is made before the person keeping the log has signed the log upon going off duty, such correction no matter by whom made, shall be initialed by the person keeping the log prior to his signing of the log when going off duty, as attesting to the fact that the log as corrected is an accurate representation of what was broadcast. If correction or additions are made on the log after it has been so signed, explanation must be made on the log or an attachment to it, dated and signed by either the person who kept the log, the station program director or manager, or an officer of the licensee.

NOTE 1. *Program type definitions.* The definitions of the first eight types of programs (a) through (h) are intended not to overlap each other and will normally include all the

various programs broadcast. Definitions (i) through (k) are subcategories and the programs classified thereunder will also be classified under one of the appropriate first eight types. There may also be further duplication within types (i) through (k); (e.g., a program presenting a candidate for public office, prepared by an educational institution, would be classified as Public Affairs (PA), Political (POL), and Educational Institution (ED)).

(a) *Agricultural programs* (A) include market reports, farming, or other information specifically addressed, or primarily of interest, to the agricultural population.

(b) *Entertainment programs* (E) include all programs intended primarily as entertainment, such as music, drama, variety, comedy, quiz, etc.

(c) *News programs* (N) include reports dealing with current local, national, and international events, including weather and stock market reports; and when an integral part of a news program, commentary, analysis, and sports news.

(d) *Public affairs programs* (PA) include talks, commentaries, discussions, speeches, editorials, political programs, documentaries, forums, panels, round tables, and similar programs primarily concerning local, national, and international public affairs.

(e) *Religious programs* (R) include sermons or devotionals; religious news; and music, drama, and other types of programs designed primarily for religious purposes.

(f) *Instructional programs* (I) include programs (other than those classified under Agricultural, News, Public Affairs, Religious or Sports) involving the discussion of, or primarily designed to further an appreciation or understanding of, literature, music, fine arts, history, geography, and the natural and social sciences; and programs devoted to occupational and vocational instruction, instruction with respect to hobbies, and similar programs intended primarily to instruct.

(g) *Sports programs* (S) include play-by-play and pre- or post-game related activities and separate programs of sports instruction, news or information (e.g., fishing opportunities, golfing instructions, etc.).

(h) *Other programs* (O) include all programs not falling within definitions (a) through (g).

(i) *Editorials* (EDIT) include programs presented for the purpose of stating opinions of the licensee.

(j) *Political programs* (POL) include those which present candidates for public office or which give expressions (other than in station editorials) to views on such candidates or on issues subject to public ballot.

(k) *Educational Institution programs* (ED) include any program prepared by, in behalf of, or in cooperation with, educational institutions, educational organizations, libraries, museums, PTA's or similar organizations. Sports programs shall not be included.

NOTE 2. *Program source definitions.* (a) *A local program* (L) is any program originated or produced by the station, or for the production of which the station is substantially responsible, and employing live talent more than 50 percent of the time. Such a program, taped, recorded, or filmed for later broadcast shall be classified by the station as local. A local program fed to a network shall be classified by the originating station as local. All nonnetwork news programs may be classified as local. Programs primarily featuring syndicated or feature films or other nonlocally recorded programs shall be classified as "Recorded" (REC) even though a station personality appears in connection with such material. However, identifiable units of such programs which are live and separately logged as such may be classified as local (e.g., if during the course of a feature film program, a nonnetwork 2-minute news report is given and logged as a news program, the report may be classified as local).

(b) *A network program* (NET) is any program furnished to the station by a network (national, regional, or special). Delayed broadcasts of programs originated by networks are classified as network.

(c) *A recorded program* (REC) is any program not defined in (a), (b), (c) above, including without limitation, syndicated programs, taped or transcribed programs, and feature films.

NOTE 3. *Definition of commercial matter* (CM) includes commercial continuity (network and nonnetwork) and commercial announcements (network and nonnetwork) as follows: (Distinction between continuity and announcements is made only for definition purposes. There is no need to distinguish between the two types of commercial matter when logging.)

(a) *Commercial continuity* is the advertising message of a program sponsor.

(b) *A commercial announcement* is any other advertising message for which a charge is made, or other consideration is received.

(1) Included are (i) "bonus spots"; (ii) trade-out spots, and (iii) promotional announcements of a future program where consideration is received for such an announcement or where such announcement identifies the sponsor of a future program beyond mention of the sponsor's name as an integral part of the title of the program. (E.g., where the agreement for the sale of time provides that the sponsor will receive promotional announcements, or when the promotional announcement contains a statement such as "LISTEN TOMORROW FOR THE—[NAME OF PROGRAM]—BROUGHT TO YOU BY—[SPONSOR'S NAME]—.")

(2) Other announcements including but not limited to the following are not commercial announcements:

(i) Promotional announcements, except as heretofore defined in paragraph (b) of this Note.

(ii) Station identification announcements for which no charge is made.

(iii) Mechanical reproduction announcements.

(iv) Public service announcements.

(v) Announcements made pursuant to § 73.654(d) that materials or services have been furnished as an inducement to broadcast a political program or a program involving the discussion of controversial public issues.

(vi) Announcements made pursuant to the local notice requirements of §§ 1.580 (pregrant) and 1.594 (designation for hearing) of this chapter.

NOTE 4. *Definition of a public service announcement.* A public service announcement is an announcement for which no charge is made and which promotes programs, activities, or services of Federal, State or local Governments (e.g., recruiting, sales of bonds, etc.) or the programs, activities or services of nonprofit organizations (e.g., UGF, Red Cross Blood Donations, etc.), and other announcements regarded as serving community interests, excluding time signals, routine weather announcements and promotional announcements.

NOTE 5. *Computation of commercial time.* Duration of commercial matter shall be as close an approximation to the time consumed as possible. The amount of commercial time scheduled will usually be sufficient. It is not necessary, for example, to correct an entry of a 1-minute commercial to accommodate varying reading speeds even though the actual time consumed might be a few seconds more or less than the scheduled time. However, it is incumbent upon the licensee to ensure that the entry represents as close an approximation of the time actually consumed as possible.

[*§ 73.670 amended in III(64)–12; amended eff. 12–1–66; III(64)–14*]

§ 73.671 Operating log.

(a) The following entries shall be made in the operating log by the properly licensed operator in actual charge of the transmitting apparatus only.

(1) An entry of the time the station begins to supply power to the antenna and the time it stops.

(2) An entry of each interruption of the carrier wave, where restoration is not automatic, its cause and duration followed by the signature of the person restoring operation (if licensed operator other than the licensed operator on duty).

(3) An entry, at the beginning of operation and at intervals not exceeding one-half hour, of the following (actual readings observed prior to making any adjustments to the equipment) and, when appropriate, an indication of corrections made to restore parameters to normal operating values:

(i) Operating constants of last radio stage of aural transmitter (total plate voltage and plate current).

(ii) Transmission line meter readings for both transmitters.

(4) Any other entries required by the instrument of authorization or the provisions of this part.

(5) The entries required by § 17.38 (a), (b), and (c) of this chapter.

(b) Automatic devices accurately calibrated and with appropriate time, date and circuit functions may be utilized to record the entries in the operating log: *Provided*, That:

(1) They do not affect the operation of circuits or accuracy of indicating instruments of the equipment being recorded;

(2) The recording devices have an accuracy equivalent to the accuracy of the indicating instruments;

(3) The calibration is checked against the original indicators at least once a week and the results noted in the maintenance log;

(4) Provision is made to actuate automatically an aural alarm circuit located near the operator on duty if any of the automatic log readings are not within the tolerances or other requirements specified in the rules or instrument of authorization;

(5) Unless the alarm circuit operates continuously, devices which record each parameter in sequence must read each parameter at least once during each 10-minute period and clearly indicate the parameter being recorded;

(6) The automatic logging equipment is located in the near vicinity of the operator on duty and is inspected by him periodically during the broadcast day; and

(7) The indicating equipment conforms to the requirements of § 73.688 except that the scales need not exceed 2 inches in length. Arbitrary scales may not be used.

(c) In preparing the operating log, original data may be recorded in rough form and later transcribed into the log, but in such a case all portions of the original memoranda shall be preserved as a part of the complete log.

(d) Operating logs shall be changed or corrected only in the manner prescribed in § 73.669(c) and only in accordance with the following:

(1) *Manually kept log.* Any necessary corrections in a manually kept operating log shall be made only by the person making the original entry who shall make and initial each correction prior to signing the log when going off duty in accordance with § 73.669(a). If corrections or additions are made in the operating log after it has been so signed, explanation must be made on the log or on an attachment to it, dated and signed by either the person who kept the log or the station technical supervisor or an officer of the licensee.

(2) *Automatic logging.* No automatically kept operating log shall be altered in any way after entries have been recorded. Any errors or omissions found in an automatically kept operating log shall be noted and explained in a memorandum signed by the operator on duty (who, under the provisions of paragraph (b)(7) of this section, is required to inspect the

automatic equipment) or, by the station technical supervisor or an officer of the licensee. Such memorandum shall be affixed to the original log in question. [*§ 73.671(a) Intro. text amended and (a) (5), (c), and (d) adopted eff. 2-21-66; III(64)-12*]

§ 73.672 Maintenance log.

(a) The following entries shall be made in the maintenance log:

(1) An entry each week of the time and result of test of auxiliary transmitters.

(2) A notation each week of the calibration check of automatic recording devices as required by § 73.671(b)(3).

(3) An entry describing the method used and the results obtained in determining the operating frequency of the transmitter:

(i) Whenever the frequency check required by § 73.690(a) is made.

(ii) Whenever the frequency measurement required by § 73.690(c) is made.

(4) An entry of the date and time of removal from and restoration to service of any of the following equipment in the event it becomes defective:

(i) Visual modulation monitoring equipment or aural modulation monitor.

(ii) Final stage plate voltmeters of aural and visual transmitters.

(iii) Final stage plate ammeters of aural and visual transmitters.

(iv) Visual and aural transmitter transmission line radio frequency voltage, current, or power meter.

(5) Record of tower light inspections where required by § 17.38(d) of this chapter (Part 17—Construction, Marking, and Lighting of Antenna Structures).

(6) Entries shall be made so as to describe fully any operation for testing and maintenance purposes.

(7) Any other entries required by the instrument of authorization or the provisions of this part.

(b) The inspecting operator shall sign and date the maintenance log at the conclusion of each inspection. In preparing the maintenance log, original data may be recorded in rough form and later transcribed into the log, but in such cases all portions of the original memorandum shall be preserved as a part of the complete log.

(c) Any necessary corrections in the maintenance log shall be made only by the inspecting operator who shall initial and date all changes prior to signing the log. If corrections or additions are made on the maintenance log after the log has been so signed, explanation must be made the subject of a separate memorandum, dated and signed by the operator who made the entry in question or the station technical supervisor or by an officer of the licensee. Such memorandum shall explain fully the circumstances surrounding the errors or ambiguities, and shall be affixed to the original log in question. If written and signed by other than the inspecting operator who made the entry the memorandum shall contain a satisfactory explanation of why such signature is lacking.

[*§ 73.672 as amended eff. 2-21-66; III(64)-12*]

§ 73.673 Retention of logs.

Logs of television broadcast stations shall be retained by the licensee or permittee for a period of 2 years: *Provided, however,* That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further,* That logs incident to or involved in any claim or complaint of which the licensee

or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 73.674 Availability of logs and records.

The program, operating, and maintenance logs shall be made available upon request by an authorized representative of the Commission.

§ 73.675 Operation during emergency.

(a) The licensee of a television broadcast station or the permittee of such a station operating under program test authority is authorized only to disseminate radio communications intended to be received by the public. However, during a period of emergency or imminent emergency in the area in which the station is located such a licensee or permittee may also utilize its station for transmitting communications directly related to the emergency which are intended to be received by specific individuals for the purpose of dispatching aid, assisting in rescue operations or otherwise promoting the safety of life and property or alleviating hardship. In the course of such operation a station may communicate with stations of other classes and in other services. For the purposes of this section, an emergency shall mean a situation that would generally and seriously endanger life and property or cause substantial hardship as a result of events such as hurricane or other severe weather conditions, flood, earthquake or wide-area forest fire. The term shall not include situations resulting from frosts, or localized fires which are not a source of general danger.

(b) The decision to operate under the provisions of this section lies solely with the licensee or permittee of the station, requests by governmental or other officials not being controlling. However, such emergency operation shall terminate upon order of the Commission.

(c) When engaged in operation under the provisions of this section a station shall use the frequency specified in and power not in excess of that specified in its instrument of authorization.

(d) A licensee or permittee operating under the provisions of this section shall (1) as soon as possible after the beginning of such emergency use, send notice to the Commission at Washington, D.C., and to the Engineer in Charge of the district in which the station is located, stating the nature of the emergency and the use to which the station is being put; (2) discontinue such emergency operation as soon as the conditions requiring such operation are no longer present or the public has had an opportunity to be adequately informed; and (3) immediately upon cessation of such emergency operation notify the Commission in Washington, D.C., and the Engineer in Charge of the district in which the station is located, and shall in such notice justify the operation by stating the nature of the emergency, the exact times of operation, the type of emergency information transmitted, the total amount of time devoted to the transmission of emergency information, and other pertinent details.

(e) No operation under this section shall be permitted if an Emergency Action Condition, under the provisions of Subpart G of this part, is in effect. If a station is operating under this section and an Emergency Action Condition is declared, compliance with the Emergency Action Notification shall take precedence.

§ 73.676 Remote control operation.

(a) Television broadcast stations operating on Channels 14–83 may be authorized to operate by remote control upon a satisfactory showing as to the manner of compliance with the following requirements:

(1) Suitable control circuits shall be installed to:

(i) Turn the transmitter on and off at will.

(ii) Determine the power output of the visual and aural final radio frequency amplifiers or the power delivered to the antenna.

(iii) Adjust the power output of the final radio frequency amplifier to compensate for variations in line voltage.

(iv) Make such adjustments as may be necessary to insure that the characteristics of the transmitted signal comply in all respects with the technical requirements of the rules.

(2) The control point shall be equipped with apparatus suitable for observing the waveform and other pertinent characteristics of the transmitted visual signal and the percent of modulation of the transmitted aural signal.

(3) The control circuits from the control point to the transmitter shall be so designed and installed that open circuits, short circuits, accidental grounding, or other line faults will not activate the transmitting apparatus and any fault which results in loss of control of the transmitting apparatus will automatically remove power from the transmitting anntena.

(4) The transmitting equipment and control equipment shall be adequately protected against tampering or activation by unauthorized persons.

(b) Where a transmitter is operated by remote control the transmitting apparatus and associated controls shall be checked as often as is necessary to insure proper operation and confirm the accuracy of the transmitter data sent to the control point over the control circuits and in all cases at least once each week until it can be demonstrated to the Commission that checks at less frequent intervals are satisfactory.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 73.678 Fraudulent billing practices.

No licensee of a television broadcast station shall knowingly issue to any local, regional or national advertiser, advertising agency, station representative, manufacturer, distributor, jobber or any other party, any bill, invoice, affidavit or other document which contains false information concerning the amount actually charged by the licensee for the broadcast advertising for which such bill, invoice, affidavit or other document is issued or which misrepresents the nature, content or quantity of such advertising. Licensees shall exercise reasonable diligence to see that their agents and employees do not issue any documents which would violate this section if issued by the licensee.

NOTE: Commission interpretations in connection with this Rule may be found in a separate Public Notice issued Oct. 22, 1965, entitled "Applicability of Fraudulent Billing Rule." (FCC 65-952.)

[§ *73.678 as adopted eff. 11-29-65; III(64)-11*]

§ 73.679 Personal attacks; political editorials

(a) When, during the presentation of views on a controversial issue of public importance, an attack is made upon the honesty, character, integrity or like personal qualities of an identified person or group, the licensee shall, within a reasonable time and in no event later than 1 week after the attack, transmit to the person or group attacked (1) notification of the date, time and identification of the broadcast; (2) a script or tape (or an accurate summary if a script or tape is not available) of the attack; and (3) an offer of a reasonable opportunity to respond over the licensee's facilities.

(b) The provisions of paragraph (a) of this section shall be inapplicable to attacks on foreign groups or foreign public figures or where personal attacks are made by legally qualified candidates, their authorized spokesmen, or those associated with them in the campaign, on other such candidates, their authorized spokesman, or persons associated with the candidates in the campaign.

NOTE: In a specific factual situation, the fairness doctrine may be applicable in this general area of political broadcasts. See section 315(a) of the Act (47 U.S.C. 315(a)); public notice: Applicability of the Fairness Doctrine in the Handling of Controversial Issues of Public Importance. 29 F.R. 10415.

(c) Where a licensee, in an editorial, (i) endorses or (ii) opposes a legally qualified candidate or candidates, the licensee shall, within 24 hours after the editorial, transmit to respectively (i) the other qualified candidate or candidates for the same office or (ii) the candidate opposed in the editorial (1) notification of the date and the time of the editorial; (2) a script or tape of the editorial; and (3) an offer of a reasonable opportunity for a candidate or a spokesman of the candidate to respond over the licensee's facilities: *Provided, however,* That where such editorials are broadcast within 72 hours prior to the day of the election, the licensee shall comply with the provisions of this paragraph sufficiently far in advance of the broadcast to enable the candidate or candidates to have a reasonable opportunity to prepare a response and to present it in a timely fashion.

[*§73.679 adopted eff. 8-14-67; III(64)-18*]

TV TECHNICAL STANDARDS

§ 73.681 Definitions.

Amplitude modulation (AM). A system of modulation in which the envelope of the transmitted wave

contains a component similar to the wave form of the signal to be transmitted.

Antenna height above average terrain. The average of the antenna heights above the terrain from two to ten miles from the antenna for the eight directions spaced evenly for each 45 degrees of azimuth starting with True North. (In general, a different antenna height will be determined in each direction from the antenna. The average of these various heights is considered the antenna height above the average terrain. In some cases less than 8 directions may be used. See § 73.684(d).)

Antenna power gain. The square of the ratio of the root-mean-square free space field intensity produced at one mile in the horizontal plane, in millivolts per meter for one kilowatt antenna input power to 137.6 mv/m. This ratio should be expressed in decibels (db). (If specified for a particular direction, antenna power gain is based on the field strength in that direction only.)

Aspect ratio. The ratio of picture width to picture height as transmitted.

Aural transmitter. The radio equipment for the transmission of the aural signal only.

Aural center frequency. (1) The average frequency of the emitted wave when modulated by a sinusoidal signal; (2) the frequency of the emitted wave without modulation.

Blanking level. The level of the signal during the blanking interval, except the interval during the scanning synchronizing pulse and the chrominance subcarrier synchronizing burst.

Chrominance. The colorimetric difference between any color and a reference color of equal luminance, the reference color having a specific chromaticity.

Chrominance subcarrier. The carrier which is modulated by the chrominance information.

Color transmission. The transmission of color television signals which can be reproduced with different values of hue, saturation, and luminance.

Effective radiated power. The product of the antenna input power and the antenna power gain. This product should be expressed in kilowatts and in decibels above one kilowatt (dbk). (If specified for a particular direction, effective radiated power is based on the antenna power gain in that direction only. The licensed effective radiated power is based on the average antenna power gain for each horizontal plane direction.)

Field. Scanning through the picture area once in the chosen scanning pattern. In the line interlaced scanning pattern of two to one, the scanning of the alternate lines of the picture area once.

Frame. Scanning all of the picture area once. In the line interlaced scanning pattern of two to one, a frame consists of two fields.

Free space field intensity. The field intensity that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

Frequency modulation (FM). A system of modulation where the instantaneous radio frequency varies in proportion to the instantaneous amplitude of the modulating signal (amplitude of modulating signal to be measured after pre-emphasis, if used) and the instantaneous radio frequency is independent of the frequency of the modulating signal.

Frequency swing. The instantaneous departure of the frequency of the emitted wave from the center frequency resulting from modulation.

Interlaced scanning. A scanning process in which successively scanned lines are spaced an integral number of line widths, and in which the adjacent lines are scanned during successive cycles of the field frequency.

Luminance. Luminous flux emitted, reflected, or transmitted per unit solid angle per unit projected area of the source.

Monochrome transmission. The tranmission of television signals which can be reproduced in gradations of a single color only.

Negative transmission. Where a decrease in initial light intensity causes an increase in the transmitted power.

Peak power. The power over a radio frequency cycle corresponding in amplitude to synchronizing peaks.

Percentage modulation. As applied to frequency modulation, the ratio of the actual frequency swing to the frequency swing defined as 100 percent modulation, expressed in percentage. For the aural transmitter of television broadcast stations, a frequency swing of ±25 kilocycles is defined as 100 percent modulation.

Polarization. The direction of the electric field as radiated from the transmitting antenna.

Reference black level. The level corresponding to the specified maximum excursion of the luminance signal in the black direction.

Reference white level of the luminance signal. The level corresponding to the specified maximum excursion of the luminance signal in the white direction.

Scanning. The process of analyzing successively, according to a predetermined method, the light values of picture elements constituting the total picture area.
public.

Scanning line. A single continuous narrow strip of the picture area containing highlights, shadows, and half-tones, determined by the process of scanning.

Standard television signal. A signal which conforms to the television transmission standards.

Synchronization. The maintenance of one operation in step with another.

Television broadcast band. The frequencies in the band extending from 54 to 890 megacycles which are assignable to television broadcast stations. These frequencies are 54 to 72 megacycles (channels 2 through 4), 76 to 88 megacycles (channels 5 and 6), 174 to 216 megacycles (channels 7 through 13), and 470 to 890 megacycles (channels 14 through 83).

Television broadcast station. A station in the television broadcast band transmitting simultaneous visual and aural signals intended to be received by the general

Television channel. A band of frequencies 6 megacycles wide in the television broadcast band and designated either by number or by the extreme lower and upper frequencies.

Television transmission standards. The standards which determine the characteristics of a television signal as radiated by a television broadcast station.

Television transmitter. The radio transmitter or transmitters for the transmission of both visual and aural signals.

Vestigial sideband transmission. A system of transmission wherein one of the generated sidebands is partially attenuated at the transmitter and radiated only in part.

Visual carrier frequency. The frequency of the carrier which is modulated by the picture information.

Visual transmitter. The radio equipment for the transmission of the visual signal only.

Visual transmitter power. The peak power output when transmitting a standard television signal.

§ 73.682 Transmission standards and changes.

(a) *Transmission standards.* (1) The width of the television broadcast channel shall be 6 Mc/s.

(2) The visual carrier frequency shall be nominally 1.25 Mc/s above the lower boundary of the channel.

(3) The aural center frequency shall be 4.5 Mc/s higher than the visual carrier frequency.

(4) The visual transmission amplitude characteristic shall be in accordance with the chart designated as Figure 5 of § 73.699: *Provided, however,* That for stations operating on Channel 15–83 and employing a transmitter with maximum peak visual power output of 1 kilowatt or less the visual transmission amplitude characteristic may be in accordance with the chart designated as Figure 5a of § 73.699.

(5) The chrominance subcarrier frequency shall be 3.579545 Mc/s ±10 cycles per second with a maximum rate of change not to exceed one-tenth cycle per second per second.

(6) For monochrome and color transmissions the number of scanning lines per frame shall be 525, interlaced two to one in successive fields. The horizontal scanning frequency shall be $2/455$ times the chrominance subcarrier frequency; this corresponds nominally to 15,750 cycles per second (with an actual value of 15,734.264 ± 0.044 cycles per second). The vertical scanning frequency is $2/525$ times the horizontal scanning frequency; this corresponds nominally to 60 cycles per second (the actual value is 59.94 cycles per second). For monochrome transmissions only, the nominal values of line and field frequencies may be used.

(7) The aspect ratio of the transmitted television picture shall be 4 units horizontally to 3 units vertically.

(8) During active scanning intervals, the scene shall be scanned from left to right horizontally and from top to bottom vertically, at uniform velocities.

(9) A carrier shall be modulated within a single television channel for both picture and synchronizing signals. For monochrome transmission, the two signals comprise different modulation ranges in amplitude, in accordance with the charts designated as Figures 5 and 7 of § 73.699 for stations operating on Channels 2–14 or Figures 5a and 7 for stations operating on Channels 15–83 and employing a transmitter with maximum peak visual power output of 1 kilowatt or less. For color transmission, the two signals comprise different modulation ranges in amplitude except where the chrominance penetrates the synchronizing region and the burst penetrates the picture region, in accordance with the charts designated as Figures 5 and 6 of § 73.699 for stations operating on Channels 2–14 or Figures 5a and 6 for stations operating on Channels 15–83 and employing a transmitter with maximum peak visual power output of 1 kilowatt or less.

(10) A decrease in initial light intensity shall cause an increase in radiated power (negative transmission).

(11) The reference black level shall be represented by a definite carrier level, independent of light and shade in the picture.

(12) The blanking level shall be transmitted at 75± 2.5 percent of the peak carrier level.

(13) The reference white level of the luminance signal shall be 12.5±2.5 percent of the peak carrier level.

(14) The signals radiated shall have horizontal polarization.

(15) The effective radiated power of the aural transmitter shall not be less than 10 percent nor more than 20 percent of the peak radiated power of the visual transmitter.

NOTE: Existing licensees presently authorized an aural effective radiated power greater than 20 percent of the peak visual effective radiated power may continue to so operate until March 1, 1966.

[*§ 73.682(a)(15) amended in III(64)–1, as further amended eff. 4–19–65; III(64)–7*]

(16) The peak-to-peak variation of transmitter output within one frame of video signal due to all causes, including hum, noise, and low-frequency response, measured at both scanning synchronizing peak and blanking level, shall not exceed 5 percent of the average scanning synchronizing peak signal amplitude. This provision is subject to change but is considered the best practice under the present state of the art. It will not be enforced pending a further determination thereof.

(17) The reference black level shall be separated from the blanking level by the setup interval, which shall be 7.5±2.5 percent of the video range from blanking level to the reference white level.

(18) For monochrome transmission, the transmitter output shall vary in substantially inverse logarithmic relation to the brightness of the subject. No tolerances are set at this time. This provision is subject to change but is considered the best practice under the present state of the art. It will not be enforced pending a further determination thereof.

(19) The color picture signal shall correspond to a luminance component transmitted as amplitude modulation of the picture carrier and a simultaneous pair of chrominance components transmitted as the amplitude modulation sidebands of a pair of suppressed subcarriers in quadrature.

(20) Equation of complete color signal.

(i) The color picture signal has the following composition:

$$E_M = E_Y' + \{E_Q' \sin(\omega t + 33°) + E_I' \cos(\omega t + 33°)\}$$

Where:

$$E_Q' = 0.41(E_B' - E_Y') + 0.48(E_R' - E_Y').$$
$$E_I' = -0.27(E_B' - E_Y') + 0.74(E_R' - E_Y').$$
$$E_Y' = 0.30E_R' + 0.59E_G' + 0.11E_B'.$$

For color-difference frequencies below 500 kc/s (see (iii) below), the signal can be represented by:

$$E_M = E_Y' + \left\{\frac{1}{1.14}\left[\frac{1}{1.78}(E_B' - E_Y')\sin\omega t + (E_R' - E_Y')\cos\omega t\right]\right\}$$

(ii) The symbols in subdivision (i) of this subparagraph have the following significance:

E_M is the total video voltage, corresponding to the scanning of a particular picture element, applied to the modulator of the picture transmitter.

E_Y' is the gamma-corrected voltage of the monochrome (black-and-white) portion of the color picture signal, corresponding to the given picture element.

NOTE: Forming of the high frequency portion of the monochrome signal in a different manner is permissible and may in fact be desirable in order to improve the sharpness on saturated colors.

E_Q' and E_I' are the amplitudes of two orthogonal components of the chrominance signal corresponding respectively to narrow-band and wide-band axes.

E_R', E_G', and E_B' are the gamma-corrected voltages corresponding to red, green, and blue signals during the scanning of the given picture element.

ω is the angular frequency and is 2π times the frequency of the chrominance subcarrier.

The portion of each expression between brackets in (i) represents the chrominance subcarrier signal which carries the chrominance information.

The phase reference in the E_M equation in (i) is the phase of the burst+180°, as shown in Figure 8 of § 73.699. The burst corresponds to amplitude modulation of a continuous sine wave.

(iii) The equivalent bandwidth assigned prior to modulation to the color difference signals E_Q' and E_I are as follows:

Q-channel bandwidth:
At 400 kc/s less than 2db down.
At 500 kc/s less than 6 db down.
At 600 kc/s at least 6 db down.

I-channel bandwidth:
At 1.3 Mc/s less than 2 db down.
At 3.6 Mc/s at least 20 db down.

(iv) The gamma corrected voltages E_R', E_G', and E_B' are suitable for a color picture tube having primary colors with the following chromaticities in the CIE system of specification:

	x	y
Red (R)	0.67	0.33
Green (G)	0.21	0.71
Blue (B)	0.14	0.08

and having a transfer gradient (gamma exponent) of 2.2 associated with each primary color. The voltages E_R', E_G', and E_B' may be respectively of the form $E_R^{1/\gamma}$, $E_G^{1/\gamma}$, and $E_B^{1/\gamma}$ although other forms may be used with advances in the state of the art.

NOTE: At the present state of the art it is considered inadvisable to set a tolerance on the value of gamma and correspondingly this portion of the specification will not be enforced.

(v) The radiated chrominance subcarrier shall vanish on the reference white of the scene.

NOTE: The numerical values of the signal specification assume that this condition will be reproduced as CIE Illuminant C ($x=0.310$, $y=0.316$).

(vi) E_Y', E_Q', E_I', and the components of these signals shall match each other in time to 0.05 μsecs.

(vii) The angle of the subcarrier measured with respect to the burst phase, when reproducing saturated primaries and their complements at 75 percent of full amplitude, shall be within $\pm 10°$ and their amplitudes shall be within ± 20 percent of the values specified above. The ratios of the measured amplitudes of the subcarrier to the luminance signal for the same saturated primaries and their complements shall fall between the limits of 0.8 and 1.2 of the values specified for their ratios. Closer tolerances may prove to be practicable and desirable with advance in the art.

(21) The interval beginning with the last 12 microseconds of line 17 and continuing through line 20 of the vertical blanking interval of each field may be used for the transmission of test signals subject to the conditions set forth below. Test signals may include signals used to supply reference modulation levels so that variations in light intensity of the scene viewed by the camera will be faithfully transmitted; signals designed to check the performance of the overall transmission system or its individual components; and cue and control signals related to the operation of the television broadcast station. Figures 6 and 7 of § 73.699 identify the numbered lines referred to in this subparagraph.

(i) Modulation of the television transmitter by such test signals shall be confined to the area between the reference white level and the blanking level except where such test signals are composed of chrominance subcarrier frequencies, in which case their negative excursions may extend into the synchronizing peak amplitude. In no case may the modulation excursions produced by test signals extend beyond peak-of-sync level.

(ii) The use of test signals shall not result in significant degradation of the program transmissions of the television broadcast station nor create emission components in excess of those permitted for normal program transmissions.

(iii) Test signals may not be transmitted during that portion of each line devoted to horizontal blanking.

(iv) A guard interval of no less than one-half line shall be maintained at all times between the last test signal and the beginning of the first picture scanning line.

(b) *Changes in transmission standards.* The Commission will consider the question whether a proposed change or modification of transmission standards adopted for television would be in the public interest, convenience and necessity, upon petition being filed by

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the person proposing such change or modification, setting forth the following:

(1) The exact character of the change or modification proposed;

(2) The effect of the proposed change or modification upon all other transmission standards that have been adopted by the Commission for television broadcast stations;

(3) The experimentation and field tests that have been made to show that the proposed change or modification accomplishes an improvement and is technically feasible;

(4) The effect of the proposed change or modification in the adopted standards upon operation and obsolescence of receivers;

NOTE: Should a change or modification in the transmission standards be adopted by the Commission, the effective date thereof will be determined in the light of the considerations mentioned in this subparagraph.

(5) The change in equipment required in existing television broadcast stations for incorporating the proposed change or modification in the adopted standards; and

(6) The facts and reasons upon which the petitioner bases his conclusion that the proposed change or modification would be in the public interest, convenience, and necessity.

§ 73.683 Field intensity contours.

(a) In the authorization of television broadcast stations, two field intensity contours are considered. These are specified as Grade A and Grade B and indicate the approximate extent of coverage over average terrain in the absence of interference from other television stations. Under actual conditions, the true coverage may vary greatly from these estimates because the terrain over any specific path is expected to be different from the average terrain on which the field strength charts were based. The required field intensities, F(50,50), in decibels above one microvolt per meter (dbu) for the Grade A and Grade B contours are as follows:

NOTE: It should be realized that the F(50,50) curves when used for Channels 14–83 are not based on measured data at distances beyond about 30 miles. Theory would indicate that the field intensities for Channels 14 83 should decrease more rapidly with distance beyond the horizon than for Channels 2–6, and modification of the curves for Channels 14–83 may be expected as a result of measurements to be made at a later date. For these reasons, the curves should be used with appreciation of their limitations in estimating levels of field intensity. Further, the actual extent of service will usually be less than indicated by these estimates due to interference from other stations. Because of these factors, the predicted field intensity contours give no assurance of service to any specific percentage of receiver locations within the distances indicated. In licensing proceedings these variations will not be considered.

	Grade A (dbu)	Grade B (dbu)
Channels 2–6	68	47
Channels 7–13	71	56
Channels 14–83	74	64

(b) The field intensity contours provided for herein shall be considered for the following purposes only:

(1) In the estimation of coverage resulting from the selection of a particular transmitter site by an applicant for a television station.

(2) In connection with problems of coverage arising out of application of § 73.636.

(3) In determining compliance with § 73.685(a) concerning the minimum field intensity to be provided over the principal community to be served.

§ 73.684 Prediction of coverage.

(a) All predictions of coverage made pursuant to this section shall be made without regard to interference and shall be made only on the basis of estimated field intensities. The peak power of the visual signal is used in making predictions of coverage.

(b) Predictions of coverage shall be made only for the same purposes as relate to the use of field intensity contours as specified in § 73.683(b).

(c) In predicting the distance to the field intensity contours, the F(50,50) field intensity charts (Figures 9 and 10 of § 73.699) shall be used. If the 50 percent field intensity is defined as that value exceeded for 50 percent of the time, these F(50,50) charts give the estimated 50 percent field intensities exceeded at 50 percent of the locations in decibels above one microvolt per meter. The charts are based on an effective power of one kilowatt radiated from a half-wave dipole in free space, which produces an unattenuated field strength at one mile of about 103 db above one microvolt per meter (137.6 millivolts per meter). To use the charts for other powers, the sliding scale associated with the charts should be trimmed and used as the ordinate scale. This sliding scale is placed on the charts with the appropriate gradation for power in line with the horizontal 40 db line on the charts. The right edge of the scale is placed in line with the appropriate antenna height gradations, and the charts then become direct reading (in uv/m and in db above 1 uv/m) for this power and antenna height. Where the antenna height is not one of those for which a scale is provided, the signal strength or distance is determined by interpolation between the curves connecting the equidistant points. Dividers may be used in lieu of the sliding scale. In predicting the distance to the Grade A and Grade B field intensity contours, the effective radiated power to be used is that in the horizontal plane in the pertinent direction. In predicting other field intensities over areas not in the horizontal plane, the effective radiated power to be used is the power in the direction of such areas; the appropriate vertical plane radiation pattern must, of course, be considered in determining this power.

(d) The antenna height to be used with these charts is the height of the radiation center of the antenna above the average terrain along the radial in question. In determining the average elevation of the terrain, the elevations between 2 and 10 miles from the an-

tenna site are employed. Profile graphs shall be drawn for 8 radials beginning at the antenna site and extending 10 miles therefrom. The radials should be drawn for each 45 degrees of azimuth starting with True North. At least one radial must include the principal community to be served even though such community may be more than 10 miles from the antenna site. However, in the event none of the evenly spaced radials include the principal community to be served and one or more such radials are drawn in addition to the 8 evenly spaced radials, such additional radials shall not be employed in computing the antenna height above average terrain. Where the 2 to 10 mile portion of a radial extends in whole or in part over large bodies of water as specified in paragraph (e) of this section or extends over foreign territory but the Grade B intensity contour encompasses land area within the United States beyond the 10 mile portion of the radial, the entire 2 to 10 mile portion of the radial shall be included in the computation of antenna height above average terrain. However, where the Grade B contour does not so encompass United States land area and (1) the entire 2 to 10 mile portion of the radial extends over large bodies of water or foreign territory, such radial shall be completely omitted from the computation of antenna height above average terrain, and (2) where a part of the 2 to 10 mile portion of a radial extends over large bodies of water or over foreign territory, only that part of the radial extending from the 2 mile sector to the outermost portion of land area within the United States covered by the radial shall be employed in the computation of antenna height above average terrain. The profile graph for each radial should be plotted by contour intervals of from 40 to 100 feet and, where the data permits, at least 50 points of elevation (generally uniformly spaced) should be used for each radial. In instances of very rugged terrain where the use of contour intervals of 100 feet would result in several points in a short distance, 200- or 400-foot contour intervals may be used for such distances. On the other hand, where the terrain is uniform or gently sloping the smallest contour interval indicated on the topographic map (see paragraph (g) of this section) should be used, although only relatively few points may be available. The profile graphs should indicate the topography accurately for each radial, and the graphs should be plotted with the distance in miles as the abscissa and the elevation in feet above mean sea level as the ordinate. The profile graphs should indicate the source of the topographical data employed. The graph should also show the elevation of the center of the radiating system. The graph may be plotted either on rectangular coordinate paper or on special paper which shows the curvature of the earth. It is not necessary to take the curvature of the earth into consideration in this procedure, as this factor is taken care of in the charts showing signal intensities. The average elevation of the 8-mile distance between 2 and 10 miles from the antenna site should then be determined from the profile graph for each radial. This may be obtained by averaging a large number of equally spaced points, by using a planimeter, or by obtaining the median elevation (that exceeded for 50 percent of the distance) in sectors and averaging those values.

NOTE: The Commission will, upon a proper showing by an existing station that the application of this rule will result in an unreasonable power reduction in relation to other stations in close proximity, consider requests for adjustment in power on the basis of a common average terrain figure for the stations in question as determined by the Commission.

(e) In instances where it is desired to determine the area in square miles within the Grade A and Grade B field intensity contours, the area may be determined from the coverage map by planimeter or other approximate means; in computing such areas, exclude (1) areas beyond the borders of the United States, and (2) large bodies of water, such as ocean areas, gulfs, sounds, bays, large lakes, etc., but not rivers.

(f) In cases where the terrain in one or more directions from the antenna site departs widely from the average elevation of the 2 to 10 mile sector, the prediction method may indicate contour distances that are different from what may be expected in practice. For example, a mountain ridge may indicate the practical limit of service although the prediction method may indicate otherwise. In such cases the prediction method should be followed, but a supplemental showing may be made concerning the contour distances as determined by other means. Such supplemental showing should describe the procedure employed and should include sample calculations. Maps of predicted coverage should include both the coverage as predicted by the regular method and as predicted by a supplemental method. When measurements of area are required, these should include the area obtained by the regular prediction method and the area obtained by the supplemental method. In directions where the terrain is such that negative antenna heights or heights below 100 feet for the 2 to 10 mile sector are obtained, a supplemental showing of expected coverage must be included together with a description of the method employed in predicting such coverage. In special cases, the Commission may require additional information as to terrain and coverage.

(g) In the preparation of the profile graphs previously described, and in determining the location and height above sea level of the antenna site, the elevation or contour intervals shall be taken from the United States Geological Survey Topographic Quadrangle Maps, United States Army Corps of Engineers maps or Tennessee Valley Authority maps, whichever is the latest, for all areas for which such maps are available. If such maps are not published for the area in question, the next best topographic information should be used. Topographic data may sometimes be obtained from State and municipal agencies. Data from Sectional Aeronautical Charts (including bench marks) or railroad depot elevations and highway elevations

from road maps may be used where no better information is available. In cases where limited topographic data is available, use may be made of an altimeter in a car driven along roads extending generally radially from the transmitter site. Ordinarily the Commission will not require the submission of topographical maps for areas beyond 15 miles from the antenna site, but the maps must include the principal community to be served. If it appears necessary, additional data may be requested. United States Geological Survey Topographic Quadrangle Maps may be obtained from the United States Geological Survey, Department of the Interior, Washington, D.C., 20240. Sectional Aeronautical Charts are available from the United States Coast and Geodetic Survey, Department of Commerce, Washington, D.C., 20235.

§ 73.685 Transmitter location and antenna system.

(a) The transmitter location shall be chosen so that, on the basis of the effective radiated power and antenna height above average terrain employed, the following minimum field intensity in decibels above one microvolt per meter (dbu) will be provided over the entire principal community to be served:

Channels 2-6	Channels 7-13	Channels 14-83
74 dbu	77 dbu	80 dbu

(b) Location of the antenna at a point of high elevation is necessary to reduce to a minimum the shadow effect on propagation due to hills and buildings which may reduce materially the intensity of the station's signals. In general, the transmitting antenna of a station should be located at the most central point at the highest elevation available. To provide the best degree of service to an area, it is usually preferable to use a high antenna rather than a low antenna with increased transmitter power. The location should be so chosen that line-of-sight can be obtained from the antenna over the principal community to be served; in no event should there be a major obstruction in this path. The antenna must be constructed so that it is as clear as possible of surrounding buildings or objects that would cause shadow problems. It is recognized that topography, shape of the desired service area, and population distribution may make the choice of a transmitter location difficult. In such cases, consideration may be given to the use of a directional antenna system, although it is generally preferable to choose a site where a nondirectional antenna may be employed.

(c) In cases of questionable antenna locations it is desirable to conduct propagation tests to indicate the field intensity expected in the principal community to be served and in other areas, particularly where severe shadow problems may be expected. In considering applications proposing the use of such locations, the commission may require site tests to be made. Such tests should be made in accordance with the measurement procedure in § 73.686, and full data thereon must be supplied to the Commission. Test transmitters should employ an antenna having a height as close as possible to the proposed antenna height, using a balloon or other support if necessary and feasible. Information concerning the authorization of site tests may be obtained from the Commission upon request.

(d) Present information is not sufficiently complete to establish "blanket areas" of television broadcast stations. A "blanket area" is that area adjacent to a transmitter in which the reception of other stations is subject to interference due to the strong signal from this station. The authorization of station construction in areas where blanketing is found to be excessive will be on the basis that the applicant will assume full responsibility for the adjustment of reasonable complaints arising from excessively strong signals of the applicant's station or take other corrective action.

(e) An antenna designed or altered to produce a non-circular radiation pattern in the horizontal plane is considered to be a directional antenna. Directional antennas may be employed for the purpose of improving service upon an appropriate showing of need. Stations operating on Channels 2–13 will not be permitted to employ a directional antenna having a ratio of maximum to minimum radiation in the horizontal plane in excess of 10 decibels. Stations operating on Channels 14–83 with transmitters delivering a peak visual power output of more than 1 kilowatt may employ directive transmitting antennas with a maximum to minimum radiation in the horizontal plane of not more than 15 decibels. Stations operating on Channels 14–83 and employing transmitters delivering a peak visual power output of 1 kilowatt or less are not limited as to the ratio of maximum to minimum radiation.

(f) Applications proposing the use of directional antenna systems must be accompanied by the following:

(1) Complete description of the proposed antenna system.

(2) Orientation of array with respect to true north; time phasing of fields from elements (degrees leading or lagging); space phasing of elements (in feet and degrees); and ratio of fields from elements.

(3) Horizontal and vertical plane radiation patterns showing the free space field intensity in millivolts per meter at 1 mile and the effective radiated power, in dbk, for each direction. The method by which the radiation patterns were computed or measured shall be fully described, including formulas used, equipment employed, sample calculations and tabulations of data. Sufficient vertical plane patterns shall be included to indicate clearly the radiation characteristics of the antenna above and below the horizontal plane. The horizontal plane pattern shall be plotted on polar coordinate paper with reference to true north. The vertical plane patterns shall be plotted on rectangular coordinate paper with reference to the horizontal plane.

(4) Name, address, and qualifications of the engineer making the calculations.

(g) Applications proposing the use of television broadcast antennas within 200 feet of other television broadcast antennas operating on a channel within 20 percent in frequency of the proposed channel, or proposing the use of television broadcast antennas on Channels 5 or 6 within 200 feet of FM broadcast antennas, must include a showing as to the expected effect, if any, of such proximate operation.

(h) Where simultaneous use of antennas or antenna structures is proposed, the following provisions shall apply:

(1) In cases where it is proposed to use a tower of a standard broadcast station as a supporting structure for a television broadcast antenna, an appropriate application for changes in the radiating system of the standard broadcast station must be filed by the licensee thereof. A formal application (FCC Form 301, or FCC Form 340 for a noncommercial educational station) will be required if the proposal involves substantial change in the physical height or radiation characteristics of the standard broadcast antennas; otherwise an informal application will be acceptable. (In case of doubt, an informal application (letter) together with complete engineering data should be submitted.) An application may be required for other classes of stations when the tower is to be used in connection with a television station.

(2) When the proposed television antenna is to be mounted on a tower in the vicinity of a standard broadcast directional array and it appears that the operation of the directional antenna system may be affected, an engineering study must be filed with the television application concerning the effect of the television antenna on the directional pattern. Readjustment and field intensity measurements of the standard broadcast station may be required following construction of the television antenna.

(i) The provisions of Part 17 of this chapter shall govern the construction, marking and lighting requirements of antenna structures used by television broadcast stations.

(j) If a common tower is used for antenna and/or antenna supporting purposes by two or more licensees or permittees of television broadcast stations, or by one or more such licensees or permittees and one or more licensees or permittees of any other class or service, each permittee or licensee shall be responsible for painting and illuminating the structure when obstruction marking and lighting are required by the Commission.

[*§ 73.685(i) amended and Par. (j) adopted eff. 9–20–65; III(64)–10*]

§ 73.686 Measurements for rule making purposes and upon request of the Commission.

(a) Except as provided for in § 73.612, television broadcast stations shall not be protected against any type of interference or propagation effect. Persons desiring to submit testimony, evidence, or data to the Commission for the purpose of showing that the technical standards contained in this subpart do not properly reflect any given types of interference or propaga-

tion effects may do so only in appropriate rule making proceedings to amend such technical standards. Persons making field intensity measurements for formal submission to the Commission in rule making proceedings, or making such measurements upon the request of the Commission, should comply with the procedure for making such measurements as outlined in the following paragraphs of this section.

(b) Measurements made to determine field intensities of television broadcast stations should be made with mobile equipment along roads which are as close and similar as possible to the radials showing topography which were submitted with the application for construction permit. Cluster and spot measurements may also be submitted, if accompanied by a complete showing of the procedures employed. Suitable measuring equipment and a continuous recording device must be employed, the chart of which is either directly driven from the speedometer of the automobile in which the equipment is mounted or so arranged that distances and identifying landmarks can be readily noted. The measuring equipment must be calibrated against recognized standards of field intensity and so constructed that it will maintain an acceptable accuracy of measurement while in motion or when stationary. The equipment should be so operated that the recorder chart can be calibrated directly in field intensity in order to facilitate analysis of the chart. The receiving antenna must be horizontally polarized and should be nondirectional.

(c) Mobile measurements should be made with a minimum chart speed of 3 inches per mile and preferably 5 or 6 inches per mile. Locations shall be noted on the recorder chart as frequently as necessary to fix definitely the relation between the measured field intensity and the location. The time constant of the equipment should be such as to permit adequate analysis of the charts, and the time constant employed shall be shown. Measurements should be made to a point on each radial well beyond the particular contour under investigation.

(d) While making field intensity measurements either the visual or the aural transmitter may be used. If the visual transmitter is used, it is recommended that a black picture be transmitted or that the transmitter be operated at black level without synchronization peaks. Operation at a power somewhat less than black level is permissible but too great a reduction in power is not recommended due to the difficulty of recording weak signals. In any event, an appropriate factor shall be used to convert the readings obtained to the field strength that would exist on synchronization peaks while operating at the authorized power.

(e) After the measurements are completed, the recorder chart should be divided into not less than 15 sections on each equivalent radial from the station. The field intensity in each section of the chart should be analyzed to determine the field intensity received 50 percent of the distance (median field) throughout the section, and this median field intensity associated

with the corresponding sector of the radial. The field intensity figures must be corrected for a receiving antenna elevation of 30 feet and for any directional effects of the automobile and receiving antenna not otherwise compensated. This data should be plotted for each radial, using log-log coordinate paper with distance as the abscissa and field intensity as the ordinate. A smooth curve should be drawn through these points (of median fields for all sectors) and this curve used to determine the distance to the desired contour. The distances obtained for each radial may then be plotted on the map of predicted coverage or on polar coordinate paper (excluding water areas, etc.) to determine the service and interference areas of a station.

(f) In certain cases the Commission may desire more information or recordings and in these instances special instructions will be issued.

(g) Data obtained in conjunction with field intensity measurements shall be submitted to the Commission in affidavit form in triplicate, including the following:

(1) Map or maps showing the roads or points where measurements were made, the service and/or interference areas determined by the prediction method and by the measurements, and any unusual terrain characteristics existing in these areas. The maps, preferably of a type showing topography in the area, should show the Grade A and Grade B field intensity contours.

(2) If a directional transmitting antenna is employed, a diagram on polar coordinate paper showing the predicted free space field intensity in millivolts per meter at 1 mile in all directions.

(3) A full description of the procedures and methods employed, including the type of equipment, the method of installation and operation, and calibration procedures.

(4) Complete data obtained during the survey, including calibration. (Only the original or one photostatic copy of the recording tapes, or representative samples, need be submitted.)

(5) Antenna system and power employed during the survey.

(6) Name, address, and qualifications of the engineer or engineers making the measurements.

§ 73.687 Transmitters and associated equipment.

(a) *Visual transmitter.* (1) For monochrome transmission only, the overall attenuation characteristics of the transmitter, measured in the antenna transmission line after the vestigial sideband filter (if used), shall not be greater than the following amounts below the ideal demodulated curve. (See Figure 11 of § 73.699.

2 db at 0.5 Mc/s
2 db at 1.25 Mc/s
3 db at 2.0 Mc/s
6 db at 3.0 Mc/s
12 db at 3.5 Mc/s

The curve shall be substantially smooth between these specified points, exclusive of the region from 0.75 to 1.25 Mc/s. Output measurement shall be made with the transmitter operating into a dummy load of pure resistance and the demodulated voltage measured across this load. The ideal demodulated curve is that shown in Figure 11 of § 73.699. Stations operating on Channels 15–83 and employing a transmitter delivering maximum peak visual power output of 1 kilowatt or less will not be required to comply with the provisions of this subparagraph.

(2) For color transmission, the standard given by subparagraph (1) of this paragraph applies except as modified by the following: A sine wave of 3.58 Mc/s introduced at those terminals of the transmitter which are normally fed the composite color picture signal shall produce a radiated signal having an amplitude (as measured with a diode on the R.F. transmission line supplying power to the antenna) which is down 6±2 db with respect to a signal produced by a sine wave of 200 kc/s. In addition, between the modulating frequencies of 2.1 and 4.1 Mc/s, the amplitude of the radiated signal shall not vary by more than ±2 db from its value at 3.58 Mc/s. At the modulating frequency of 4.18 Mc/s, the amplitude of the radiated signal shall not be down more than 4 db below its value of 3.58 Mc/s. Stations operating on Channels 15–83 and employing a transmitter delivering maximum peak visual power output of 1 kilowatt or less are not required to comply with the provisions of this subparagraph.

(3) The field strength or voltage of the lower sideband, as radiated or dissipated and measured as described in subparagraph (4) of this paragraph, shall not be greater than −20 db for a modulating frequency of 1.25 Mc/s or greater and in addition, for color, shall not be greater than −42 db for a modulating frequency of 3.579545 Mc/s (the color subcarrier frequency). For both monochrome and color, the field strength or voltage of the upper sideband as radiated or dissipated and measured as described in subparagraph (4) of this paragraph, shall not be greater than −20 db for a modulating frequency of 4.75 Mc/s or greater. For stations operating on Channels 15–83 and employing a transmitter delivering maximum peak visual power output of 1 kilowatt or less, the field strength or voltage of the upper and lower sidebands, as radiated or dissipated and measured as described in subparagraph (4) of this paragraph, shall depart from the visual amplitude characteristic. (Figure 5a of § 73.699) by no more than the following amounts:

−2 db at 0.5 Mc/s below visual carrier frequency;
−2 db at 0.5 Mc/s above visual carrier frequency;
−2 db at 1.25 Mc/s above visual carrier frequency;
−3 db at 2.0 Mc/s above visual carrier frequency;
−6 db at 3.0 Mc/s above visual carrier frequency;
−12 db at 3.5 Mc/s above visual carrier frequency;
−8 db at 3.58 Mc/s above visual carrier frequency (for color transmission only).

The field strength or voltage of the upper and lower sidebands, as radiated or dissipated and measured as described in subparagraph (4) of this paragraph, shall not exceed a level of −20 db for a modulating

frequency of 4.75 Mc/s or greater. If interference to the reception of other stations is caused by out-of-channel lower sideband emission, the technical requirements applicable to stations operating on Channels 2–13 shall be met.

(4) The attenuation characteristics of a visual transmitter shall be measured by application of a modulating signal to the transmitter input terminals in place of the normal composite television video signal. The signal applied shall be a composite signal composed of a synchronizing signal to establish peak output voltage plus a variable frequency sine wave voltage occupying the interval between synchronizing pulses. (The "synchronizing signal" referred to in this section means either a standard synchronizing wave form or any pulse that will properly set the peak.) The axis of the sine wave in the composite signal observed in the output monitor shall be maintained at an amplitude 0.5 of the voltage at synchronizing peaks. The amplitude of the sine wave input shall be held at a constant value. This constant value should be such that at no modulating frequency does the maximum excursion of the sine wave, observed in the composite output signal monitor, exceed the value 0.75 of peak output voltage. The amplitude of the 200 kilocycle sideband shall be measured and designated zero db as a basis for comparison. The modulation signal frequency shall then be varied over the desired range and the field strength or signal voltage of the corresponding sidebands measured. As an alternate method of measuring, in those cases in which the automatic d-c insertion can be replaced by manual control, the above characteristic may be taken by the use of a video sweep generator and without the use of pedestal synchronizing pulses. The d-c level shall be set for midcharacteristic operation.

(5) A sine wave, introduced at those terminals of the transmitter which are normally fed the composite color picture signal, shall produce a radiated signal having an envelope delay, relative to the average envelope delay between 0.05 and 0.20 Mc/s, of zero microseconds up to a frequency of 3.0 Mc/s; and then linearly decreasing to 4.18 Mc/s so as to be equal to −0.17 μsecs at 3.58 Mc/s. The tolerance on the envelope delay shall be ±0.05 μsecs at 3.58 Mc/s. The tolerance shall increase linearly to ±0.1 μsec down to 2.1 Mc/s, and remain at ±0.1 μsec down to 0.2 Mc/s. (Tolerances for the interval of 0.0 to 0.2 Mc/s are not specified at the present time.) The tolerance shall also increase linearly to ±0.1 μsec at 4.18 Mc/s.

(6) The radio frequency signal, as radiated, shall have an envelope as would be produced by a modulating signal in conformity with § 73.682 and Figure 6 or 7 of §73.699, as modified by vestigial sideband operation specified in Figure 5 of § 73.699. For stations operating on Channels 15–83 the radio frequency signal as radiated, shall have an envelope as would be produced by a modulating signal in conformity with § 73.682 and Figures 6 or 7 of § 73.699.

(7) The time interval between the leading edges of successive horizontal pulses shall vary less than one half of one percent of the average interval. However, for color transmissions, § 73.682(a) (5) and (6) shall be controlling.

(8) The rate of change of the frequency of recurrence of the leading edges of the horizontal synchronizing signals shall be not greater than 0.15 percent per second, the frequency to be determined by an averaging process carried out over a period of not less than 20, nor more than 100 lines, such lines not to include any portion of the blanking interval. However, for color transmissions, § 73.682(a) (5) and (6) shall be controlling.

(9) For color transmission the transfer characteristic (that is the relationship between the transmitter RF output and video signal input) shall be substantially linear between the reference black and reference white levels.

(b) *Aural transmitter.* (1) The transmitter shall operate satisfactorily with a frequency swing of ±25 kilocycles, which is considered 100 percent modulation. It is recommended, however, that the transmitter be designed to operate satisfactorily with a frequency swing of at least ±40 kilocycles.

(2) The transmitting system (from input terminals of microphone pre-amplifier, through audio facilities at the studio, through telephone lines or other circuits between studio and transmitter, through audio facilities at the transmitter, and through the transmitter, but excluding equalizers for the correction of deficiencies in microphone response) shall be capable of transmitting a band of frequencies from 50 to 15,000 cycles. Pre-emphasis shall be employed in accordance with the impedance-frequency characteristic of a series inductance-resistance network having a time constant of 75 microseconds. (See Figure 12 of § 73. 699.) The deviation of the system response from the standard pre-emphasis curve shall lie between two limits as shown by Figure 12 of § 73.699. The upper of these limits shall be uniform (no deviation) from 50 to 15,000 cycles. The lower limit shall be uniform from 100 to 7,500 cycles, and three db below the upper limit; from 100 to 50 cycles the lower limit shall fall from three db limit at a uniform rate of one db per octave (4 db at 50 cycles); from 7,500 to 15,000 cycles the lower limit shall fall from three db limit at a uniform rate of two db per octave (5 db at 15,000 cycles).

(3) At any modulating frequency between 50 and 15,000 cycles and at modulation percentages of 25 percent, 50 percent, and 100 percent, the combined audio frequency harmonics measured in the output of the system shall not exceed the root-mean-square values given in the following table:

Modulation frequency	*Distortion (percent)*
50 to 100 cycles	3.5
100 to 7,500 cycles	2.5
7,500 to 15,000 cycles	3.0

(i) Measurement shall be made employing 75 microsecond de-emphasis in the measuring equipment and 75 microsecond pre-emphasis in the transmitting equipment, and without compression if a compression ampli-

fier is employed. Harmonics shall be included to 30 kc/s.

NOTE: Measurements of distortion using deemphasis in the measuring equipment are not practical at the present time for the range 7,500 to 15,000 cycles for 25 and 50 percent modulation. Therefore, measurements should be made at 100 percent modulation and on at least the following modulating frequencies: 50, 100, 400, 1,000, 5,000, 10,000, and 15,000 cycles. At 25 and 50 percent modulation, measurements should be made on at least the following modulating frequencies: 50, 100, 400, 1,000 and 5,000 cycles.

(ii) It is recommended that none of the three main divisions of the system (transmitter, studio to transmitter circuit, and audio facilities) contribute over one-half of these percentages, since at some frequencies the total distortion may become the arithmetic sum of the distortions of the divisions.

(4) The transmitting system output noise level (frequency modulation) in the band of 50 to 15,000 cycles shall be at least 55 db below the audio frequency level representing a frequency swing of ±25 kc/s.

NOTE: For the purpose of these measurements, the visual transmitter should be inoperative since the exact amount of noise permissible from that source is not known at this time.

(5) The transmitting system output noise level (amplitude modulation) in the band of 50 to 15,000 cycles shall be at least 50 db below the level representing 100 percent amplitude modulation.

NOTE: For the purpose of these measurements, the visual transmitter should be inoperative since the exact amount of noise permissible from that source is not known at this time.

(6) If a limiting or compression amplifier is employed, precaution should be maintained in its connection in the circuit due to the use of pre-emphasis in the transmitting system.

(7) The percentage of modulation shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice. In no case is it to exceed 100 percent on peaks of frequent recurrence. Generally, it should not be less than 85 percent on peaks of frequent recurrence; but where necessary to avoid objectionable loudness modulation may be reduced to whatever level is necessary, even if the resulting modulation is substantially less than 85 percent on peaks of frequent recurrence.

[§ 73.687(b)(7) *as amended eff. 9-1-65; III(64)-9*]

(c) *Requirements applicable to both visual and aural transmitters.* (1) Automatic means shall be provided in the visual transmitter to maintain the carrier frequency within ±one kilocycle of the authorized frequency; automatic means shall be provided in the aural transmitter to maintain the carrier frequency 4.5 megacycles above the actual visual carrier frequency within ±one kilocycle.

(2) The transmitters shall be equipped with suitable indicating instruments for the determination of operating power and with other instruments necessary for proper adjustment, operation, and maintenance of the equipment.

(3) Adequate provision shall be made for varying the output power of the transmitters to compensate for excessive variations in line voltage or for other factors affecting the output power.

(4) Adequate provisions shall be provided in all component parts to avoid overheating at the rated maximum output powers.

(d) *Construction.* In general, the transmitters shall be mounted either on racks and panels or in totally enclosed frames protected as required by article 810 of the national Electric Code (section 8192 (a), (b), and (c)), and as set forth below:

(1) Means shall be provided for making all tuning adjustments, requiring voltages in excess of 350 volts to be applied to the circuit, from the front of the panels with all access doors closed.

(2) Proper bleeder resistors or other automatic means shall be installed across all the capacitor banks to lower any voltage which may remain accessible with access door open to less than 350 volts within two seconds after the access door is opened.

(3) All plate supply and other high voltage equipment, including transformers, filters, rectifiers and motor generators, shall be protected so as to prevent injury to operating personnel.

(i) Commutator guards shall be provided on all high voltage rotating machinery. Coupling guards should be provided on motor generators.

(ii) Power equipment and control panels of the transmitters shall meet the above requirements (exposed 220-volt A.C. switching equipment on the front of the power control panels is not recommended but is not prohibited).

(iii) Power equipment located at a television broadcast station not directly associated with the transmitters (not purchased as part of same), such as power distribution panels, are not subject to the provisions of this subpart.

(4) The following provisions shall be applicable to metering equipment:

(i) All instruments having more than 1,000 volts potential to ground on the movement shall be protected by a cage or cover in addition to the regular case. (Some instruments are designed by the manufacturers to operate safely with voltages in excess of 1,000 volts on the movement. If it can be shown by the manufacturer's rating that the instrument will operate safely at the applied potential, additional protection is not necessary.)

(ii) In case the plate voltmeters are located on the low potential side of the multiplier resistors with the high potential terminal of the instruments at or less than 1,000 volts above ground, no protective case is required. However, it is good practice to protect voltmeters subject to more than 5,000 volts with suitable over-voltage protective devices across the instrument terminals in case the winding opens.

(iii) Transmission line meters and any other radio frequency instrument which may be necessary for the operator to read shall be so installed as to be read easily and accurately without the operator having to risk contact with circuits carrying high potential radio frequency energy.

(e) *Wiring and shielding.* (1) The transmitter panels or units shall be wired in accordance with standard practice, such as insulated leads properly cabled and supported, coaxial cables, or rigid bus bar properly insulated and protected.

(2) Wiring between units of the transmitters, with the exception of circuits carrying radio frequency energy or video energy, shall be installed in conduits or approved fiber or metal raceways to protect it from mechanical injury.

(3) Circuits carrying radio frequency or video energy between units shall be coaxial cables, two wire balanced lines, or properly shielded lines.

(4) All stages or units shall be adequately shielded and filtered to prevent interaction and radiation.

(5) The frequency and modulation monitors and associated radio frequency lines to the transmitter shall be thoroughly shielded.

(f) *Auxiliary transmitters.* Auxiliary transmitters may not exceed the power rating of the main transmitters. As a general guide, specifications for auxiliary transmitters should conform as much as possible to those of the main transmitters. No requirements are set forth at this time.

(g) *Installation.* (1) The installation of transmitting equipment shall be made in suitable quarters.

(2) Suitable facilities shall be provided for the welfare and comfort of the operator.

(h) *Other technical data.* An accurate circuit diagram, as furnished by the manufacturer of the equipment, shall be retained at the transmitter location.

(i) *Operation.* (1) Spurious emissions, including radio frequency harmonics, shall be maintained at as low a level as the state of the art permits. As measured at the output terminals of the transmitter (including harmonic filters, if required) all emissions removed in frequency in excess of 3 Mc/s above or below the respective channel edge shall be attenuated no less than 60 db below the visual transmitted power. (The 60 db

value for television transmitters specified in this rule should be considered as a temporary requirement which may be increased at a later date, especially when more higher-powered equipment is utilized. Stations should, therefore, give consideration to the installation of equipment with greater attenuation than 60 db). In the event of interference caused to any service greater attenuation will be required.

(2) If a limiting or compression amplifier is used in conjunction with the aural transmitter, due operating precautions should be maintained because of pre-emphasis in the transmitting system.

(j) *Studio equipment.* Studio equipment shall be subject to all the above requirements where applicable, except as follows:

(1) If properly covered by an underwriter's certificate, it will be considered as satisfying safety requirements.

(2) Section 8192 of article 810 of the National Electrical Code shall apply for voltages only in excess of 500 volts.

(3) No specific requirements are made relative to the design and acoustical treatment of studios. However, the design of studios, particularly the main studio, shall be compatible with the required performance characteristics of television broadcast stations.

§ 73.688 Indicating instruments.

(a) Each television broadcast station shall be equipped with indicating instruments for measuring the direct plate voltage and current of the last radio stage of the visual and aural transmitters and the transmission line radio frequency current, voltage, or power of both transmitters; such instruments shall conform to the specifications therefor set forth in this subpart.

(b) The following requirements and specifications shall apply to indicating instruments used by television broadcast stations in compliance with paragraph (a) of this section:

(1) Length of scale shall be not less than $2\frac{3}{10}$ inches.

(2) Accuracy shall be at least 2 percent of the full scale reading.

(3) Scale shall have at least 40 divisions.

(4) Full scale reading shall be not greater than five times the minimum normal indication.

(5) No specifications are prescribed at this time regarding the peak indicating device required by § 73.689 (b).

(c) Any required instrument, the accuracy of which is questionable, shall not be employed. Repairs and calibration of instruments shall be made by the manufacturer, or by an authorized instrument repair service of the manufacturer, or by some other properly qualified or equipped instrument repair service. In any case, the repaired instrument must be supplied with a certificate of calibration.

(d) [Reserved]

(e) The function of each instrument used in the equipment shall be clearly and permanently shown on the instrument itself or on the panel immediately adjacent thereto.

(f) In the event that any one of the indicating instruments required by paragraph (a) of this section becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days: *Provided,* That:

(1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the instrument is found to be defective and immediately after the repaired or replacement instrument has been installed and is functioning properly.

(3) If the defective instrument is a plate voltmeter or plate ammeter in the last radio stage, the operating power shall be maintained by means of the radio frequency transmission line meter.

(4) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request may be filed

in accordance with § 1.549 of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

§ 73.689 Operating power.

(a) *Determination*—(1) *Visual transmitter.* The operating power of the visual transmitter shall be determined at the output terminals of the transmitter, which includes any vestigial sideband and harmonic filters which may be used during normal operation. For this determination the average power output shall be measured while operating into a dummy load of substantially zero reactance and a resistance equal to the transmission line characteristic impedance. During this measurement the transmitter shall be modulated only by a standard synchronizing signal with blanking level set at 75 percent of peak amplitude as observed in an output monitor, and with this blanking level amplitude maintained throughout the time interval between synchronizing pulses. If electrical devices are used to determine the output power, such devices shall permit determination of this power to within an accuracy of ±5 percent of the power indicated by the full scale reading of the electrical indicating instrument of the device. If temperature and coolant flow indicating devices are used to determine the power output, such devices shall permit determination of this power to within an accuracy of 4 percent of measured average power output. The peak power output shall be the power so measured in the dummy load multiplied by the factor 1.68. During this measurement the direct plate voltage and current of the last radio stage and the transmission line meter shall be read and compared with similar readings taken with the dummy load replaced by the antenna. These readings shall be in substantial agreement.

(2) *Aural transmitter.* The operating power of the aural transmitter shall be determined by either the direct or indirect method.

(i) Using the direct method, the power shall be measured at the output terminals of the transmitter while operating into a dummy load of substantially zero reactance and a resistance equal to the transmission line characteristic impedance. The transmitter shall be unmodulated during this measurement. If electrical devices are used to determine the output power, such devices shall permit determination of this power to within an accuracy of ±5 percent of the power indicated by the full scale reading of the electrical indicating instrument of the device. If temperature and coolant flow indicating devices are used to determine the power output, such devices shall permit determination of this power to within an accuracy of 4 percent of measured average power output. During this measurement the direct plate voltage and current of the last radio stage and the transmission line meter shall be read and compared with similar readings taken with the dummy load replaced by the antenna. These reading shall be in substantial agreement.

(ii) Using the indirect method, the operating power is the product of the plate voltage (E_p) and the plate current (I_p) of the last radio stage, and an efficiency factor, F, as follows:

$$\text{Operating power} = E_p \times I_p \times F$$

(iii) The efficiency factor, F, shall originally be established by the transmitter manufacturer for each type of transmitter for which he submits data to the Commission, and shall be shown in the instruction books supplied to the customer with each transmitter. In the case of composite equipment, the factor F shall be furnished to the Commission by the applicant along with a statement of the basis used in determining such factor.

(b) *Maintenance*—(1) *Visual transmitter.* The peak power shall be monitored by a peak reading meter which reads proportional to voltage, current, or power at the output terminals of the transmitter, this meter to be calibrated at intervals not exceeding 6 months. The meter shall cover, as a minimum, the range from 80 to 110 percent of authorized power and it shall be of sufficient accuracy and clarity of indication to permit maintaining the operating power within the prescribed tolerance or the meter shall be calibrated to read directly in power units. The operating power so monitored shall be maintained as near as practicable to the authorized power and shall not be less than 80 percent nor greater than 110 percent of authorized power except as indicated in subparagraph (3) of this paragraph.

(2) *Aural transmitter.* (i) The operating power shall be maintained as near as practicable to the authorized power and shall not be less than 80 percent nor greater than 110 percent of authorized power except as indicated in subparagraph (3) of this paragraph.

(ii) When determined by the direct method, the operating power of the transmitter shall be monitored using a transmission line meter which reads proportional to the voltage, current, or power at the output terminals of the transmitter, the meter to be calibrated at intervals not exceeding 6 months. The calibration shall cover, as a minimum, the range from 80 to 110 percent of authorized power and the meter shall provide clear indications which will permit maintaining the operating power within the prescribed tolerance or the meter shall be calibrated to read directly in power units.

(3) *Reduced power.* In the event it becomes technically impossible to operate with the authorized power, the station may be operated with reduced power for a period of 10 days or less without further authority of the Commission: *Provided,* That the Commission and the Engineer in Charge of the radio district in which the station is located shall be immediately notified in

writing if the station is unable to maintain the minimum operating schedule (specified in § 73.651) with authorized power and shall be subsequently notified upon resumption of operation with authorized power.

MONITORING EQUIPMENT

§ 73.690 Frequency measurements.

(a) The visual carrier frequency and the difference between the visual carrier frequency and the center frequency of the aural transmitter shall be checked as often as necessary to ensure that they are kept at all times within the prescribed tolerance. At least one such check shall be made each day.

(b) The daily frequency checks need not be an exact measurement of the actual operating frequencies but merely a determination that the transmitters are operating within the prescribed frequency tolerance. The choice of method for performing the daily frequency checks is left to the discretion of the licensee. However, whatever method used, it shall be capable of sufficient accuracy to reveal deviations of the operating frequencies in excess of the prescribed tolerance.

(c) The visual carrier frequency and the difference between the visual carrier frequency and the center frequency of the aural transmitter shall be measured as often as is necessary to ensure that they are maintained within the prescribed tolerance. The interval between successive measurements shall never be more than one month.

(d) The primary standard of frequency for radio frequency measurements shall be the national standard of frequency maintained by the National Bureau of Standards, Department of Commerce, Washington, D.C. The operating frequency of all radio stations will be determined by comparison with this standard or the standard signals of stations WWV, WWVB, WWVH, and WWVL of the National Bureau of Standards.

[*§ 73.690 as amended eff. 12-22-64; III(64)-4*]

§ 73.691 Modulation monitors.

(a) The licensee of each television broadcast station shall have in operation at the transmitter an approved modulation monitor for the aural transmitter. There shall also be employed sufficient monitoring equipment for the visual signal to determine that the signal complies with the requirements of this subpart.

NOTE: Approved aural modulation monitors are included on the Commission's "Radio Equipment List, Part A, Television Broadcast Equipment." Copies of this list are available for inspection at the Commission's office in Washington, D.C., and at each of its field offices.

(b) In the event the visual monitoring equipment or the aural modulation monitor becomes defective, the station may be operated without such equipment pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided,* That:

(1) Appropriate entries shall be made in the maintenance log of the station to show the date and time the equipment was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the equipment is found to be defective and immediately after the repaired or replacement equipment has been installed and is functioning properly.

(3) During the period when the station is operated without the aural modulation monitor or the visual monitoring equipment, the licensee shall provide other suitable means for insuring that the aural modulation is maintained within the tolerance prescribed in § 73.687(b)(7) and that the visual signal is maintained in accordance with the requirements of this subpart.

(4) If conditions beyond the control of the licensee or permittee prevent the restoration of the monitor or monitoring equipment to serve within the period specified above, an informal request in accordance with § 1.549 of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument or equipment.

[*§ 73.691(a) as amended eff. 12-22-64; III(64)-4*]

§ 73.692 General requirements for type approval of frequency and modulation monitors.

(a) Any manufacturer desiring to submit a monitor for type approval shall supply the Commission with full specification details (two sworn copies) as well as the test data specified in §§ 73.693 and 73.694. If this information appears to meet the requirements of the rules, shipping instructions will be issued to the manufacturer. The shipping charges to and from the Laboratory at Laurel, Maryland, shall be paid for by the manufacturer. Approval of a monitor will only be given on the basis of the data obtained from the sample monitor submitted to the Commission for test.

(b) In approving a monitor upon the basis of the tests conducted by the Laboratory, the Commission merely recognizes that the type of monitor has the inherent capability of functioning in compliance with the rules, if properly constructed, maintained, and operated. The Commission realizes that the frequency monitor may have limited range over which the visual indicator will determine deviations. Accordingly, it is necessary that adjunct equipment be used to determine major deviations.

(c) Additional rules with respect to withdrawal of type approval, modification of type approved equipment and limitations on the findings upon which type approval is based are set forth in Part 2, Subpart F, of this chapter.

§ 73.693 Requirements for type approval of frequency monitors.

(a) The specifications that frequency monitors shall meet before they will be approved by the Commission are as follows:

(1) The monitors shall have an accuracy of better than 500 cycles for 30 days of VHF operation, or for 10 days of UHF operation, and under ordinary conditions (ambient temperature from 10° centigrade to 40° centigrade above zero, humidity from 10 percent to 95 percent relative humidity, power supply variations from 90 percent to 110 percent, and other conditions which may affect its accuracy) encountered in television broadcast stations throughout the United States.

(2) The range of the indicating device for the aural monitor shall be at least 3000 cycles below to 3000 cycles above the assigned center frequency. Alternatively, the aural monitor may use an indicating device with a similar scale to indicate the difference-frequency between the aural and visual carriers. The range of the indicating device for the visual monitor shall be at least 1500 cycles below to 1500 cycles above the assigned carrier frequency.

(3) The scale of the indicating device shall be calibrated in divisions of not more than 100 cycles.

(4) Means shall be provided for adjustment of the monitor indication to agree with an external standard.

(5) The monitors shall be capable of continuous operation and the circuits shall be such as to permit continuous monitoring of the transmitter carrier frequencies, and the difference-frequency between the visual and aural carriers if this method of measurement is used.

(6) Operation of the monitors shall have no adverse effect on the operation of either the aural or visual transmitters or the signals emitted therefrom and shall be independent of the frequency control of the transmitters.

(7) Means shall be provided for insuring power input level.

(8) General design, construction and operation shall be in accordance with good engineering practice.

(b) Tests to be made for approval of television broadcast frequency monitors. The manufacturer of a monitor shall submit data on the following at the time of requesting approval:

(1) Constancy of oscillator frequency, as measured daily for one month, or more.

(2) Constancy of oscillator frequency when subject to vibration tests which would correspond to the treatment received in shipping, handling and installing the instrument.

(3) Accuracy of reading of the frequency deviation instrument.

(4) Functioning of frequency adjustment device.

(5) Effects on frequency readings, of the changing of tubes, of voltage variations, and of variations of room temperature through a range from 10° to 40° C.

(6) Response of indicating instrument to small changes of frequency.

(7) General information on the effect of tilting or tipping or other tests to determine ability of equipment to withstand shipment.

(c) Various other tests may be made or required, such as effects of variation of input from the transmitter depending upon the character of the apparatus.

(d) Tests shall be conducted in such a manner as to approximate actual operating conditions as nearly as possible. The equipment shall be tested on the highest channel for which it is designed.

§ 73.694 Requirements for type approval of aural modulation monitors.

(a) The required aural modulation monitor may or may not be a part of the frequency monitor.

(b) The specifications that the aural modulation monitor shall meet before it will be approved by the Commission are as follows:

(1) Means shall be provided for indicating that the signal input to the modulation monitor is in the range required for proper operations.

(2) A modulation peak indicating device shall be provided that can be set at any pre-determined value from 50 to 120 percent modulation (±25 kc/s swing is defined as 100 percent modulation) and for either positive or negative swings (i. e., either above or below transmitter center frequency).

(3) A quasi-peak indicator with a meter having the characteristics given below shall be used with a circuit such that peaks of modulation of duration between 40 and 90 milliseconds are indicated to 90 percent of full value and the discharge rate adjusted so that the pointer returns from full reading to within 10 percent of zero within 500 to 800 milliseconds. A switch shall be provided so that this meter will read either positive or negative swings.

(4) When modulation of a magnitude necessary to produce a deflection equivalent to 100 percent modulation is suddenly applied and left on, the indicating instrument shall not deflect beyond 110 percent on the first passage of the 100 percent mark and shall have excursion from the final value of less than 1 percent after one second or more.

(5) The meter scale shall be similar in appearance to that of a standard VU meter. The scale length between 0 and 100 percent modulation markings shall be at least 2.3 inches. In addition to other markings a small marker for 133 percent modulation, designated as such, should be included for the purpose of testing the transmitter with 33.3 kc/s swing.

(6) The indicated reading in percentage shall be accurate within ±5 (based on 100 percent modulation) at any percentage of modulation up to 100.

(7) The frequency characteristic curve as measured at 50 percent modulation shall not depart from a straight line more than ±½ db from 50 to 15,000 cycles. Distortion shall be kept to a minimum.

(8) The monitor shall not absorb appreciable power from the transmitter.

(9) Operation of the monitor shall have no adverse effect on the operation of the transmitter.

(10) General design, construction, and operation shall be in accordance with good engineering practice.

(c) Tests to be made for approval of television broadcast aural modulation monitors. The manufacturer of a monitor shall submit data on the following at the time of requesting approval:

(1) Audio frequency response of the monitor from 50 to 15,000 cycles in db from the response at 400 cycles.

(2) Distortion in the response.

(3) Input signal power required.

(4) Permissible tolerance on input signal power to keep the meter reading correct within 5 percent units.

(5) Ballistic characteristics of the monitor indicator.

(d) Various other tests may be made or required depending on the character of the apparatus.

(e) Tests shall be conducted in such a manner as to approximate actual operating conditions as nearly as possible. The equipment shall be tested on the highest channel for which it is designed.

§ 73.698 Tables.

TABLE I

MINUTES TO DECIMAL PARTS OF A DEGREE

Minutes	Degrees	Minutes	Degrees
1	0.01667	31	0.51667
2	.03333	32	.53333
3	.05	33	.55
4	.06667	34	.56667
5	.08333	35	.58333
6	.10	36	.60
7	.11667	37	.61667
8	.13333	38	.63333
9	.15	39	.65
10	.16667	40	.66667
11	.18333	41	.68333
12	.20	42	.70
13	.21667	43	.71667
14	.23333	44	.73333
15	.25	45	.75
16	.26667	46	.76667
17	.28333	47	.78333
18	.30	48	.80
19	.31667	49	.81667
20	.33333	50	.83333
21	.35	51	.85
22	.36667	52	.86667
23	.38333	53	.88333
24	.40	54	.90
25	.41667	55	.91667
26	.43333	56	.93333
27	.45	57	.95
28	.46667	58	.96667
29	.48333	59	.98333
30	.50	60	1.00

SECONDS TO DECIMAL PARTS OF A DEGREE

Seconds	Degrees	Seconds	Degrees
1	0.00028	31	0.00861
2	.00056	32	.00889
3	.00083	33	.00917
4	.00111	34	.00944
5	.00139	35	.00972
6	.00167	36	.01
7	.00194	37	.01028
8	.00222	38	.01056
9	.0025	39	.01083
10	.00278	40	.01111
11	.00306	41	.01139
12	.00333	42	.01167
13	.00361	43	.01194
14	.00389	44	.01222
15	.00417	45	.0125
16	.00444	46	.01278
17	.00472	47	.01306
18	.005	48	.01333
19	.00528	49	.01361
20	.00556	50	.01389
21	.00583	51	.01417
22	.00611	52	.01444
23	.00639	53	.01472
24	.00667	54	.015
25	.00694	55	.01528
26	.00722	56	.01556
27	.0075	57	.01583
28	.00778	58	.01611
29	.00806	59	.01639
30	.00833	60	.01667

TABLE II

MILES PER DEGREE OF LATITUDE DIFFERENCE

Middle latitude	Statute miles	Middle latitude	Statute miles	Middle latitude	Statute miles	Middle latitude	Statute miles
° ′		° ′		° ′		° ′	
25 0	68.828	32 0	68.899	39 0	68.980	45 0	69.053
30	68.833	30	68.905	30	68.986	30	69.060
26 0	68.837	33 0	68.911	40 0	68.992	46 0	69.066
30	68.842	30	68.916	30	68.998	30	69.072
27 0	68.847	34 0	68.922	41 0	69.004	47 0	69.078
30	68.852	30	68.928	30	69.011	30	69.084
28 0	68.857	35 0	68.933	42 0	69.017	48 0	69.090
30	68.862	30	68.939	30	69.023	30	69.096
29 0	68.867	36 0	68.945	43 0	69.029	49 0	69.102
30	68.873	30	68.951	30	69.035	30	69.108
30 0	68.878	37 0	68.957	44 0	69.041	50 0	69.115
30	68.883	30	68.962	30	69.047		
31 0	68.889	38 0	68.968				
30	68.894	30	68.974				

TABLE III

Middle latitude degrees	Miles per degree of longitude difference (statute miles)									
	25	26	27	28	29	30	31	32	33	34
Minutes										
0	62.728	62.211	61.675	61.120	60.547	59.955	59.345	58.716	58.070	57.406
1	62.720	62.202	61.666	61.111	60.537	59.945	59.335	58.706	58.059	57.395
2	62.712	62.193	61.657	61.101	60.528	59.935	59.324	58.695	58.048	57.384
3	62.703	62.184	61.648	61.092	60.517	59.925	59.314	58.684	58.037	57.373
4	62.694	62.176	61.639	61.082	60.508	59.915	59.303	58.674	58.026	57.362
5	62.686	62.167	61.630	61.073	60.498	59.905	59.293	58.663	58.015	57.350
6	62.677	62.158	61.621	61.064	60.488	59.895	59.282	58.652	58.004	57.339
7	62.669	62.149	61.611	61.054	60.478	59.885	59.272	58.642	57.994	57.328
8	62.660	62.140	61.602	61.045	60.469	59.875	59.262	58.631	57.983	57.316
9	62.652	62.132	61.593	61.035	60.459	59.865	59.252	58.620	57.972	57.305
10	62.644	62.123	61.584	61.026	60.449	59.855	59.241	58.610	57.961	57.294
11	62.635	62.114	61.575	61.017	60.440	59.845	59.231	58.599	57.950	57.283
12	62.627	62.105	61.566	61.007	60.430	59.835	59.221	58.588	57.939	57.271
13	62.618	62.096	61.557	60.997	60.420	59.825	59.210	58.578	57.928	57.260
14	62.609	62.088	61.547	60.988	60.410	59.814	59.200	58.567	57.917	57.249
15	62.601	62.079	61.538	60.979	60.400	59.804	59.189	58.556	57.906	57.238
16	62.592	62.070	61.529	60.969	60.390	59.794	59.179	58.546	57.895	57.227
17	62.583	62.061	61.520	60.959	60.381	59.784	59.168	58.535	57.884	57.215
18	62.575	62.052	61.510	60.950	60.371	59.774	59.158	58.524	57.873	57.204
19	62.567	62.044	61.501	60.940	60.361	59.764	59.147	58.514	57.862	57.192
20	62.559	62.035	61.492	60.931	60.352	59.754	59.137	58.503	57.851	57.181
21	62.550	62.026	61.483	60.921	60.342	59.744	59.127	58.492	57.840	57.170
22	62.541	62.017	61.474	60.912	60.332	59.734	59.116	58.481	57.829	57.159
23	62.532	62.008	61.465	60.902	60.322	59.723	59.106	58.470	57.818	57.147
24	62.524	61.999	61.455	60.893	60.312	59.713	59.095	58.460	57.807	57.136
25	62.515	61.990	61.446	60.883	60.302	59.703	59.085	58.449	57.796	57.125
26	62.507	61.981	61.437	60.874	60.292	59.693	59.074	58.438	57.785	57.113
27	62.498	61.972	61.428	60.865	60.282	59.683	59.064	58.428	57.774	57.102
28	62.489	61.963	61.419	60.855	60.273	59.672	59.054	58.417	57.763	57.090
29	62.480	61.955	61.409	60.845	60.263	59.662	59.043	58.406	57.752	57.079
30	62.472	61.946	61.400	60.836	60.253	59.652	59.033	58.396	57.741	57.068
31	62.463	61.937	61.391	60.826	60.243	59.642	59.022	58.385	57.729	57.057
32	62.455	61.928	61.381	60.817	60.233	59.632	59.012	58.374	57.718	57.045
33	62.446	61.918	61.372	60.807	60.223	59.622	59.001	58.363	57.707	57.034
34	62.438	61.909	61.363	60.798	60.213	59.611	58.991	58.352	57.696	57.022
35	62.429	61.900	61.354	60.788	60.203	59.601	58.980	58.341	57.685	57.011
36	62.420	61.891	61.344	60.778	60.194	59.591	58.970	58.331	57.674	56.999
37	62.412	61.882	61.335	60.768	60.184	59.581	58.960	58.320	57.663	56.988
38	62.403	61.874	61.325	60.759	60.174	59.571	58.949	58.309	57.652	56.977
39	62.395	61.865	61.316	60.750	60.164	59.561	58.939	58.298	57.641	56.966
40	62.386	61.856	61.307	60.740	60.154	59.550	58.928	58.288	57.629	56.954
41	62.377	61.847	61.298	60.730	60.144	59.540	58.917	58.277	57.618	56.943
42	62.369	61.838	61.289	60.721	60.134	59.530	58.907	58.266	57.607	56.931
43	62.360	61.829	61.279	60.711	60.124	59.520	58.896	58.255	57.596	56.919
44	62.351	61.820	61.270	60.701	60.114	59.510	58.886	58.244	57.585	56.908
45	62.342	61.811	61.261	60.692	60.104	59.500	58.875	58.233	57.574	56.897
46	62.334	61.802	61.252	60.682	60.094	59.489	58.865	58.223	57.563	56.885
47	62.325	61.793	61.242	60.672	60.084	59.479	58.854	58.212	57.552	56.874
48	62.316	61.784	61.233	60.663	60.074	59.468	58.843	58.201	57.541	56.863
49	62.308	61.775	61.223	60.654	60.065	59.458	58.833	58.190	57.529	56.851
50	62.299	61.766	61.214	60.644	60.055	59.448	58.822	58.179	57.518	56.840
51	62.290	61.757	61.205	60.634	60.045	59.438	58.812	58.168	57.507	56.829
52	62.281	61.748	61.195	60.625	60.035	59.427	58.801	58.157	57.496	56.817
53	62.272	61.739	61.186	60.615	60.025	59.417	58.790	58.147	57.485	56.805
54	62.264	61.730	61.176	60.605	60.015	59.406	58.780	58.136	57.473	56.794
55	62.255	61.721	61.167	60.595	60.005	59.396	58.769	58.125	57.462	56.782
56	62.246	61.712	61.158	60.586	59.995	59.386	58.759	58.114	57.451	56.771
57	62.237	61.702	61.148	60.576	59.985	59.376	58.748	58.103	57.440	56.759
58	62.228	61.693	61.139	60.566	59.975	59.365	58.737	58.092	57.429	56.748
59	62.220	61.684	61.129	60.557	59.965	59.355	58.727	58.081	57.418	56.737

TABLE III—Continued

Middle latitude degrees	Miles per degree of longitude difference (statute miles)														
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Minutes															
0	56.725	56.026	55.311	54.578	53.828	53.063	52.280	51.482	50.669	49.839	48.995	48.135	47.260	46.371	45.468
1	56.713	56.014	55.299	54.565	53.816	53.050	52.267	51.469	50.655	49.825	48.980	48.120	47.245	46.356	45.453
2	56.702	56.002	55.286	54.553	53.803	53.037	52.254	51.455	50.641	49.811	48.966	48.106	47.231	46.341	45.438
3	56.690	55.991	55.274	54.541	53.791	53.024	52.241	51.442	50.627	49.797	48.952	48.091	47.216	46.326	45.422
4	56.678	55.979	55.262	54.528	53.778	53 011	52.229	51.429	50.614	49.783	48.937	48.077	47.201	46.311	45.407
5	56.667	55.967	55.250	54.516	53.765	52.998	52.215	51.415	50.600	49.769	48.923	48.063	47.187	46.296	45.392
6	56.655	55.955	55.238	54.503	53.753	52.985	52.201	51.402	50.586	49.755	48.909	48.048	47.172	46.281	45.377
7	56.644	55.943	55.226	54.491	53.740	52.972	52.188	51.388	50.573	49.741	48.895	48.034	47.158	46.266	45.362
8	56.632	55.931	55.213	54.479	53.727	52.959	52.175	51.375	50.559	49.727	48.881	48.019	47.143	46.252	45.346
9	56.621	55.920	55.201	54.466	53.715	52.946	52.162	51.361	50.545	49.713	48.867	48.005	47.128	46.237	45.331
10	56.610	55.908	55.189	54.454	53.702	52.933	52.149	51.348	50.531	49.699	48.852	47.990	47.114	46.222	45.317
11	56.598	55.896	55.177	54.441	53.689	52.920	52.135	51.335	50.517	49.685	48.838	47.975	47.099	46.207	45.301
12	56.586	55.884	55.165	54.429	53.677	52.907	52.122	51.321	50.504	49.671	48.824	47.961	47.084	46.192	45.286
13	56.575	55.872	55.153	54.417	53.664	52.894	52.109	51.307	50.490	49.657	48.809	47.946	47.069	46.177	45.270
14	56.563	55.860	55.141	54.404	53.651	52.881	52.096	51.294	50.476	49.643	48.795	47.932	47.054	46.162	45.255
15	56.552	55.849	55.128	54.392	53.639	52.868	52.082	51.280	50.462	49.629	48.781	47.917	47.040	46.147	45.240
16	56.540	55.837	55.116	54.380	53.626	52.855	52.069	51.267	50.449	49.615	48.767	47.903	47.025	46.132	45.225
17	56.529	55.825	55.104	54.367	53.613	52.842	52.056	51.253	50.435	49.601	48.752	47.888	47.010	46.117	45.210
18	56.517	55.813	55.093	54.354	53.601	52.830	52.043	51.240	50.421	49.587	48.738	47.874	46.995	46.102	45.194
19	56.505	55.802	55.080	54.342	53.588	52.817	52.030	51.226	50.408	49.573	48.724	47.859	46.980	46.087	45.179
20	56.493	55.790	55.068	54.330	53.575	52.804	52.016	51.213	50.394	49.559	48.709	47.845	46.966	46.072	45.164
21	56.482	55.778	55.056	54.317	53.562	52.791	52.003	51.199	50.380	49.545	48.695	47.830	46.951	46.057	45.149
22	56.470	55.766	55.043	54.304	53.549	52.778	51.990	51.185	50.366	49.531	48.681	47.816	46.936	46.042	45.134
23	56.459	55.754	55.031	54.292	53.536	52.765	51.977	51.172	50.352	49.517	48.667	47.801	46.921	46.027	45.118
24	56.447	55.742	55.019	54.280	53.524	52.752	51.963	51.159	50.338	49.503	48.653	47.787	46.906	46.012	45.103
25	56.435	55.730	55.007	54.267	53.511	52.739	51.950	51.145	50.325	49.489	48.638	47.772	46.891	45.997	45.088
26	56.424	55.718	54.995	54.255	53.498	52.726	51.936	51.132	50.311	49.475	48.623	47.758	46.877	45.982	45.073
27	56.412	55.706	54.983	54.242	53.486	52.713	51.923	51.118	50.297	49.461	48.609	47.743	46.862	45.937	45.057
28	56.401	55.694	54.970	54.230	53.473	52.700	51.910	51.104	50.283	49.447	48.595	47.729	46.847	45.952	45.042
29	56.389	55.682	54.958	54.217	53.460	52.687	51.897	51.091	50.270	49.433	48.581	47.714	46.832	45.937	45.026
30	56.378	55.671	54.946	54.205	53.448	52.674	51.883	51.077	50.256	49.419	48.567	47.699	46.818	45.922	45 011
31	56.366	55.659	54.934	54.192	53.435	52.661	51.870	51.064	50.242	49.405	48.552	47.685	46.803	45.906	44.996
32	56.354	55.647	54.922	54.180	53.422	52.648	51.857	51.050	50.228	49.391	48.538	47.671	46.788	45.891	44.981
33	56.343	55.635	54.909	54.167	53.409	52.635	51.843	51.036	50.214	49.377	48.524	47.656	46.773	45.876	44.965
34	56.331	55.623	54.897	54.155	53.396	52.622	51.830	51.023	50.200	49.362	48.509	47.641	46.759	45.861	44.950
35	56.319	55.611	54.885	54.142	53.384	52.608	51.817	51.010	50.186	49.348	48.494	47.627	46.744	45.846	44.935
36	56.308	55.599	54.872	54.130	53.371	52.595	51.804	50.996	50.173	49.334	48.480	47.612	46.729	45.831	44.920
37	56.296	55.587	54.861	54.117	53.358	52.582	51.790	50.982	50.159	49.320	48.466	47.597	46.714	45.816	44.904
38	56.284	55.575	54.848	54.104	53.345	52.569	51.777	50.968	50.145	49.306	48.452	47.583	46.699	45.801	44.889
39	56.273	55.563	54.836	54.092	53.332	52.556	51.763	50.955	50.131	49.292	48.437	47.568	46.684	45.786	44.874
40	56.261	55.551	54.824	54.080	53.320	52.543	51.750	50.942	50.117	49.277	48.423	47.553	46.669	45.771	44.858
41	56.249	55.539	54.811	54.067	53.307	52.530	51.736	50.928	50.103	49.263	48.409	47.539	46.654	45.756	44.843
42	56.238	55.527	54.799	54.054	53.294	52.517	51.723	50.914	50.089	49.249	48.395	47.524	46.639	45.741	44.827
43	56.226	55.515	54.787	54.042	53.281	52.504	51.710	50.901	50.076	49.235	48.380	47.509	46.624	45.726	44.812
44	56.214	55.503	54.775	54.030	53.268	52.491	51.697	50.887	50.062	49.221	48.365	47.495	46.609	45.710	44.797
45	56.202	55.491	54.762	54.017	53.255	52.478	51.684	50.873	50.048	49.207	48.351	47.480	46.595	45.695	44.782
46	56.191	55.479	54.750	54.005	53.243	52.465	51.670	50.860	50.034	49.193	48.336	47.465	46.580	45.680	44.766
47	56.179	55.467	54.738	53.992	53.230	52.452	51.657	50.846	50.020	49.179	48.322	47.451	46.565	45.665	44.751
48	56.167	55.455	54.726	53.979	53.217	52.438	51.643	50.833	50.006	49.165	48.308	47.436	46.551	45.650	44.736
49	56.156	55.443	54.713	53.967	53.204	52.425	51.630	50.819	49.992	49.151	48.293	47.421	46.536	45.635	44.720
50	56.144	55.431	54.701	53.955	53.191	52.412	51.616	50.805	49.978	49.136	48.279	47.407	46.521	45.620	44.705
51	56.132	55.419	54.688	53.942	53.178	52.399	51.603	50.792	49.965	49.122	48.265	47.392	46.506	45.604	44.689
52	56.120	55.407	54.676	53.929	53.165	52.386	51.590	50.778	49.951	49.108	48.250	47.377	46.491	45.589	44.674
53	56.109	55.395	54.664	53.917	53.152	52.373	51.576	50.764	49.937	49.094	48.236	47.363	46.476	45.574	44.659
54	56.097	55.383	54.652	53.904	53.140	52.359	51.563	50.751	49.923	49.080	48.222	47.348	46.461	45.559	44.643
55	56.085	55.371	54.639	53.891	53.127	52.346	51.549	50.737	49.909	49.066	48.207	47.333	46.446	45.544	44.628
56	56.073	55.359	54.627	53.879	53.114	52.333	51.536	50.723	49.895	49.051	48.192	47.319	46.431	45.529	44.613
57	56.061	55.347	54.614	53.867	53.101	52.320	51.523	50.710	49.881	49.037	48.178	47.304	46.416	45.514	44.597
58	56.050	55.335	54.602	53.854	53.088	52.307	51.509	50.696	49.867	49.023	48.163	47.289	46.401	45.499	44.582
59	56.038	55.323	54.590	53.841	53.075	52.294	51.496	50.682	49.853	49.009	48.149	47.275	46.386	45.484	44.566

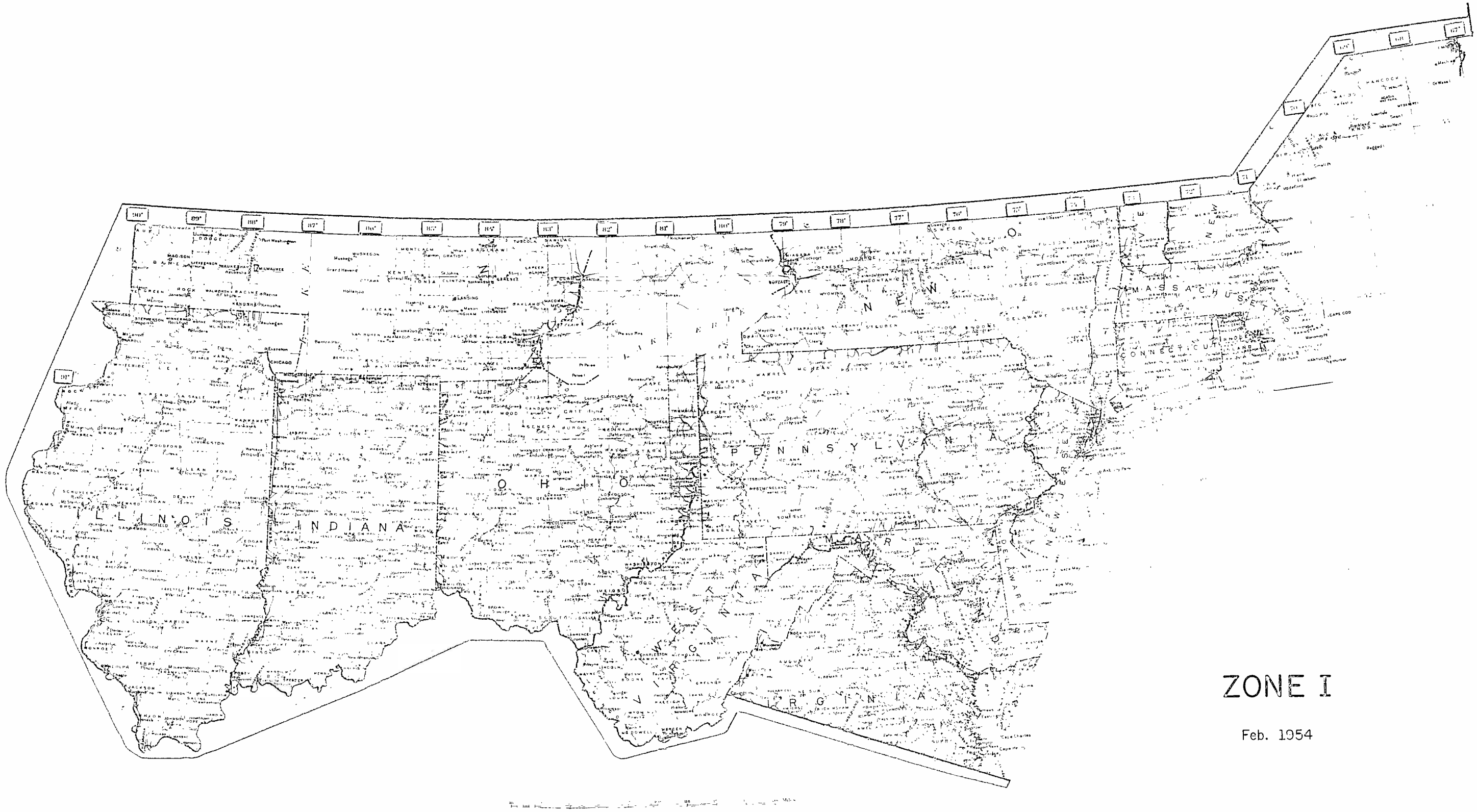
TABLE IV

(1) Channel	(2) 20 miles (IF beat)	(3) 20 miles (intermodulation)	(4) 55 miles (adjacent channel)	(5) 60 miles (oscillator)	(6) 60 miles (sound image)	(7) 75 miles (picture image)
14	22	16-19	15	21	28	29
15	23	17-20	14, 16	22	29	30
16	24	14, 18-21	15, 17	23	30	31
17	25	14-15, 19-22	16, 18	24	31	32
18	26	14-16, 20-23	17, 19	25	32	33
19	27	14-17, 21-24	18, 20	26	33	34
20	28	15-18, 22-25	19, 21	27	34	35
21	29	16-19, 23-26	20, 22	28, 14	35	36
22	30, 14	17-20, 24-27	21, 23	29, 15	36	37
23	31, 15	18-21, 25-28	22, 24	30, 16	37	38
24	32, 16	19-22, 26-29	23, 25	31, 17	38	39
25	33, 17	20-23, 27-30	24, 26	32, 18	39	40
26	34, 18	21-24, 28-31	25, 27	33, 19	40	41
27	35, 19	22-25, 29-32	26, 28	34, 20	41	42
28	36, 20	23-26, 30-33	27, 29	35, 21	42, 14	43
29	37, 21	24-27, 31-34	28, 30	36, 22	48, 15	44, 14
30	38, 22	25-28, 32-35	29, 31	37, 23	44, 16	45, 15
31	39, 23	26-29, 33-36	30, 32	38, 24	45, 17	46, 16
32	40, 24	27-30, 34-37	31, 33	39, 25	46, 18	47, 17
33	41, 25	28-31, 35-38	32, 34	40, 26	47, 19	48, 18
34	42, 26	29-32, 36-39	33, 35	41, 27	48, 20	49, 19
35	43, 27	30-33, 37-40	34, 36	42, 28	49, 21	50, 20
36	44, 28	31-34, 38-41	35, 37	43, 29	50, 22	51, 21
37	45, 29	32-35, 39-42	36, 38	44, 30	51, 23	52, 22
38	46, 30	33-36, 40-43	37, 39	45, 31	52, 24	53, 23
39	47, 31	34-37, 41-44	38, 40	46, 32	53, 25	54, 24
40	48, 32	35-38, 42-45	39, 41	47, 33	54, 26	55, 25
41	49, 33	36-39, 43-46	40, 42	48, 34	55, 27	56, 26
42	50, 34	37-40, 44-47	41, 43	49, 35	56, 28	57, 27
43	51, 35	38-41, 45-48	42, 44	50, 36	57, 29	58, 28
44	52, 36	39-42, 46-49	43, 45	51, 37	58, 30	59, 29
45	53, 37	40-43, 47-50	44, 46	52, 38	59, 31	60, 30
46	54, 38	41-44, 48-51	45, 47	53, 39	60, 32	61, 31
47	55, 39	42-45, 49-52	46, 48	54, 40	61, 33	62, 32
48	56, 40	43-46, 50-53	47, 49	55, 41	62, 34	63, 33
49	57, 41	44-47, 51-54	48, 50	56, 42	63, 35	64, 34
50	58, 42	45-48, 52-55	49, 51	57, 43	64, 36	65, 35
51	59, 43	46-49, 53-56	50, 52	58, 44	65, 37	66, 36
52	60, 44	47-50, 54-57	51, 53	59, 45	66, 38	67, 37
53	61, 45	48-51, 55-58	52, 54	60, 46	67, 39	68, 38
54	62, 46	49-52, 56-59	53, 55	61, 47	68, 40	69, 39
55	63, 47	50-53, 57-60	54, 56	62, 48	69, 41	70, 40
56	64, 48	51-54, 58-61	55, 57	63, 49	70, 42	71, 41
57	65, 49	52-55, 59-62	56, 58	64, 50	71, 43	72, 42
58	66, 50	53-56, 60-63	57, 59	65, 51	72, 44	73, 43
59	67, 51	54-57, 61-64	58, 60	66, 52	73, 45	74, 44
60	68, 52	55-58, 62-65	59, 61	67, 53	74, 46	75, 45
61	69, 53	56-59, 63-66	60, 62	68, 54	75, 47	76, 46
62	70, 54	57-60, 64-67	61, 63	69, 55	76, 48	77, 47
63	71, 55	58-61, 65-68	62, 64	70, 56	77, 49	78, 48
64	72, 56	59-62, 66-69	63, 65	71, 57	78, 50	79, 49
65	73, 57	60-63, 67-70	64, 66	72, 58	79, 51	80, 50
66	74, 58	61-64, 68-71	65, 67	73, 59	80, 52	81, 51
67	75, 59	62-65, 69-72	66, 68	74, 60	81, 53	82, 52
68	76, 60	63-66, 70-73	67, 69	75, 61	82, 54	83, 53
69	77, 61	64-67, 71-74	68, 70	76, 62	83, 55	54
70	78, 62	65-68, 72-75	69, 71	77, 63	56	55
71	79, 63	66-69, 73-76	70, 72	78, 64	57	56
72	80, 64	67-70, 74-77	71, 73	79, 65	58	57
73	81, 65	68-71, 75-78	72, 74	80, 66	59	58
74	82, 66	69-72, 76-79	73, 75	81, 67	60	59
75	83, 67	70-73, 77-80	74, 76	82, 68	61	60
76	68	71-74, 78-81	75, 77	83, 69	62	61
77	69	72-75, 79-82	76, 78	70	63	62
78	70	73-76, 80-83	77, 79	71	64	63
79	71	74-77, 81-83	78, 80	72	65	64
80	72	75-78, 82-83	79, 81	73	66	65
81	73	76-79, 83	80, 82	74	67	66
82	74	77-80	81, 83	75	68	67
83	75	78-81	82	76	69	68

NOTE: The parenthetical reference beneath the mileage figures in columns 2 through 7, inclusive, indicate, in abbreviated form, the bases for the required mileage separations. For a discussion of these bases, see the "Sixth Report and Order" of the Commission (FCC 52-294). The hyphenated numbers listed in column (3) are both inclusive.

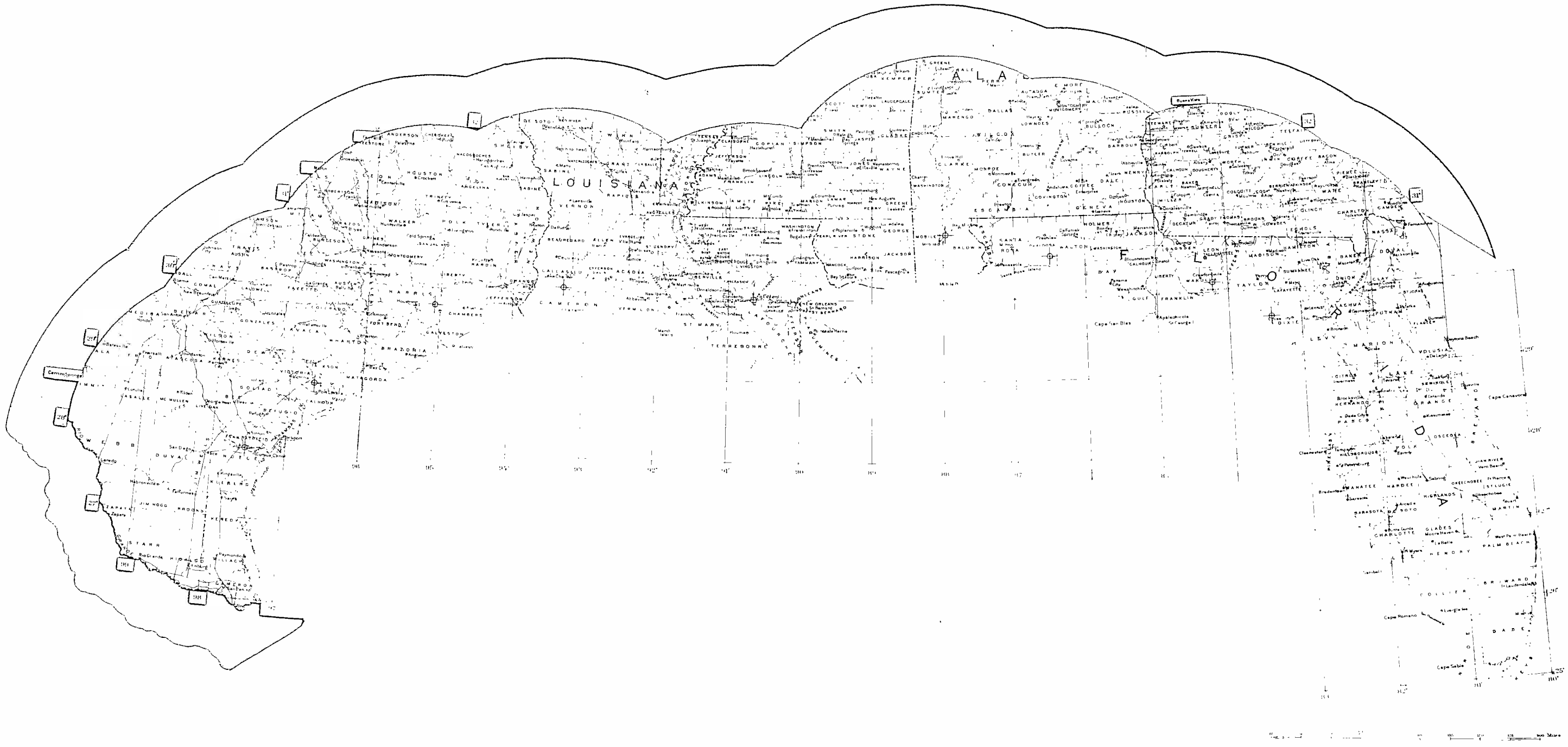
§ 73.699 Engineering charts.

This section consists of the following Figures 1–5, 5a, and 6–12, and "slider for use with Figures 9 and 10."



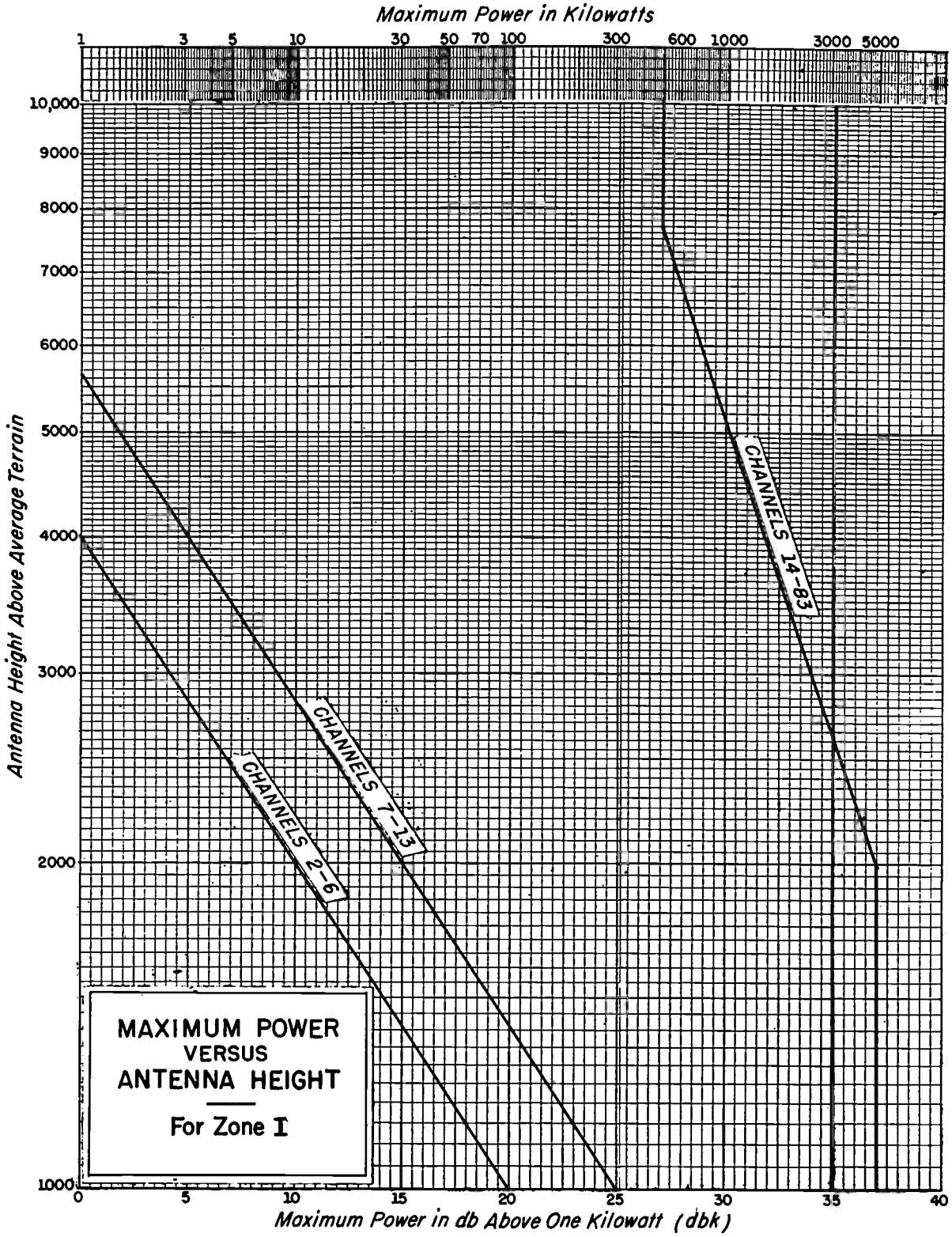
ZONE I

Feb. 1954

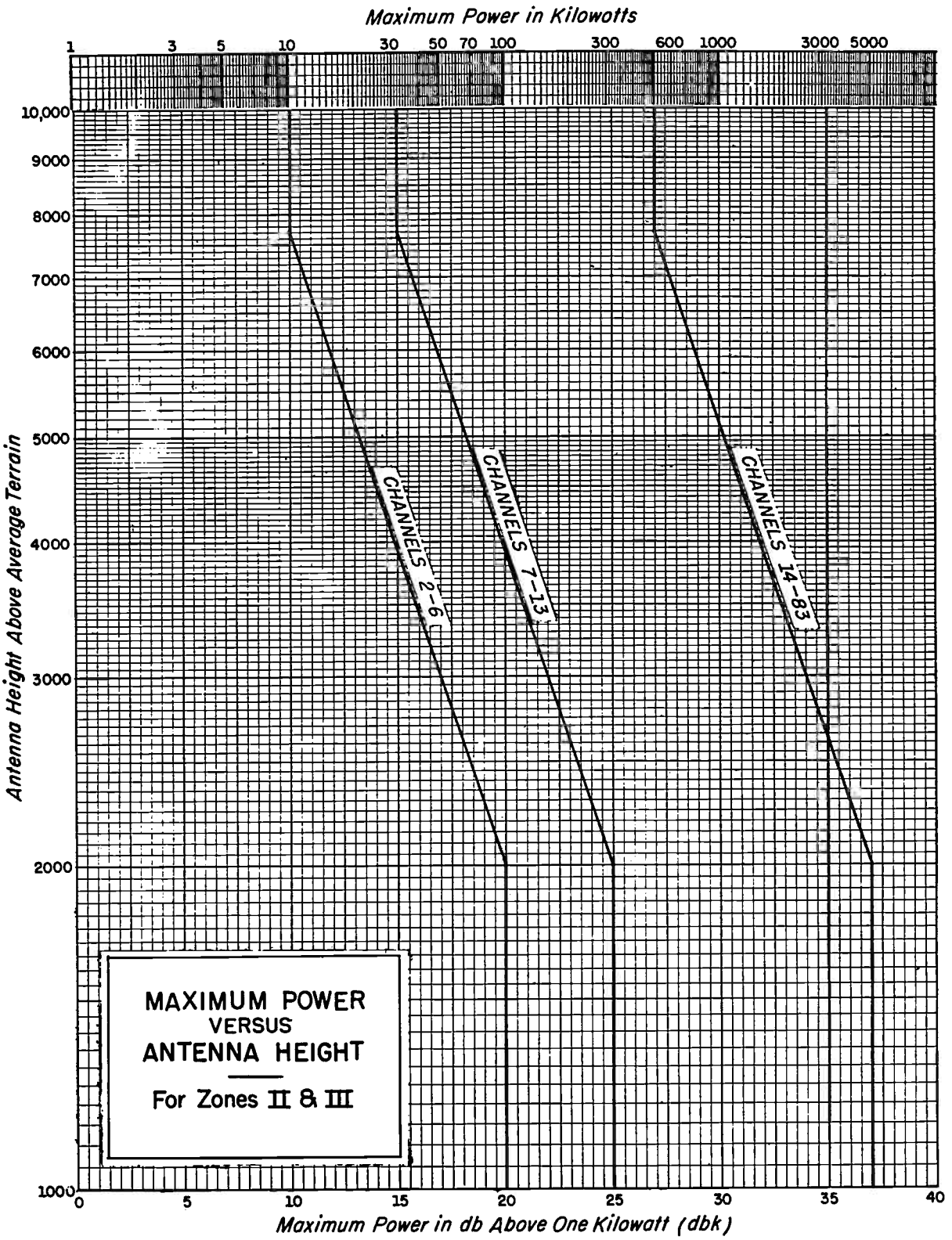


ZONE III

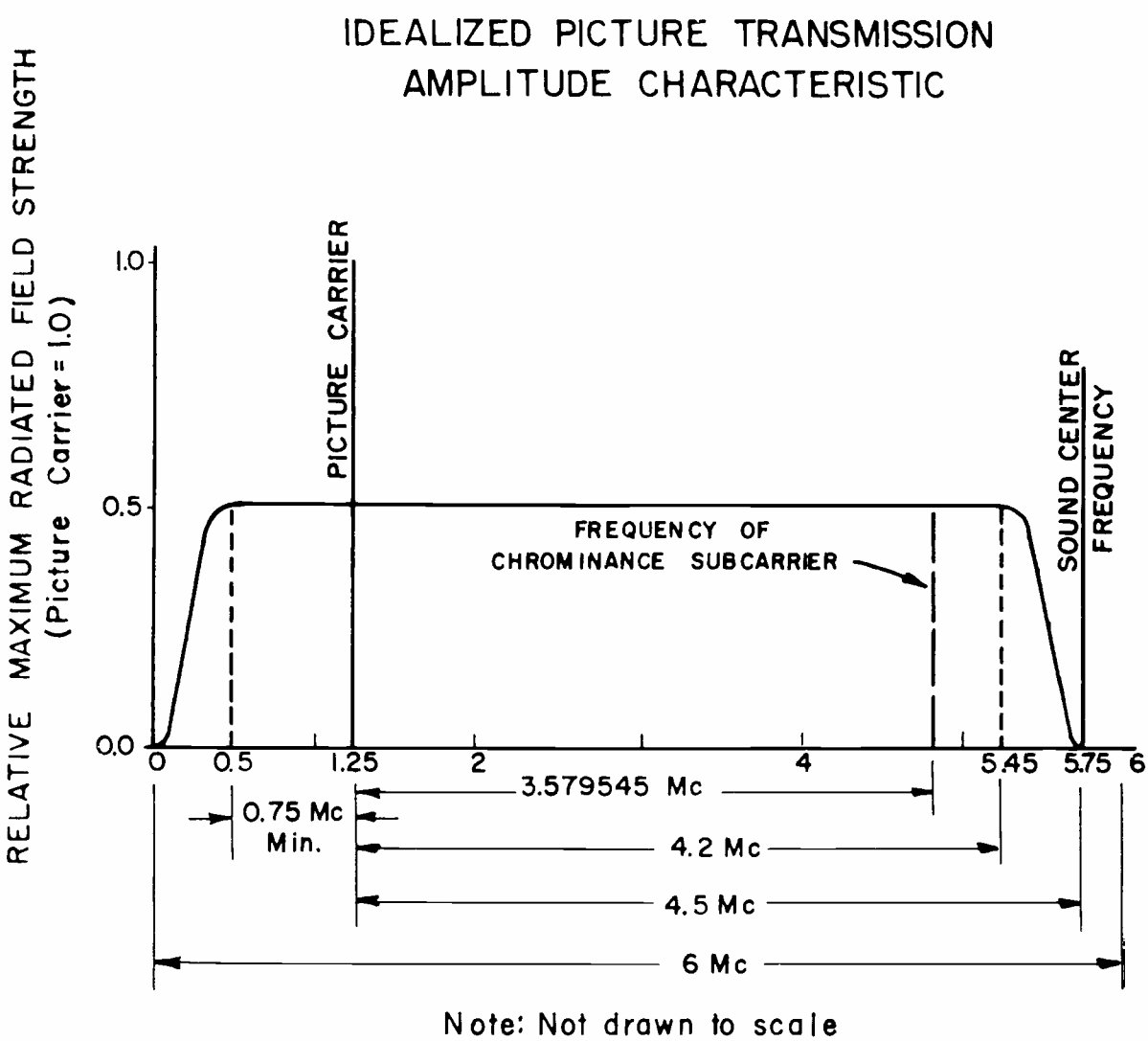
MARCH 1957



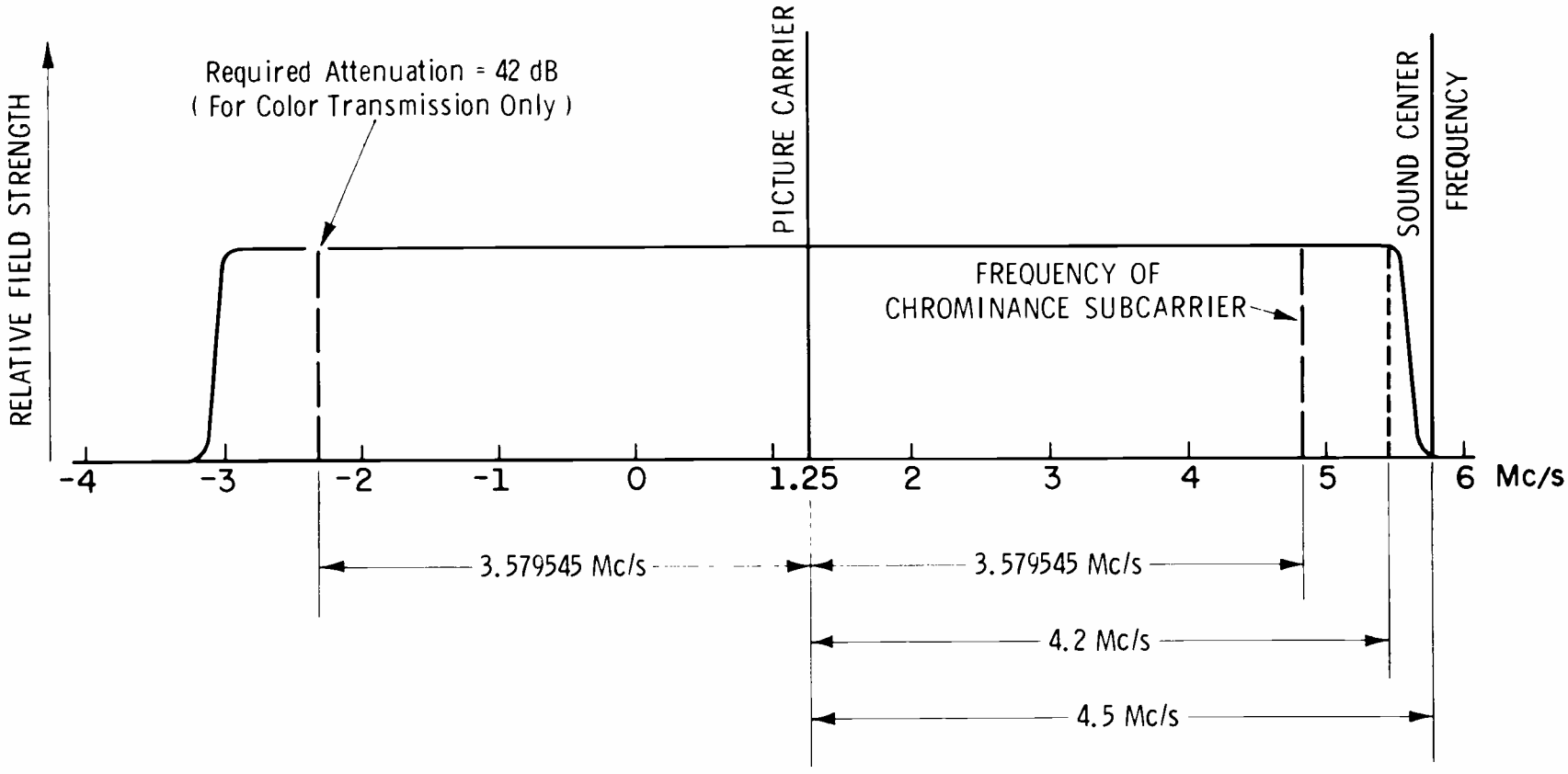
FCC § 73.699, FIGURE 3



FCC § 73.699, FIGURE 4

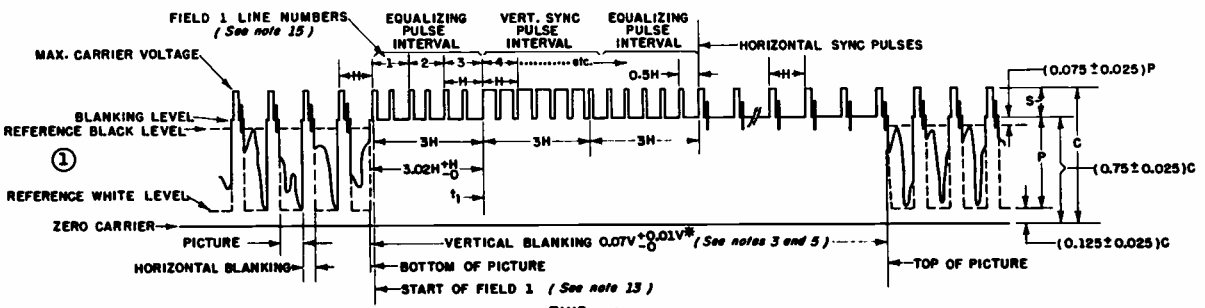

IDEALIZED PICTURE TRANSMISSION
AMPLITUDE CHARACTERISTIC
RELATIVE MAXIMUM RADIATED FIELD STRENGTH
(Picture Carrier = 1.0)
1.0
0.5
0.0
PICTURE CARRIER
SOUND CENTER FREQUENCY
FREQUENCY OF
CHROMINANCE SUBCARRIER
0
0.5
1.25
2
4
5.45
5.75
6
3.579545 Mc
0.75 Mc
Min.
4.2 Mc
4.5 Mc
6 Mc
Note: Not drawn to scale

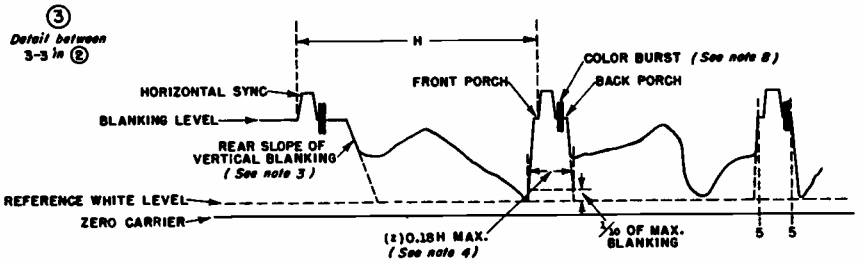
IDEALIZED PICTURE TRANSMISSION AMPLITUDE CHARACTERISTIC

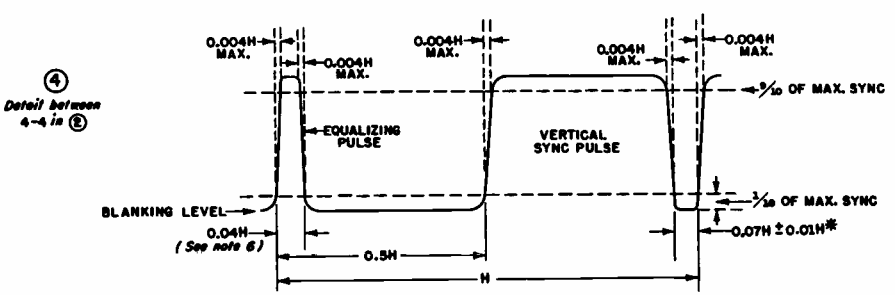


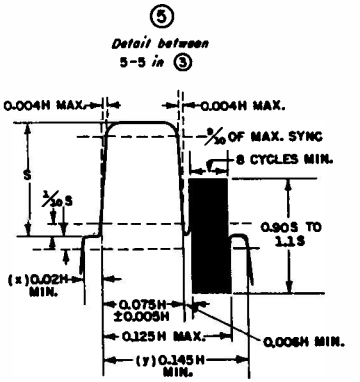
TELEVISION SYNCHRONIZING WAVEFORM

FOR COLOR TRANSMISSION







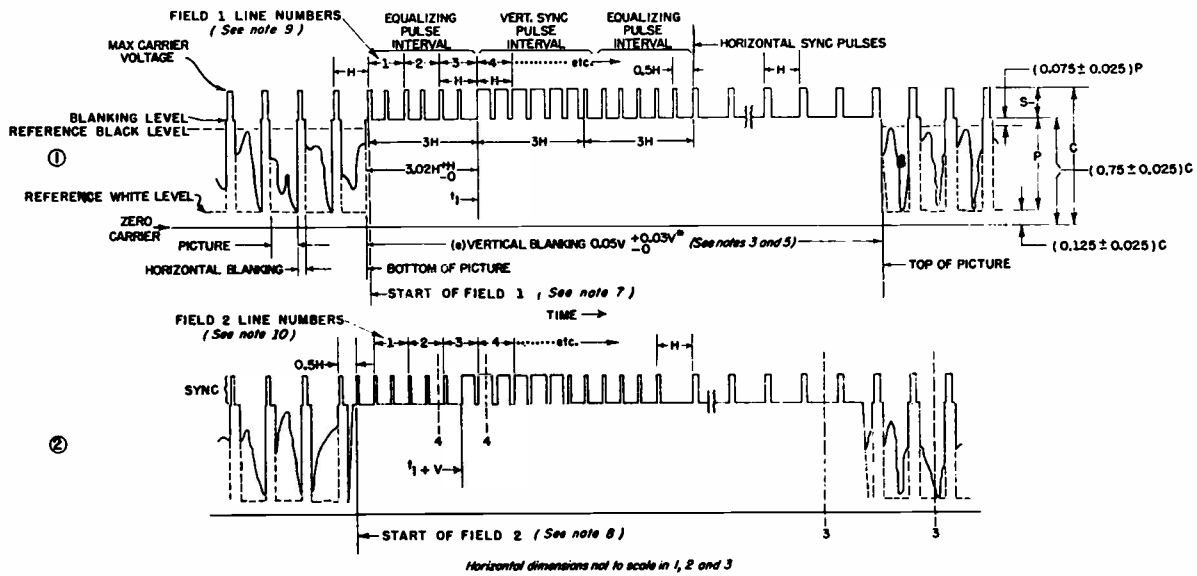


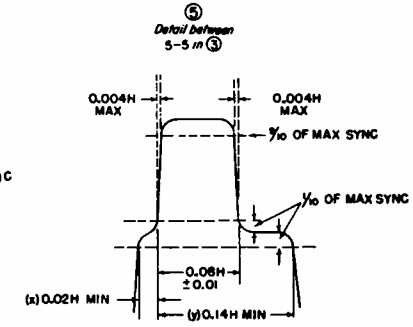
NOTES

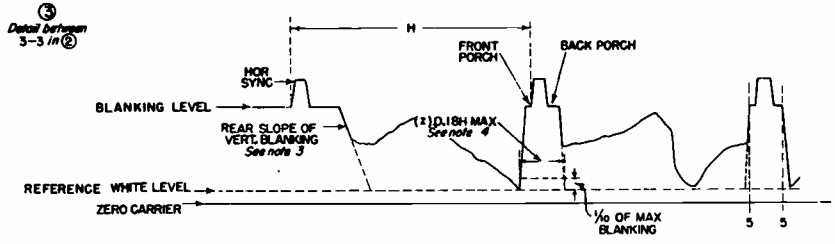
1. H = *Time from start of one line to start of next line.*
2. V = *Time from start of one field to start of next field.*
3. *Leading and trailing edges of vertical blanking should be complete in less than 0.1H.*
4. *Leading and trailing slopes of horizontal blanking must be steep enough to preserve minimum and maximum values of (x+y) and (z) under all conditions of picture content.*
5. *Dimensions marked with asterisk indicate that tolerances given are permitted only for long time variations and not for successive cycles.*
6. *Equalizing pulse area shall be between 0.45 and 0.5 of area of a horizontal sync pulse.*
7. *Color burst follows each horizontal pulse, but is omitted following the equalizing pulses and during the broad vertical pulses.*
8. *Color bursts to be omitted during monochrome transmission.*
9. *The burst frequency shall be 3.579545 mc. The tolerance on the frequency shall be ±10 cycles with a maximum rate of change of frequency not to exceed 1/10 cycle per second per second.*
10. *The horizontal scanning frequency shall be 2/455 times the burst frequency.*
11. *The dimensions specified for the burst determine the times of starting and stopping the burst, but not its phase. The color burst consists of amplitude modulation of a continuous sine wave.*
12. *Dimension "P" represents the peak excursion of the luminance signal from blanking level, but does not include the chrominance signal. Dimension "S" is the sync amplitude above blanking level. Dimension "C" is the peak carrier amplitude.*
13. *Start of Field 1 is defined by a whole line between first equalizing pulse and preceding H sync pulses.*
14. *Start of Field 2 is defined by a half line between first equalizing pulse and preceding H sync pulses.*
15. *Field 1 line numbers start with first equalizing pulse in Field 1.*
16. *Field 2 line numbers start with second equalizing pulse in Field 2.*
17. *Refer to text for further explanations and tolerances.*

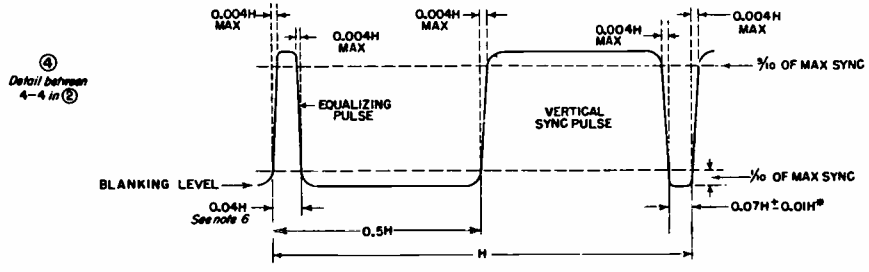
TELEVISION SYNCHRONIZING WAVEFORM

FOR MONOCHROME TRANSMISSION ONLY



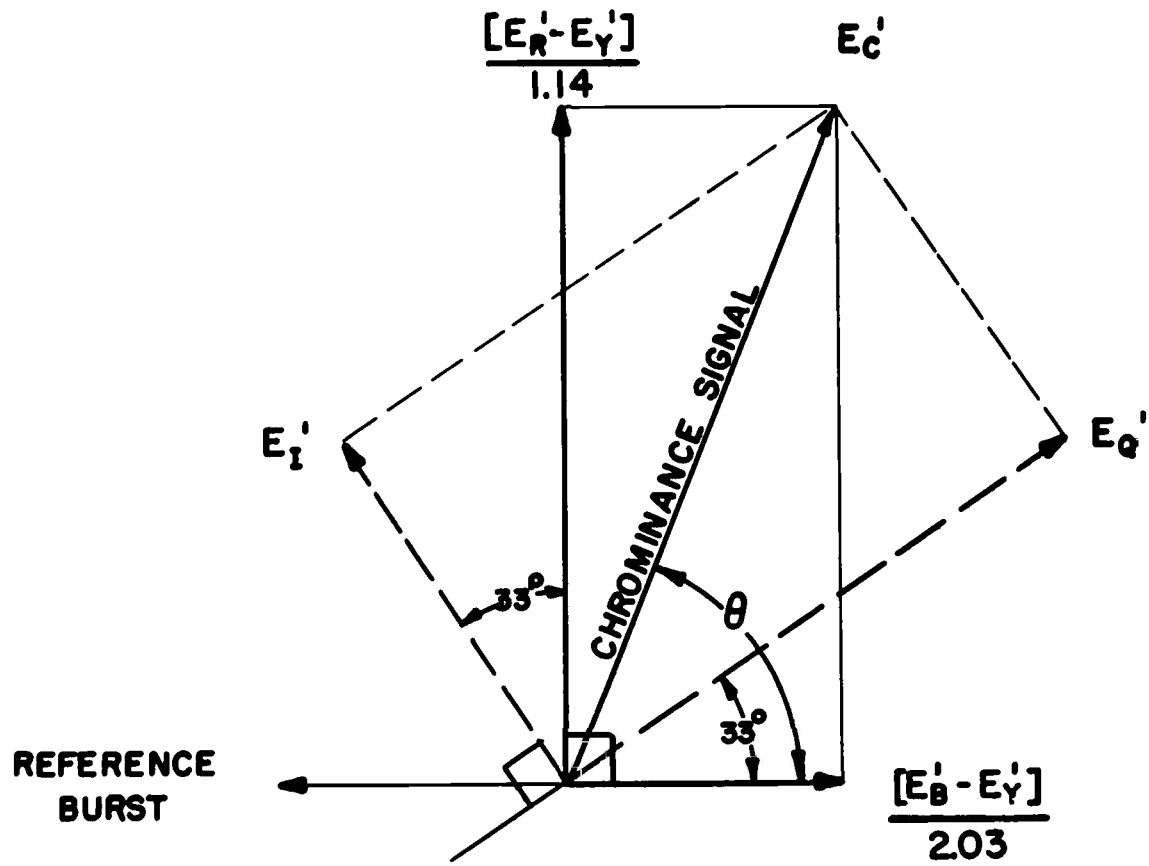


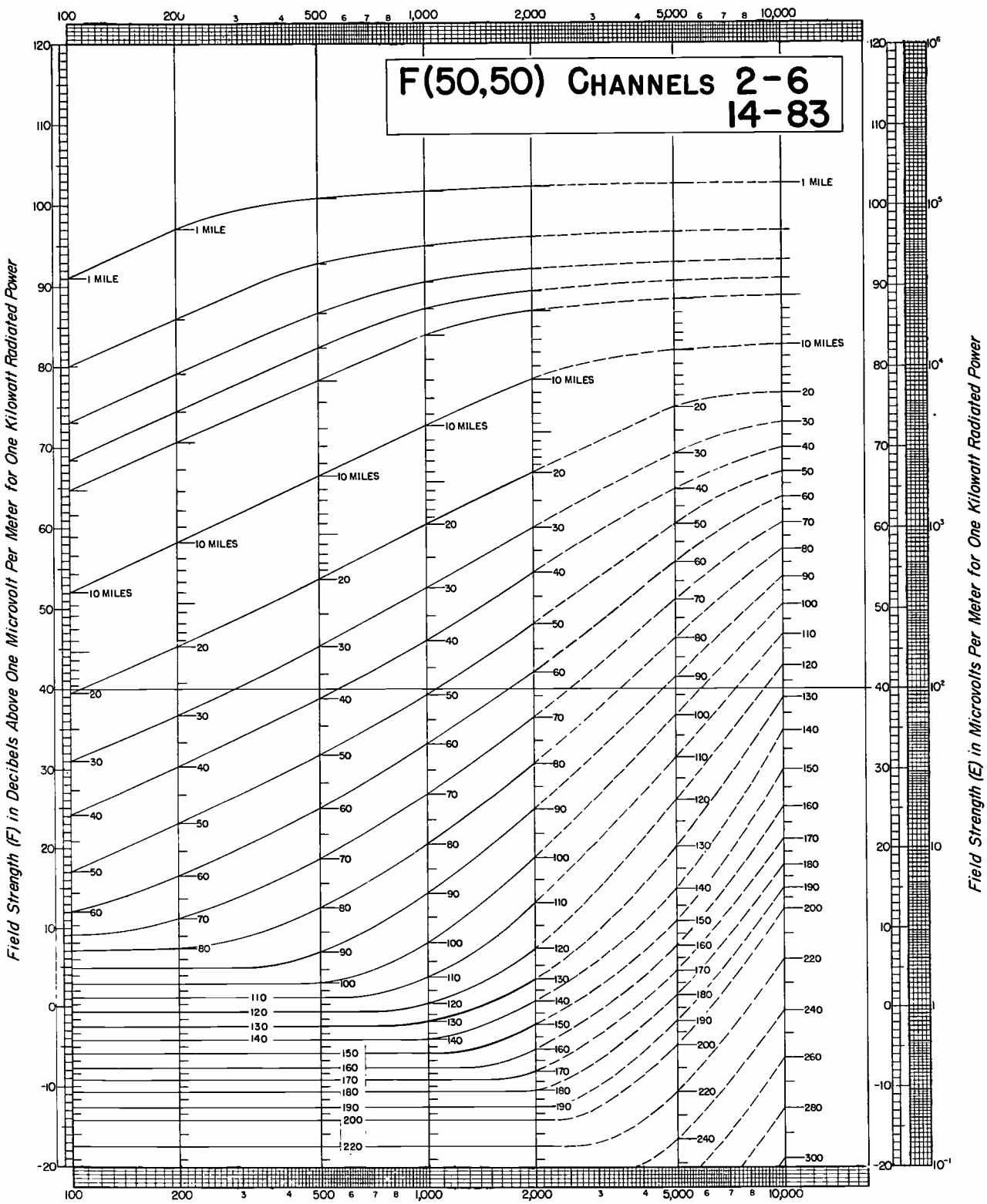




NOTES

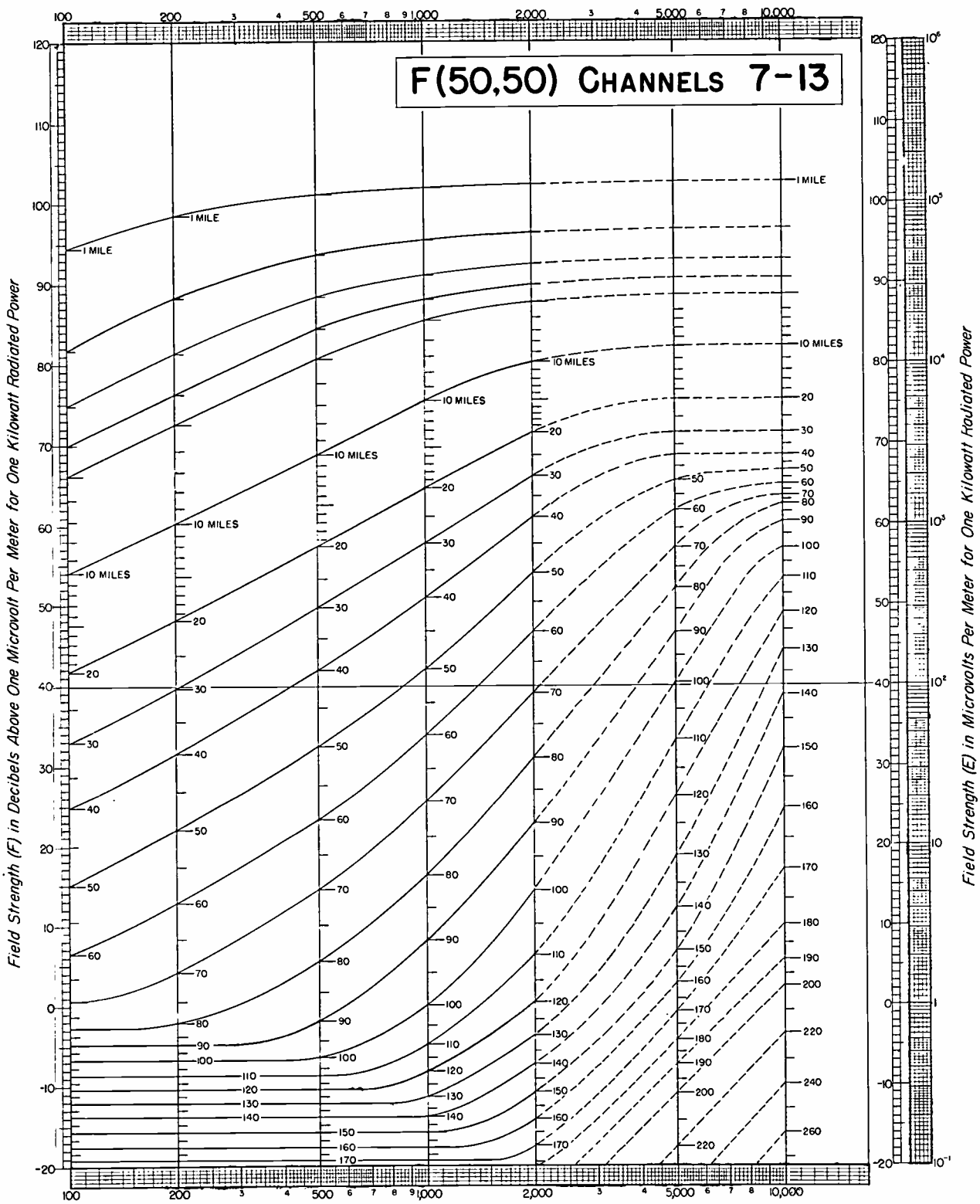
1. H = *Time from start of one line to start of next line.*
2. V = *Time from start of one field to start of next field.*
3. *Leading and trailing edges of vertical blanking should be complete in less than 0.1 H.*
4. *Leading and trailing slopes of horizontal blanking must be steep enough to preserve minimum and maximum values of (x+y) and (z) under all conditions of picture content.*
5. * *Dimensions marked with asterisk indicate that tolerances given are permitted only for long time variations and not for successive cycles.*
6. *Equalizing pulse area shall be between 0.45 and 0.5 of area of a horizontal sync pulse.*
7. *Start of Field 1 is defined by a whole line between first equalizing pulse and preceding H sync pulses.*
8. *Start of Field 2 is defined by a half line between first equalizing pulse and preceding H sync pulses.*
9. *Field 1 line numbers start with first equalizing pulse in Field 1.*
10. *Field 2 line numbers start with second equalizing pulse in Field 2.*
11. *Refer to text for further explanations and tolerances.*


[E'R-E'Y']
1.14
E'C
E'I
E'Q
CHROMINANCE SIGNAL
33°
θ
33°
REFERENCE
BURST
[E'B-E'Y']
2.03



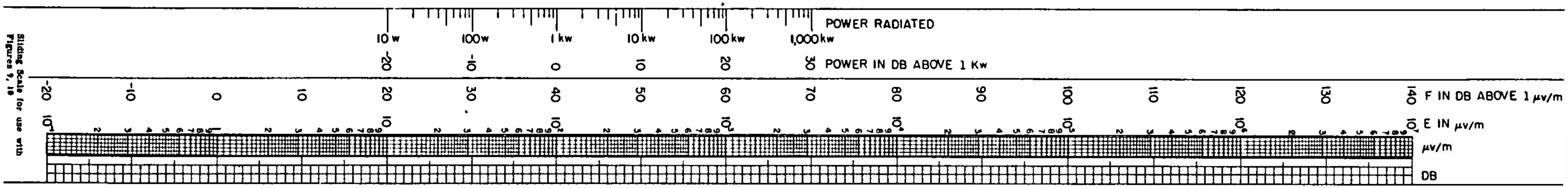
TELEVISION CHANNELS 2-6, 14-83

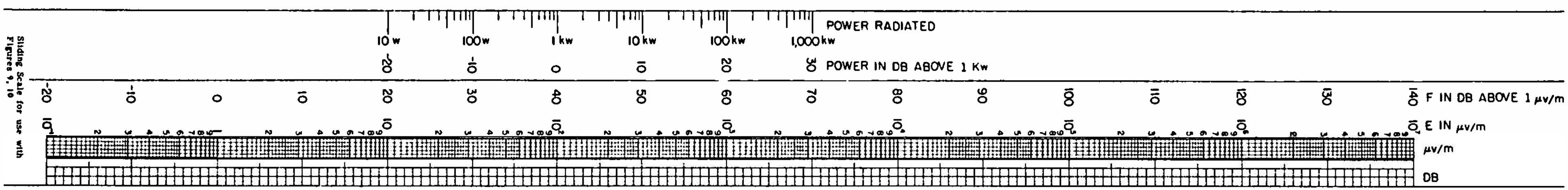
ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT OF THE POTENTIAL RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT OF THE TIME AT A RECEIVING ANTENNA HEIGHT OF 30 FEET

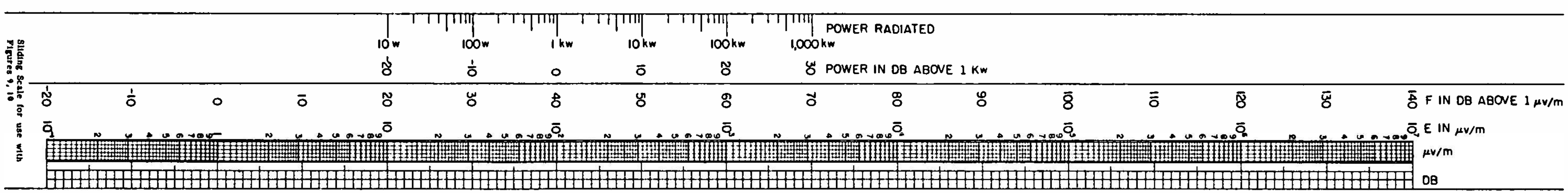


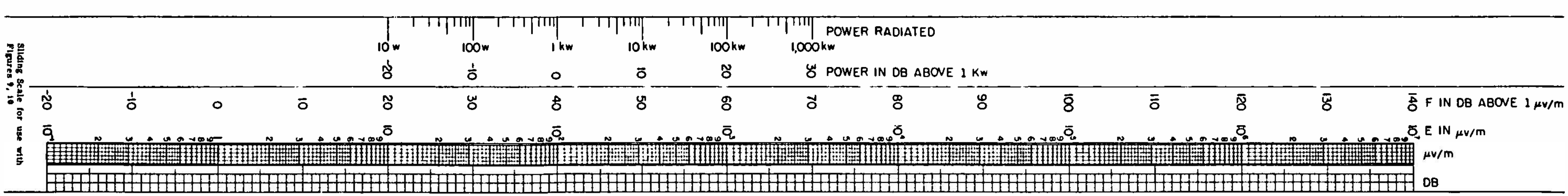
TELEVISION CHANNELS 7-13

ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT OF THE POTENTIAL RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT OF THE TIME AT A RECEIVING ANTENNA HEIGHT OF 30 FEET

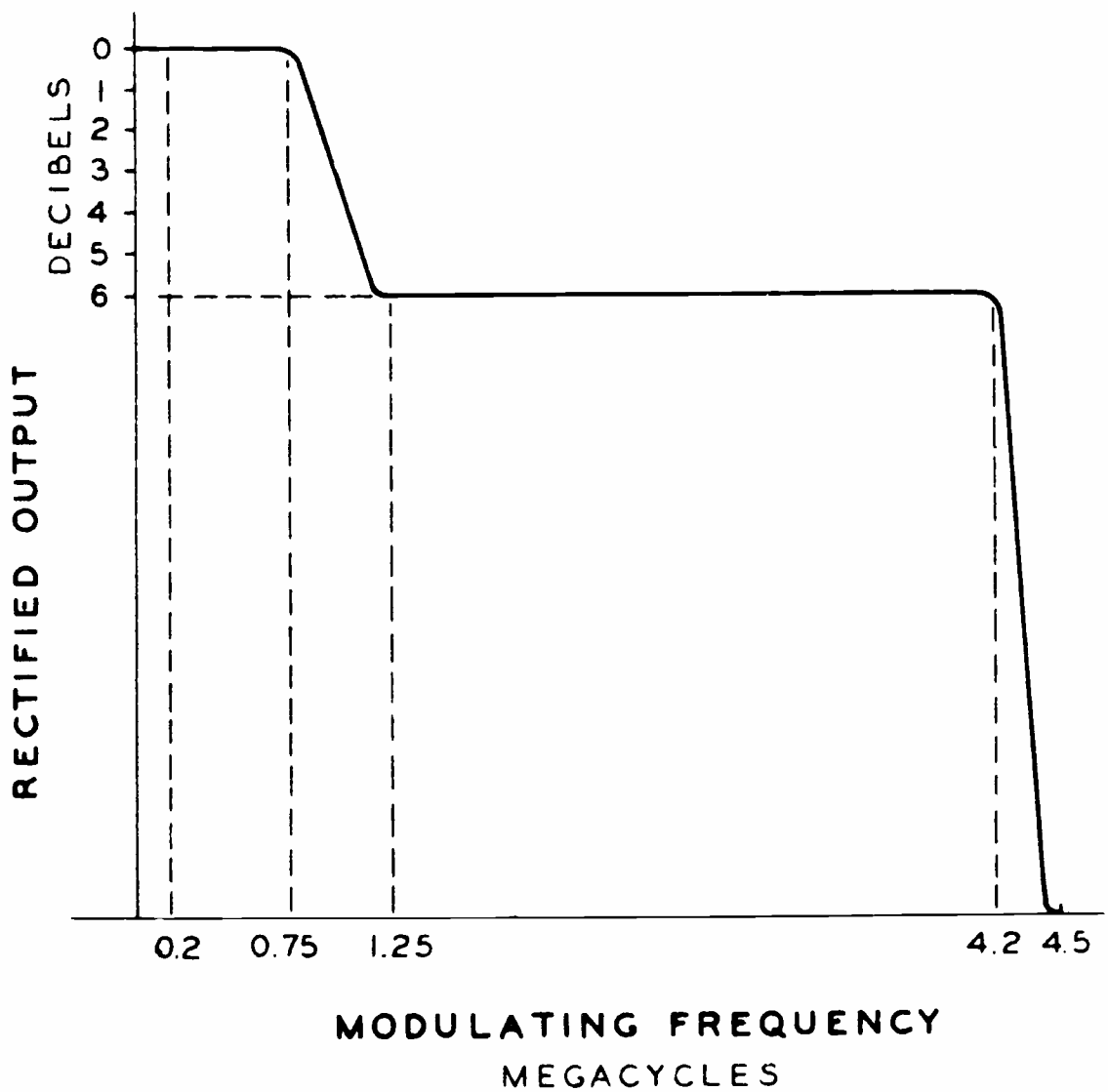

POWER RADIATED
10 w 100w 1 kw 10 kw 100 kw 1,000 kw
-20 -10 0 10 20 30 POWER IN DB ABOVE 1 Kw
-20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 F IN DB ABOVE 1 μv/m
E IN μv/m
μv/m
DB
Sliding Scale for use with Figures 9, 10

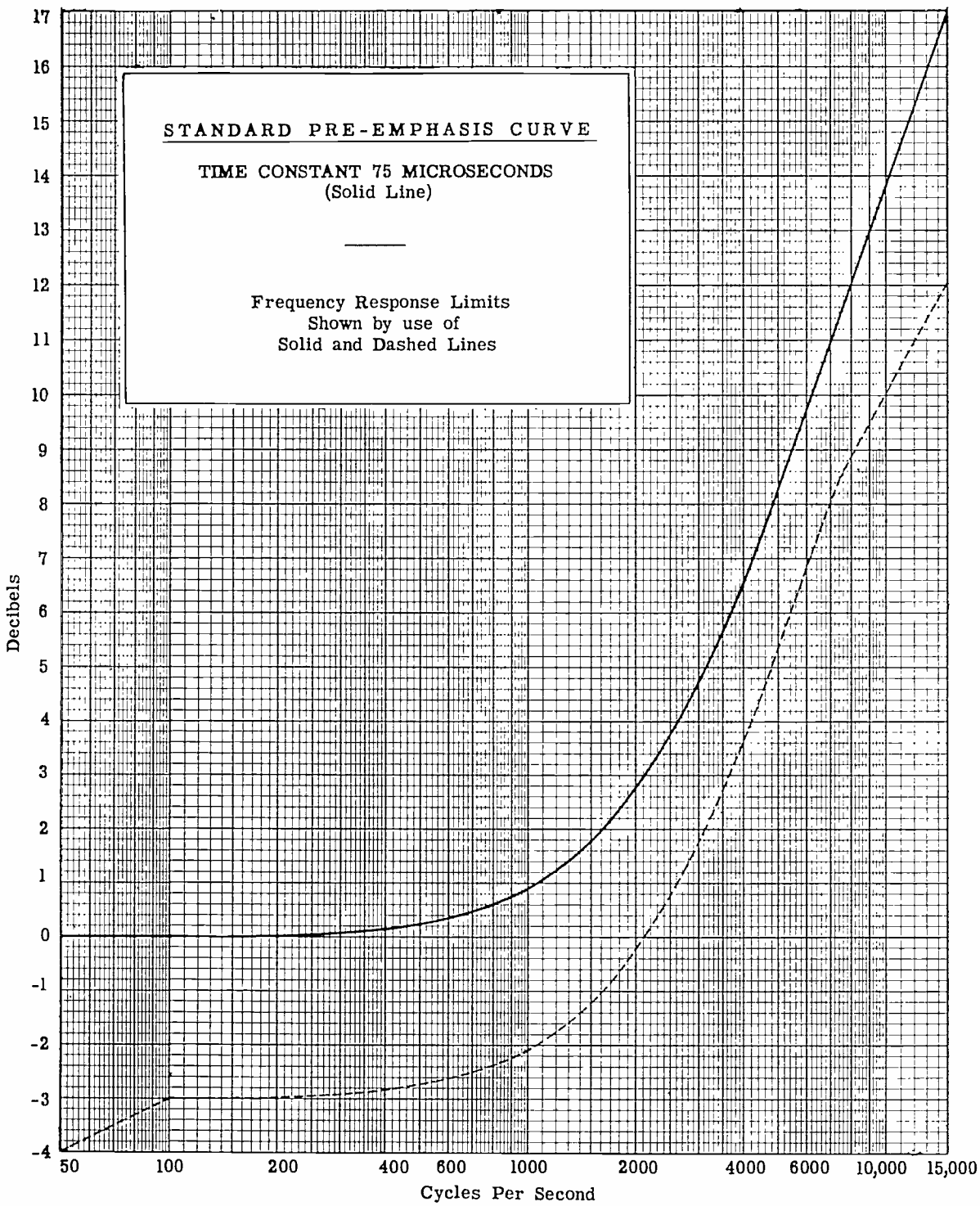

POWER RADIATED
10 w 100w 1 kw 10 kw 100 kw 1,000 kw
-20 -10 0 10 20 30 POWER IN DB ABOVE 1 Kw
-20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 F IN DB ABOVE 1 μv/m
E IN μv/m
μv/m
DB
Sliding Scale for use with Figures 9, 10


POWER RADIATED
10 w 100w 1 kw 10 kw 100 kw 1,000 kw
-20 -10 0 10 20 30 POWER IN DB ABOVE 1 Kw
-20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 F IN DB ABOVE 1 μv/m
E IN μv/m
μv/m
DB
Sliding Scale for use with Figures 9, 10


POWER RADIATED
10 w 100w 1 kw 10 kw 100 kw 1,000 kw
-20 -10 0 10 20 30 POWER IN DB ABOVE 1 Kw
-20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 F IN DB ABOVE 1 μv/m
E IN μv/m
μv/m
DB
Sliding Scale for use with Figures 9, 10

ASSUMED IDEAL DETECTOR OUTPUT




STANDARD PRE-EMPHASIS CURVE
TIME CONSTANT 75 MICROSECONDS
(Solid Line)
Frequency Response Limits
Shown by use of
Solid and Dashed Lines
Decibels
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
50
100
200
400
600
1000
2000
4000
6000
10,000
15,000
Cycles Per Second

SUBPART F—INTERNATIONAL BROADCAST STATIONS

DEFINITIONS AND ALLOCATION OF FACILITIES

§ 73.701 Definitions.

The following definitions apply to terminology employed in this subpart:

(a) *International broadcast station.* A broadcasting station employing frequencies allocated to the broadcasting service between 5950 and 26100 kc, whose transmissions are intended to be received directly by the general public in foreign countries.

(b) *Frequency-hour.* One frequency used for one hour.

(c) *Day.* Any twenty-four hour period beginning 0000 EST and ending 2400 EST.

(d) *Sunspot number.* The predicted 12 month running average of the number of sunspots for any month as indicated in the National Bureau of Standards CRPL Series D publications.

(e) *Vernal equinox season.* That period of any calendar year starting at 0000 EST on 1 February and ending at 2400 EST on 30 April.

(f) *Summer season.* That period of any calendar year starting at 0000 EST on 1 May and ending at 2400 EST on 31 July.

(g) *Autumnal equinox season.* That period of any calendar year starting at 0000 EST on 1 August and ending at 2400 EST on 31 October.

(h) *Winter season.* That period of any calendar year starting at 0000 EST on 1 November and ending at 2400 EST on 31 January.

(i) *Maximum usable frequency (MUF).* The highest frequency which is returned to the surface of the earth for a particular path and time of day on 50 percent of the days of the reference month.

(j) *Optimum working frequency (OWF).* The frequency which is returned to the surface of the earth for a particular path and time of day on 90 percent of the days of the reference month.

(k) *Reference month.* The middle month of any season listed in § 73.704 "Daily Frequency Hour Availability Table."

(l) *Delivered median field intensity or field intensity.* The field intensity incident upon the target area expressed in microvolts per meter, or decibels above one microvolt per meter, which is exceeded by the hourly median value on 50 percent of the days of the reference month.

(m) *Target area.* Geographic area in which the reception of particular programs is specifically intended and in which adequate broadcast coverage is contemplated.

(n) *Contract operation.* Any non-Government operation of an international broadcast station pursuant to a contract with an agency of the United States Government and subject to Governmental control as to program content, target areas to be covered, and time of broadcast.

(o) *Private operation.* Any non-Government operation of an International Broadcast station which is not contract operation.

§ 73.702 Assignment and use of frequencies.

NOTE: Paragraphs (c) through (k) do not apply to stations when engaged in contract operations as defined in § 73.701.

(a) Frequencies will be assigned by the Commission from time to time and in accordance with the provisions of this section, to authorized international broadcast stations for use at specified hours and for transmission to specified target areas. Licensees may request the assignment of specific frequencies for transmission during given hours of operation to specified target areas by filing informal requests in triplicate with the Commission no less than 15 days prior to the start of a new season. Such requests will be honored to the extent that interference and propagation conditions permit and that they are otherwise in accordance with the provisions of this section. Requests for changes in frequency or hour assignments at other times during the year or which are received less than 15 days before the start of a new season will be processed as rapidly as practical. All specific frequency authorizations will be made only on the express understanding that they are subject to immediate cancellation or change without hearing whenever the Commission determines that interference or propagation conditions so require and that each assignment of frequency hours for a given season is unique unto itself and not subject to renewal, with the result that completely new assignments must be secured for the forthcoming season. Where a station is simultaneously engaged in both private and contract broadcasting, as defined in § 73.701, it must receive separate frequency hour authorizations for each of these operations.

(b) Any foreign standard target areas shown in Figure 1 of § 73.792 may be specified by the licensee, in which case field intensity calculations should be based on the transmission path between the corresponding reference points listed in § 73.703. In the event a broadcast is to be directed to more than one target area in the same region, the *primary* target area should be specified and the reasons for selecting that particular target area given, with special reference to the nature and special suitability, if any, of the programming proposed. Field intensity calculations should be based on the transmission path to the standard reference point in § 73.703 for the primary target area. In the event a licensee wishes to specify target areas other than those shown in Figure 1 of § 73.792, adequate justification must be given to show that the use of standard target areas is inappropriate, with special reference given to any specialized programming proposed which appears suitable only for the nonstandard target areas designated. When nonstandard target areas are proposed, special reference points must be specified (by geographical coordinates) and reasonably chosen so as to insure complete and adequate coverage of the target areas.

(c) Frequencies assigned by the Commission will be within the following bands:

	Kilocycles
Band A	5950–6200
Band B	9500–9775
Band C	11700–11975
Band D	15100–15450
Band E	17700–17900
Band F	21450–21750
Band G	25600–26100

(d) No frequency will be assigned which would provide a Delivered Median Field Intensity, either measured or calculated, of less than 150 uv/m—50 percent or 43.5 decibels above one uv/m at the distant foreign target area. (This value of Delivered Median Field Intensity is expected to provide protection against atmospheric and industrial noise for at least 90 percent of each hour during 90 percent of the days of the month.) With each request for frequency assignment, licensees must submit computations which adequately show that this requirement would be met.

NOTE: Standard OWF propagation curves and Delivered Median Field Intensity curves for the various hours and seasons throughout the eleven year sunspot cycle have been computed for transmission paths between standard reference points listed in § 73.703 for the standard target area shown in Figure 1 of § 73.792. These curves, which were developed and used at the Mexico City High Frequency Broadcasting Conference (1948-1949), are available at the Commission's Washington offices and may be used in calculating the propagation data which licensees are required to provide under these Rules. The methods used in computing these data are described in Chapter 7, paragraph 7.7 of the National Bureau of Standards Circular 462. In lieu of that data, and in all cases where nonstandard target areas are specified as provided in paragraph (b) of this section, licensees must develop their own propagation curves for use in computing values of OWF and Delivered Median Field Intensity for the particular transmission paths involved. In doing so, use may be made of the published propagation data of the National Bureau of Standards known as CRPL Series D, "Basic Radio Propagation Predictions", published monthly in conjunction with National Bureau of Standards Circular 465, "Instruction for the use of Basic Radio Propagation Predictions." These publications are available from the Superintendent of Documents, Washington 20402, D.C. A typical example of a computation for a transmission path between standard target areas is from New York (Area 8) to Buenos Aires (Area 15). The Delivered Median Field Intensity for the equinox season, sunspot 5, and for the 6 Mc band for the hours 0200 to 0400 GMT is indicated by the appropriate propagation curve as 24 decibels above one microvolt per meter for 1 kw radiated power. The transmitter power output of 20 decibels (100 kw) is added. The transmitting antenna gain of 12 decibels is added. The resultant total (56 decibels) exceeds the level of 43.5 decibels required to deliver a median field intensity of 150 uv/m at the distant target area.

(e) Frequencies assigned will be as near as possible to the Optimum Working Frequency. In no case will they exceed the Maximum Usable Frequency for more than a total of 15 minutes during any period of transmission. With each request for frequency assignment, licensees must submit computations which adequately show that this requirement would be met. (See note in paragraph (d) of this section regarding methods for computation.)

(f) Not more than one frequency will be authorized for use at any one time for any one program transmission except in instances where a program is intended for reception in more than one target area and the intended target areas cannot be served by a single frequency.

(g) No authorization for use of a particular frequency will be issued which fails to provide a minimum co-channel Delivered Median Field Intensity protection ratio of 40 db to the transmissions of other broadcasting stations at the reference point in the target area being served by such stations which, in the opinion of the Commission, have priority of assignment.

(h) Authorization for use of a particular frequency will not be issued which does not provide a minimum adjacent channel Delivered Median Field Intensity protection ratio of 11 db to the transmissions of other international broadcasting stations at the reference points in the target areas being served by such stations which, in the opinion of the Commission, have priority of assignment.

(i) Any frequency authorized to an international broadcast station shall also be available for assignment to other international broadcast stations.

(j) Not more than one frequency shall be used simultaneously under the same authorization and call letter and equipment installation number designation.

(k) Subject to all other pertinent provisions of this subpart, the total maximum number of frequency-hours which will be authorized to all licensees of private international broadcast stations for private operation combined in any frequency band for any pertinent season during any one day will be those in § 73.704 less the number of frequency-hours in these bands scheduled for use by both (1) government international broadcasting stations, and (2) international broadcast stations licensed by the Commission to use frequencies in these bands for contract operations.

(l) In the event the total number of frequency hours in any band scheduled for both (1) government international broadcasting stations, and (2) international broadcast stations licensed by the Commission to use frequencies in these bands for contract operations equals or exceeds 75 percent of the frequency hour figures given in § 73.704, the maximum number of frequency-hours which will be authorized to all licensees of international broadcast stations for private operation in any frequency band for any pertinent season during any one day will be 25 percent of the frequency hours shown in § 73.704.

(m) If the requests for international broadcasting frequency-hours for private operation in any band or bands exceed those available under the terms of these Rules, in the absence of any voluntary agreement for reduction of frequency-hours requested, the Commission will designate all requests for frequency-hours in the band or bands in question for hearing. Pending such hearing the Commission will temporarily assign the available frequency-hours equally among the several applicants: *Provided, however*, That with respect to such temporary allocation:

(1) An existing license shall not, to the extent such frequency hours are available, receive less than the number of frequency-hours utilized during the preceding

season or requested for the forthcoming season, whichever is lesser.

(2) Where the number of frequency-hours available for private international broadcasting during a forthcoming season are insufficient to permit existing licensees to secure a temporary allocation equal to that previously utilized or requested, whichever is lesser, the allocation shall be pro-rated among such persons in a manner which will give them a share of the available frequency-hours proportionate to that utilized in the preceding season.

(3) In any event, where an applicant's share of the available frequency hours would be more than requested, the surplus shall be divided among the remaining applicants in the manner herein prescribed.

§ 73.703 Latitude and longitude of areas used for field intensity calculations.

Area No.	Latitude degrees	Longitude degrees
1	65 N.	150 W.
2	60 N.	125 W.
3	60 N.	100 W.
4	60 N.	80 W.
5	70 N.	40 W.
6	40 N.	120 W.
7	40 N.	100 W.
8	40 N.	80 W.
9	50 N.	60 W.
10	20 N.	100 W.
11	10 N.	80 W.
12	10 S.	70 W.
13	10 S.	50 W.
14	30 S.	60 W.
15	25 S.	50 W.
16	45 S.	70 W.
17	65 N.	20 W.
18	65 N.	15 E.
19	65 N.	40 E.
20	70 N.	60 E.
21	70 N.	80 E.
22	70 N.	100 E.
23	70 N.	120 E.
24	65 N.	140 E.
25	65 N.	160 E.
26	65 N.	180 E.
27	50 N.	0°
28	50 N.	20 E.
29	50 N.	40 E.
30	50 N.	60 E.
31	50 N.	80 E.
32	50 N.	100 E.
33	50 N.	120 E.
34	55 N.	140 E.
35	55 N.	160 E.
36	40 N.	25 W.
37	30 N.	0°
38	30 N.	20 E.
39	30 N.	40 E.
40	30 N.	60 E.
41	20 N.	80 E.
42	40 N.	85 E.
43	35 N.	100 E.
44	30 N.	120 E.
45	35 N.	140 E.
46	10 N.	5 W.
47	10 N.	20 E.
48	10 N.	40 E.
49	15 N.	100 E.
50	10 N.	120 E.
51	0°	140 E.
52	10 S.	20 E.
53	10 S.	40 E.
54	5 S.	105 E.
55	15 S.	140 E.
56	20 S.	165 E.
57	30 S.	25 E.
58	25 S.	120 E.
59	35 S.	150 E.
60	40 S.	170 E.
61	20 N.	160 W.
62	20 S.	170 W.
63	20 S.	150 W.
64	15 N.	145 E.
65	10 N.	170 E.

§ 73.704 Daily frequency hour availability table.

Band	Season	Sunspot Numbers								
		0-20	20-35	35-50	50-65	65-80	80-95	95-110	110-125	125-140
Mc/s										
6	June	0	0	0	0	0	0	0	0	0
	March-September	29	21	14	7	0	0	0	0	0
	December	45	47	48	49	50				32
9	June	34	30	27	24	21	16	11	5	2
	March-September	52	42	36	31	27	23	19	12	10
	December	54	50	47	44	42	39	36	33	32
11	June	53	50	48	46	45	39	31	23	14
	March-September	47	50	52	54	55	49	40	31	24
	December	31	34	36	38	39	34	30	26	22
15	June	84	88	91	94	96	87	79	69	58
	March-September	49	54	58	61	64	47	33	21	7
	December	35	35	35	35	35	33	31	29	27
17	June	23	32	40	47	53	59	66	75	84
	March-September	23	22	22	21	20	24	29	34	39
	December	14	18	21	23	25	23	20	17	16
21	June	2	9	14	18	22	39	52	68	80
	March-September	0	9	16	22	27	36	45	56	65
	December	6	11	15	18	21	29	36	47	53
26		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Totals	June	196	209	220	229	237	240	239	239	238
	March-September	200	198	198	196	193	179	166	154	145
	December	185	195	202	207	212	158	153	152	181

[1] No limit.

Administrative Procedure

§ 73.710 Cross reference.

See Subpart D of Part 1, of this chapter, for general requirements as to applications, filing of applications and description of application forms, other forms and information to be filed with the Commission, the manner in which applications are processed, and provisions applying to action on applications. See § 1.1111 of Subpart G of that part for the fees to be paid in connection with applications for facilities in the service covered in this subpart.

§ 73.711 Application for international broadcast stations.

(a) If the application is for a construction permit or for modification of an existing authorization, FCC Form 309 shall be filed; if for a license, FCC Form 310 shall be filed; if for a renewal of license, FCC Form 311 shall be filed.

NOTE: Until these forms are revised, information required by these Rules and not required by the forms shall be submitted as a supplement to the application and will be considered a part thereof.

(b) Authorizations issued to international broadcast stations by the Commission will not specify the frequencies or hours of use, but will be authorizations to permit the construction or use of a particular transmitting equipment combination and related antenna systems for international broadcasting.

NOTE: Requests for the use of frequencies and frequency hours for transmissions to specific target areas should be submitted separately as provided in § 73.702.

(c) In the case of applications for authorizations to permit contract operations, as defined in § 73.701(n), the contracting agency and contract number should be indicated for each operation.

§ 73.712 Notification of filing of applications.

(a) *Radio Astronomy and Radio Research Installations.* In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct a new international broadcast station or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by 39°15′ N on the north, 78°30′ W on the east, 37°30′ N on the south, and 80°30′ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P. O. Box No. 2, Green Bank, West Virginia, 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the twenty-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(b) *Location on Government land.* Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

[*The text of § 73.712 redesignated (a) and (b) added eff. 3-20-67; III(64)-16*]

§ 73.716 Equipment tests.

(a) During the process of construction of an international broadcast station, the permittee after notifying the Commission and Engineer in Charge of the radio district in which the station is located may, without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations. No programming shall be conducted during equipment tests.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 73.718 Normal license period.

All international broadcast station licenses will be issued so as to expire at the hour of 3 a.m. eastern standard time and will be issued for a normal license period of 1 year expiring November 1.

LICENSING POLICIES

§ 73.731 Licensing requirements; necessary showing.

A license for an international broadcast station will be issued only after a satisfactory showing has been made in regard to the following, among others:

(a) That there is a need for the international broadcast service proposed to be rendered.

(b) That the necessary program sources are available to the applicant to render an effective international service.

(c) That directive antennas and other technical facilities will be employed to deliver maximum signals to the target area or areas for which the service is designed.

(d) That the production of the program service and the technical operation of the proposed station will be conducted by qualified persons.

(e) That the applicant is technically and financially qualified and possesses adequate technical facilities to carry forward the service proposed.

(f) That the public interest, convenience and necessity will be served through the operation of the proposed station.

EQUIPMENT

§ 73.751 Power requirement.

No international broadcast station will be authorized to install equipment or licensed for operation with a power less than 50 kilowatts.

§ 73.752 Frequency control.

The transmitter of each international broadcast station shall be equipped with automatic frequency control apparatus so designed and constructed that it is capable of maintaining the operating frequency within 0.003 percent of the assigned frequency.

§ 73.753 Antenna.

The antenna shall be so designed and operated that the signal (field intensity) toward the specific foreign country or countries served shall be at least 3.16 times the average effective signal from the station (power gain of 10).

§ 73.754 Frequency monitors.

(a) The licensee of each international broadcast station shall operate at the transmitter a frequency monitor independent of the frequency control of the transmitter.

(b) The frequency monitor shall be designed and constructed in accordance with good engineering practice and shall have an accuracy sufficient to determine that the operating frequency is within one-half of the allowed tolerance.

§ 73.755 Modulation monitors.

The licensee of each international broadcast station shall have in operation at the transmitter a modulation monitor.

§ 73.756 Required transmitter performance.

(a) The construction, installation, operation, and performance of the international broadcast transmitter system shall be in accordance with good engineering practice.

NOTE: The establishment of specific levels of attenuation for spurious emissions will be the subject of further Rule Making in Docket 10962 pending the completion of additional studies of this matter.

(b) In addition to the requirements of paragraph (a) of this section in the event spurious emissions cause harmful interference, such additional steps as may be necessary to eliminate the interference must be taken immediately by the licensee.

§ 73.757 Auxiliary transmitters.

Upon showing that a need exists for the use of auxiliary transmitters in addition to the regular transmitters of an international broadcast station, a license therefor may be issued provided that:

(a) Auxiliary transmitters may be installed either at the same location as the main transmitters or at another location.

(b) A licensed operator shall be in control whenever auxiliary transmitters are placed in operation.

(c) The auxiliary transmitters shall be maintained so that they may be put into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitters.

(2) The transmission of regular programs during maintenance or modification work on the main transmitter, necessitating discontinuance of its operation for a period not to exceed 5 days. (This includes the equipment changes which may be made without authority as set forth elsewhere in the rules and regulations or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.542 of this chapter.)

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitters shall be tested at least once each week to determine that they are in proper operating condition and that they are adjusted to the proper frequency except that in the case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) of this section is satisfactory. A record shall be kept of the time and result of each test. Such records shall be retained for a period of two years.

(e) The auxiliary transmitters shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitters, but in no event shall it be greater than such power.

§ 73.758 Alternate main transmitters.

The licensee of an international broadcast station may be licensed for alternate main transmitters provided that a technical need for such alternate transmitters is shown and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the construction, installation, operation, and performance requirements of good engineering practice.

§ 73.759 Changes in equipment and antenna system.

Licensees of international broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(b) Specific authority, upon filing formal application (FCC Form 309) therefor, is required for any of the following changes:

(1) Changes involving an increase or decrease in the power rating of the transmitters.

(2) A replacement of the transmitters as a whole.

(3) Change in the location of the transmitting antenna.

(4) Change in location of main studio, if it is proposed to move the main studio to a different city from that specified in the license.

(5) Change in the power delivered to the antenna.

(6) Change in frequency control and/or modulation system.

(c) Other changes, except as above provided for in this section, may be made at any time without the authority of the Commission, provided that the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

TECHNICAL OPERATION AND OPERATORS

§ 73.761 Time of operation.

(a) All international broadcast stations will be licensed for unlimited time operation except as may be directed by the Commission from time to time. In an emergency however, when, due to causes beyond the control of the licensee, it becomes impossible to continue operation, the station may cease operation for a period not to exceed 10 days, provided that the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately after the emergency develops.

(b) Persons desiring to enter into a voluntary sharing arrangement of an international channel may file application therefor with the Commission. Copies of the time-sharing agreement should be filed with the application.

§ 73.762 Station inspection.

The licensee of any international broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 73.763 Station license, posting of.

The original of each station license shall be posted in the transmitter room.

§ 73.764 Operator requirements.

One or more licensed radiotelephone first-class operators shall be on duty at the place where the transmitting apparatus of each station is located and in actual charge thereof whenever it is being operated. The original license (or FCC Form 759) of each station operator shall be posted at the place where he is on duty. The licensed operator on duty and in charge of an international broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator's license which he holds and by the rules and regulations governing such stations. However, such duties shall in nowise interfere with the operation of the broadcast transmitter.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 73.765 Operating power; how determined.

The operating power, and its maintenance, of each international broadcast station shall be in conformity with good engineering practice.

§ 73.766 Modulation.

The percentage of modulation of the transmissions shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice and in no case less than 50 percent nor more than 100 percent on peaks of frequent recurrence during any selection which normally is transmitted at the highest level of the program under consideration.

§ 73.767 Frequency tolerance.

The operating frequencies of international broadcast station transmitters shall, at all times, be maintained within the frequency tolerances specified in § 73.752.

§ 73.768 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of that part.

§ 73.769 Discontinuance of operation.

The licensee of each station, except stations operating in Alaska, shall notify the Engineer in Charge of the radio district in which the station is located of any of the following changes in the status of such station at least two days before such change:

(a) Temporary discontinuance of operation for a period of ten days or more;

(b) The date of resumption of operation after temporary discontinuance of operation for a period of ten days or more;

(c) Permanent discontinuance of operation.

In all cases of permanent discontinuance of operation the licensee shall, in addition to notifying the Engineer in Charge of the radio district in which the station is located of intention to discontinue operation, immediately forward the station license to the Washington, D.C., office of the Commission for cancellation.

OTHER OPERATING REQUIREMENTS

§ 73.781 Logs.

The licensee or permittee of each international broadcast station shall maintain program and operating logs in the following manner:

(a) In the program log:

(1) An entry of the time each station identification announcement (call letters and location) is made.

(2) An entry briefly describing each program broadcast, such as "music", "drama", "speech", etc., together with the name or title thereof, language, and the sponsor's name, with the time of the beginning and ending of the complete program.

(3) An entry showing, for each program of network origin, the name of the network originating the program.

(b) In the operating log:

(1) An entry of the time the station begins to supply power to the antenna, and the time it stops.

(2) An entry of the time the program begins and ends.

(3) An entry of each interruption to the carrier wave, its cause, and duration.

(4) An entry of the following each 30 minutes:

(i) Operating constants of last radio stage of the transmitter (total plate current and plate voltage).

(ii) Frequency monitor reading.

(5) A log must be kept of all experimental operation. If the entries required above are not applicable thereto, then the entries shall be made so as to fully describe the operation.

(c) Where an antenna structure(s) is required to be illuminated, see § 17.38, *Recording of tower light inspections in the station record*, of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 73.782 Retention of logs.

Logs of international broadcast stations shall be retained by the licensee or permittee for a period of two years: *Provided, however*, That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further*, That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 73.783 Logs; by whom kept.

Each log shall be kept by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty. The logs shall be made available upon request by an authorized representative of the Commission.

§ 73.784 Log form.

The log shall be kept in an orderly manner, in suitable form, and in such detail that the data required for the particular class of station concerned are readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

§ 73.785 Correction of logs.

No log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention provided by the rules. Any necessary correction may be made only by the person originating the entry who shall strike out the erroneous portion, initial the correction made, and indicate the date of correction.

§ 73.786 Rough logs.

Rough logs may be transcribed into condensed form, but in such case, the original log or memoranda and all portions thereof shall be preserved and made a part of the complete log.

§ 73.787 Station identification.

(a) A licensee of an international broadcast station shall make station identification announcement (call letters and location), at the beginning and ending of each time of operation and during the operation on the hour.

(b) Station identification, program announcements, and oral continuity shall be made with international significance (language particularly) which is designed for the foreign country or countries for which the service is primarily intended.

(c) Identification announcements during operation need not be made when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or any type of production. In such cases the identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion thereof.

§ 73.788 Service; commercial or sponsored programs.

(a) A licensee of an international broadcast station shall render only an international broadcast service which will reflect the culture of this country and which will promote international goodwill, understanding, and cooperation. Any program solely intended for, and directed to an audience in the continental United States does not meet the requirements for this service.

(b) Such international broadcast service may include commercial or sponsored programs: *Provided*, That:

(1) Commercial program continuities give no more than the name of the sponsor of the program and the name and general character of the commodity, utility or service, or attraction advertised.

(2) In case of advertising a commodity, the commodity is regularly sold or is being promoted for sale on the open market in the foreign country or countries to which the program is directed in accordance with paragraph (c) of this section.

(3) In case of advertising an American utility or service to prospective tourists or visitors to the United States, the advertisement continuity is particularly directed to such persons in the foreign country or countries where they reside and to which the program is directed in accordance with paragraph (c) of this section.

(4) In case of advertising an international attraction (such as a world fair, resort, spa, etc.) to prospective tourists or visitors to the United States, the oral

continuity concerning such attraction is consistent with the purpose and intent of this section.

(5) In case of any other type of advertising, such advertising is directed to the foreign country or countries to which the program is directed and is consistent with the purpose and intent of this section.

(c) The geographic areas to be served by international broadcast stations are the foreign standard target areas shown in Figure 1 of § 73.792, or foreign non-standard target areas as provided in § 73.702(d), and directive antennas shall be employed to direct the transmission to these specific target areas.

(d) An international broadcast station may transmit the program of a standard broadcast station or network system: *Provided*, The conditions in paragraph (b) of this section in regard to any commercial continuities are observed and when station identifications are made, only the call letter designation of the international station is given on its assigned frequency: *And provided further*, That in the case of chain broadcasting the program is not carried simultaneously by another international station (except another station owned by the same licensee operated on a frequency in a different group to obtain continuity of signal service), the signals from which are directed to the same area. (See section 3(p) of the Communications Act of 1934 for the definition of "chain broadcasting.")

§ 73.789 Sponsored programs, announcement of.

(a) When an international broadcast station transmits any matter for which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, such station, the station shall broadcast an announcement that such matter is sponsored, paid for, or furnished, either in whole or in part, and by whom or on whose behalf such consideration was supplied: *Provided, however*, That "service or other valuable consideration" shall not include any service or property furnished without charge or at a nominal charge for use on, or in connecton with, a broadcast unless it is so furnished in consideration for an identification in a broadcast of any person, product, service, trademark, or brand name beyond an identification which is reasonably related to the use of such service or property on the broadcast.

(b) The licensee of each international broadcast station shall exercise reasonable diligence to obtain from its employees, and from other persons with whom it deals directly in connection with any program matter for broadcast, information to enable such licensee to make the announcement required by this section.

(c) In any case where a report (concerning the providing or accepting of valuable consideration by any person for inclusion of any matter in a program intended for broadcasting) has been made to an international broadcast station, as required by section 508 of the Communications Act of 1934, as amended, of circumstances which would have required an announcement under this section had the consideration been received by such international broadcast station, an appropriate announcement shall be made by such station.

(d) In the case of any political program or any program involving the discussion of public controversial issues for which any records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which such matrial or services are used that such records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such programs: *Provided, however*, That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or conclusion of the program.

(e) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received, or by whom the material or services referred to in paragraph (d) of this section are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

(f) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for or furnished, either in whole or in part, or for which material or services referred to in paragraph (d) of this section are furnished, by a corporation, committee, association, or other unincorporated group, the announcement required by this section shall disclose the name of such corporation, committee, association, or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association or other unincorporated group shall be made available for public inspection at the studios or general offices of one of the international broadcast stations carrying the program in each community in which the program is broadcast.

(g) In the case of broadcast matter advertising commercial products or services, an announcement stating the sponsor's corporate or trade name, or the name of the sponsor's product, when it is clear that the mention of the name of the product constitutes a sponsorship identification, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

(h) Commission interpretations in connection with the foregoing rules may be found in the Commission's

Public Notice entitled "Applicability of Sponsorship Identification Rules" (FCC 63-409; 28 F.R. 4732. May 10, 1963) and such supplements as are issued from time to time.

§ 73.790 Rebroadcast.

(a) The licensee of an international broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard, FM noncommercial educational, or FM broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program. The notice and certification of consent must be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of another broadcast station several times during a license period, notice and certification of consent must be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

NOTE: The broadcasting of a program relayed by a remote pickup broadcast station is not considered a rebroadcast.

(b) No licensee of an international broadcast station shall rebroadcast the programs of any other class of United States radio station without written authority having first been obtained from the Commission.

(c) A licensee of an international broadcast station may authorize the rebroadcast of its programs by any station outside the limits of the North American continent without permission from the Commission: *Provided*, That the station rebroadcasting the programs cannot be received consistently in the United States.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

§ 73.791 Supplemental report with renewal application.

A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following:

(a) The number of hours operated on each frequency, listing contract operations and private operations separately.

(b) Outline of reports of reception and interference and conclusions with regard to propagation characteristics of assigned frequencies. (If such information is not available to the applicant in the case of contract operations, a statement to this effect will be considered adequate.)

§ 73.792. *Engineering chart.*

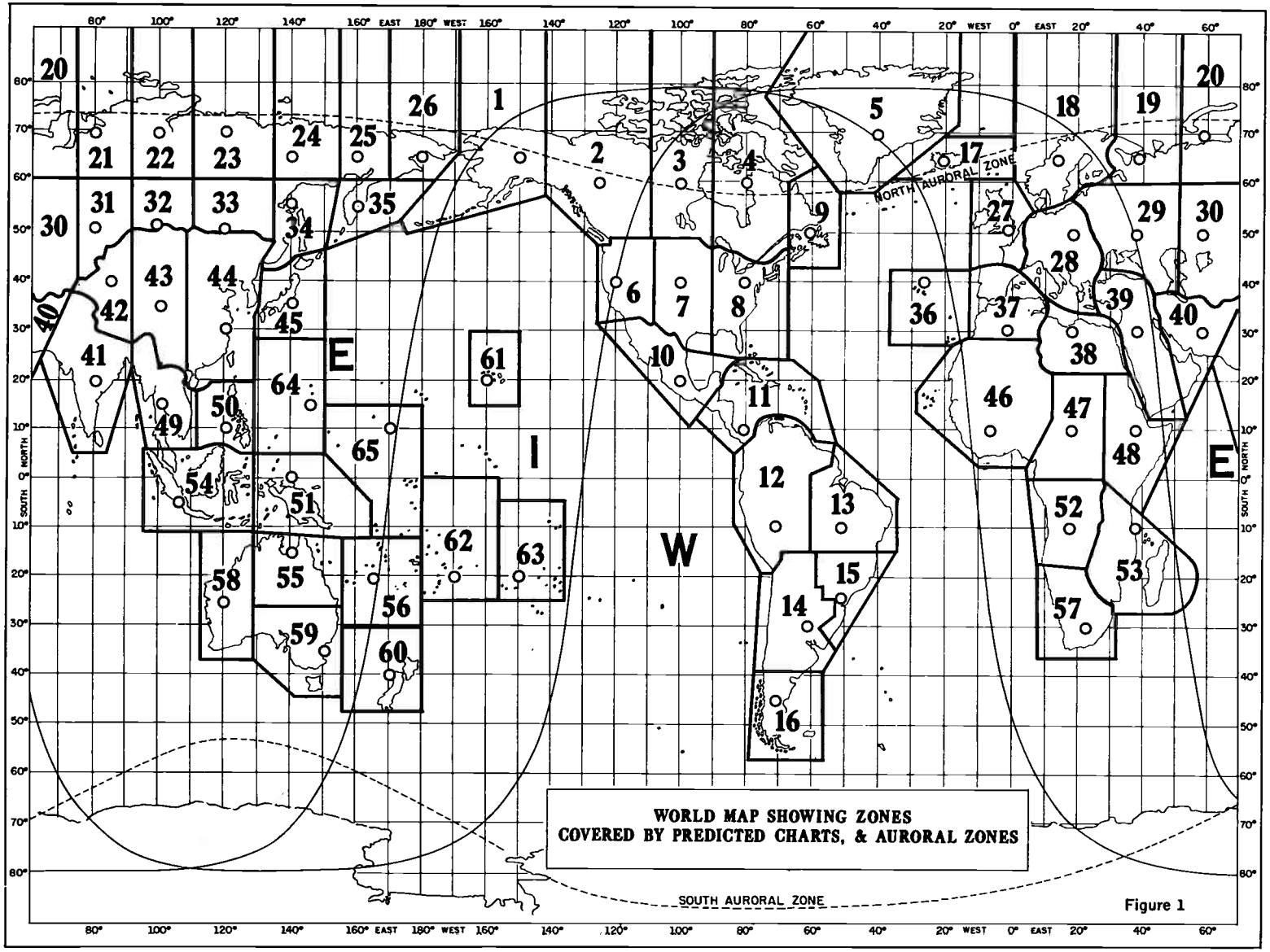


Figure 1

SUBPART G—EMERGENCY ACTION NOTIFICATION SYSTEM AND THE EMERGENCY BROADCAST SYSTEM

AUTHORITY: The provisions of this Subpart G issued under secs. 1, 4, 303, 48 Stat., as amended, 1064, 1066, 1082, 47 U.S.C. 151, 154, 303; E.O. 11092, Feb. 26, 1963.

SCOPE AND OBJECTIVES

§ 73.901 Scope of Subpart.

This subpart provides for an Emergency Action Notification System for all licensees and regulated services of the Federal Communications Commission and the general public, and for an Emergency Broadcast System (EBS). This subpart applies to all broadcast stations governed by this part within any State, the District of Columbia, the Commonwealth of Puerto Rico, and the possessions of the United States, but not those stations located in the Canal Zone.

§ 73.902 Objectives of Subpart.

The objectives of this subpart are to provide an expeditious means for the dissemination of an Emergency Action Notification (with or without an Attack Warning) to licensees and regulated services of the Federal Communications Commission and to the general public during conditions of a grave national crisis or war and to provide for an Emergency Broadcast System (EBS), which would be activated upon release of an Emergency Action Notification by direction of the President of the United States. The Emergency Broadcast System provides for controlled operation of broadcast stations subject to this part, on a voluntary organized basis, to provide the President and the Federal Government, as well as State and local governments, with an expeditious means of communicating with the general public during an Emergency Action Condition.

DEFINITIONS

§ 73.905 Emergency Action Notification System and the Emergency Broadcast System Implementation System.

The system by which all licensees and regulated services of the Federal Communications Commission, and the general public, are notified (with or without an Attack Warning) of the existence of an Emergency Action Condition resulting from a grave national crisis or war. The Emergency Action Notification System and the Emergency Broadcast System Implementation System consist only of the following approved facilities, systems, and arrangements:

(a) *First Method.* From the President of the United States via the White House Communications Agency to the Associated Press (AP) and United Press International (UPI); thence via automatic selective switching and teletype Emergency Action Notification to all standard, FM, and television broadcast and other stations subscribing to the AP and UPI Radio Wire Teletype Networks.

(b) *Second Method.* From the President of the United States via the White House Communications Agency to specified control points of the nationwide commercial Radio and Television Broadcast Networks, the American Telephone and Telegraph Co. and other specified points via a dedicated teletypewriter network; thence to all affiliates via any available internal commercial radio and television network alerting facilities.

(c) *Third Method.* Off-the-air monitoring of specified standard, FM, and television broadcast stations by standard, FM, and television broadcast stations and other licensees and regulated services for receipt of the Emergency Action Notification. All broadcast licensees are required to install, maintain, and operate radio receiving equipment for receipt of the Emergency Action Notification.

(d) *Fourth Method.* Off-the-air monitoring of standard, FM, and television broadcast stations by the general public who are listening or viewing or whose radio or television receivers are equipped for actuation by the Attention Signal to receive the Emergency Action Notification.

§ 73.906 Attention Signal.

The signaling arrangement transmitted by all standard, FM, and television broadcast stations for the purpose of actuating muted standard, FM, and television receivers.

§ 73.907 Emergency Action Notification.

The Emergency Action Notification is the notice (with or without an Attack Warning) to all licensees and regulated services of the Federal Communications Commission and to the general public of the existence of an Emergency Action Condition. The Emergency Action Notification is released upon direction of the President of the United States and is disseminated only via the Emergency Action Notification System.

§ 73.908 Emergency Action Condition.

The Emergency Action Condition is the period of time between the transmission of an Emergency Action Notification and the transmission of the Emergency Action Condition Termination.

73.909 Emergency Action Condition Termination.

The Emergency Action Condition Termination is the notice to all licensees and regulated services of the

Federal Communications Commission and to the general public of the termination of an Emergency Action Condition. The Emergency Action Condition Termination is released upon direction of the President of the United States and is disseminated only via the Emergency Action Notification System.

§ 73.910 Emergency Broadcast System (EBS).

The Emergency Broadcast System (EBS) is a system of facilities and personnel of nongovernment broadcast stations and other authorized facilities licensed or regulated by the Federal Communications Commission, including approved and authorized integral facilities or systems, arrangements, procedures, and interconnecting facilities, which have been authorized by the Commission to operate in a controlled manner during a grave national crisis or war.

§ 73.911 Basic Emergency Broadcast System (EBS) Plan.

The Basic Emergency Broadcast System (EBS) Plan is a plan containing, among other things, approved basic concepts and designated national-level systems, arrangements, procedures, and interconnecting facilities to satisfy the White House Statement of Requirements for Presidential Messages and National Programing and News. Provision is made therein for the development, designation, and approval of facilities, mutually compatible operational arrangements, procedures, and interconnecting facilities to satisfy the Department of Defense (Office of Civil Defense) statement of requirements for the dissemination of emergency information and instructions by Regional, State, and Operational Area (Local) authorities in addition to Presidential Messages and National Programing and News, as set forth above.

§ 73.912 NIAC Order.

A NIAC Order is a service order previously filed with the American Telephone and Telegraph Co. providing for approved arrangements for program origination reconfiguration of the major commercial Radio and Television (aural) Broadcast Networks (except UPI Audio) voluntarily participating in the Emergency Broadcast System (EBS). Broadcast networks presently participating are American Broadcasting Co. (ABC), Columbia Broadcasting System (CBS), Mutual Broadcasting System (MBS), National Broadcasting Co. (NBC), Intermountain Network (IMN), and the United Press International Audio (UPI). Any NIAC Order must meet White House requirements and may be activated only when requested by the White House Communications Agency in accordance with approved established procedures.

§ 73.913 National Defense Emergency Authorization (NDEA).

A National Defense Emergency Authorization (NDEA) is an authorization issued by the Federal Communications Commission only to the licensees of broadcast stations subject to the provisions of this part to permit controlled operation of such stations, as well as associated auxiliary broadcast stations subject to Part 74 of this chapter, on a voluntary organized basis during an Emergency Action Condition, consistent with the provisions of this subpart and the Basic Emergency Broadcast System (EBS) Plan, including the annexes and supplements to that plan. A broadcast station licensee will be issued a National Defense Emergency Authorization only in accordance with the Criteria for Eligibility set forth in the Basic Emergency Broadcast System (EBS) Plan, which will remain valid concurrently with the term of the broadcast station license, so long as the station licensee continues to comply with the Criteria for Eligibility.

§ 73.914 Primary Station National Defense Emergency Authorization (NDEA).

A Primary Station National Defense Emergency Authorization is the authorization issued to one or more broadcast station licensees in an Operational Area assigning such licensees the responsibility for broadcasting a common emergency program for the initial period of, or for the duration of, and Emergency Action Condition. Broadcasts by such stations are intended for direct public reception in an Operational Area, as specified in an approved Detailed State Emergency Broadcast System (EBS) Operational Plan.

§ 73.915 Alternate Station National Defense Emergency Authorization (NDEA).

An Alternate Station National Defense Emergency Authorization is the authorization issued to one or more broadcast licensees in an Operational Area assigning such licensees as specified alternates. An Alternate station will assume broadcasting responsibility in accordance with the Detailed State Emergency Broadcast System (EBS) Operational Plan.

§ 73.916 Primary Relay National Defense Emergency Authorization (NDEA).

A Primary Relay National Defense Emergency Authorization is the authorization issued to one or more broadcast licensees in an Operational Area assigning such licensees the function of emergency program distribution or relay service of emergency programing to stations holding Primary or Alternate Station National Defense Emergency Authorizations, in accordance with an approved Detailed State Emergency Broadcast System (EBS) Operational Plan. A Relay sta-

tion will not generally broadcast emergency program material intended for direct public reception.

§ 73.917 Alternate Relay National Defense Emergency Authorization (NDEA).

An Alternate Relay National Defense Emergency Authorization is the authorization issued to one or more broadcast licensees in an Operational Area assigning such licensees as specified alternates to stations holding Primary Relay National Defense Emergency Authorizations. In the event a Primary Relay station is unable to assume its initial operational functions, or discontinues such operation for any reason, an Altenate Relay station will assume those operational fuctions, in accordance with the "alternate" designations (1st, 2d, 3d, 4th, etc.) contained in an approved Detailed State Emergency Broadcast System (EBS) Operational Plan.

§ 73.918 Non-NDEA Station.

A Non-NDEA Station is a broadcast station which is not voluntarily participating in the Emergency Broadcast System (EBS) and does not hold a National Defense Emergency Authorization. Such stations are required to discontinue operations for the duration of an Emergency Action Condition.

§ 73.919 Detailed Regional Emergency Broadcast System (EBS) Operational Plan.

A Detailed Regional Emergency Broadcast System (EBS) Operational Plan is a plan providing for a regional emergency programing origination capability at the Federal Regional Center in coordination with the State Industry Advisory Committees and integrated into the Detailed State Emergency Broadcast System (EBS) Operational Plans within the Federal Region as a coordinated Regional/State operation. Such a plan shall be in conformity with the provisions of this subpart and the Basic Emergency Broadcast System (EBS) Plan and shall be considered a supplement thereto.

§ 73.920 Detailed State Emergency Broadcast System (EBS) Operational Plan.

A Detailed State Emergency Broadcast System (EBS) Operational Plan is a plan containing the designation of facilities, approved detailed mutually compatible operational arrangements, procedures, instructions, and interconnecting facilities to satisfy the requirements of the President and the Federal Government, as well as State and Operational Area (Local) authorities for communicating with the general public during an Emergency Action Condition. Such a plan includes approved and authorized detailed emergency operational communications facilities, systems, procedures, and interconnecting systems. It shall be in conformity with the provisions of this subpart and the Basic Emergency Broadcast System (EBS) Plan and shall be considered a supplement thereto.

§ 73.921 Operational Area.

An Operational Area is a greographical area which may encompass a number of contiguous communities, as mutually determined by the State Industry Advisory Committee and State authorities, and as delineated in the approved Detailed State Emergency Broadcast System (EBS) Operational Plan.

§ 73.922 Common Program Control Broadcast Station.

A Common Program Control Broadcast Station is a Primary NDEA broadcast station in each Operational Area assigned the responsibility for coordinating the operations for the broadcasting of the common program for the Operational Area. In the event a Common Program Control Broadcast Station is unable for any reason to carry out this responsibility, other Primary and Alternate broadcast stations in the Operational Area will be assigned as the Common Program Control Broadcast Station in progressive order, as set forth in the approved Detailed State Emergency Broadcast System (EBS) Operational Plan.

EMERGENCY ACTIONS

§ 73.931 Notification of Emergency Action Condition.

(a) Authority for release of the Emergency Action Notification rests solely with the President of the United States. This authority has not been delegated, except as set forth in paragraph (b) of this section.

(b) Under the President's responsibility to activate the Emergency Broadcast System (EBS), he has directed that in the event an enemy attack has been detected, the White House Communications Agency shall be authorized to activate the Emergency Broadcast System (EBS) and the Office of Civil Defense shall be authorized to follow with the dissemination of appropriate warning messages.

(c) The Emergency Action Notification will be released by direction of the President and will be disseminated only via the Four Methods of the Emergency Action Notification System in one of the following two forms:

(1) The Emergency Action Notification only without Attack Warning Message.

(2) The Emergency Action Notification with Attack Warning Message.

§ 73.932 Emergency Action Notification Procedures.

All broadcast stations are to be furnished complete instructions on color coded cards (yellow, white, red, blue). Each card specifies the procedure to be followed (texts of these cards are included in Annex V of the EBS Plan). Immediately upon receipt of an Emergency Action Notification (yellow card), all standard, commercial FM, and noncommercial educational FM

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broadcast stations with a transmitter output of over 10 watts, and television broadcast stations, including all such stations operating under equipment or program test authority, will proceed as set forth in paragraph (a) or (b) of this section, as applicable:

(a) Receipt of the Emergency Action Notification without Attack Warning:

(1) Discontinue normal program and follow the detailed transmission procedures set forth on the White Card entitled "Broadcast Message" EAN–1. This White Card has been furnished to all licensed broadcast stations for posting in all studios and broadcast operating positions.

(2) Upon completion of these detailed transmission procedures, all licensed broadcast stations which do not hold a National Defense Emergency Authorization (NDEA) shall discontinue operation for the duration of the Emergency Action Condition.

(b) Receipt of the Emergency Action Notification with Attack Warning:

(1) Discontinue normal program and follow the detailed transmission procedures set forth on the Red Card entitled "Broadcast Message" EAN–2. This Red Card has been furnished to all licensed broadcast stations for posting in all studios and broadcast operating positions.

(2) Upon completion of these detailed transmission procedures, all licensed broadcast stations which do not hold a National Defense Emergency Authorization (NDEA) shall discontinue operation for the duration of the Emergency Action Condition.

(c) A station which normally broadcasts a substantial part of its programing in a language other than English may broadcast the required announcements as well as EBS programing, in such foreign language sequentially with the broadcast in English, provided such station has been authorized to do so as part of an approved Detailed State Emergency Broadcast System (EBS) Operational Plan.

(d) Noncommercial educational FM broadcast stations with a transmitter power output of 10 watts or less will, upon receipt of an Emergency Action Notification, interrupt the program in progress and broadcast the appropriate Emergency Action Notification Message as provided in paragraph (a) of this section, but without the transmission of the Attention Signal. Such stations will then discontinue operation and maintain radio silence in accordance with the Basic Emergency Broadcast System (EBS) Plan.

(e) International broadcast stations will cease broadcasting immediately upon receipt of an Emergency Action Notification and will maintain radio silence in accordance with the Basic Emergency Broadcast System (EBS) Plan.

§ 73.933 Radio Monitoring Requirement.

(a) In order to ensure the effectiveness of the Third Method of the Emergency Action Notification System, all broadcast station licensees must install and operate during their hours of broadcast operation equipment capable of receiving Emergency Action Notifications or Terminations transmitted by other radio broadcast stations. This equipment must be maintained in operative condition, including arrangements for human listening watch or automatic alarm devices, and shall have its termination at each transmitter control point. However, where more than one broadcast transmitter is controlled from a common point by the same operator, only one set of equipment is required at that point.

(b) The off-the-air monitoring assignment of each standard, FM, and television broadcast station is specified in the Detailed State Emergency Broadcast System (EBS) Operational Plan. Particular attention should be paid to avoiding "closed loops" in monitoring assignments.

(c) Prior to commencing routine operation or originating any emissions under program test, equipment test, experimental, or other authorizations or for any other purpose, licensees or permittees shall first ascertain whether an Emergency Action Condition exists and, if so, shall operate only in accordance with the Basic Emergency Broadcast System (EBS) Plan and Detailed State Emergency Broadcast System (EBS) Operational Plan.

§ 73.934 Emergency Broadcast System (EBS) operation during an Emergency Action Condition.

Following completion of the procedures set forth in § 73.932, and upon receipt of emergency programing, authorized participating broadcast stations will immediately begin operations in accordance with the approved Detailed State Emergency Broadcast System (EBS) Operational Plan, as follows:

(a) Primary NDEA stations within an Operational Area will, upon cue from the Common Program Control Broadcast Station, begin broadcast of a common program consisting of either Presidential Messages, State programing, Operational Area (local) programing, National programing and news, or Regional programing in the order or priority indicated, consistent with the provisions of the Basic Emergency Broadcast System (EBS) Plan and the Detailed State Emergency Broadcast System (EBS) Operational Plan.

(b) Alternate NDEA Stations within an Operational Area will stand by in a state of operational readiness to begin operation to broadcast a common program upon cue from a Primary or Alternate NDEA station which is discontinuing operation for any reason, or has discontinued operation with no advance notice, consistent with the provisions of the Basic

Emergency Broadcast System (EBS) Plan and the Detailed State Emergency Broadcast System (EBS) Operational Plan.

(c) Primary Relay NDEA Stations will begin emergency program relay and distribution service in accordance with the provisions of the Basic Emergency Broadcast System (EBS) Plan and the Detailed Regional and State Emergency Broadcast System (EBS) Operational Plans.

(d) Alternate Relay NDEA Stations will stand by in a state of operational readiness to begin emergency program relay and distribution service upon cue from a Primary Relay or Alternate Relay NDEA station which is discontinuing operation for any reason, or has discontinued operation with no advance notice, consistent with the provisions of the Basic Emergency Broadcast System (EBS) Plan and the Detailed Regional and State Emergency Broadcast System (EBS) Operational Plans.

(e) Broadcast stations which do not hold a National Defense Emergency Authorization (NDEA) are not authorized to operate in the Emergency Broadcast System (EBS). Such stations shall discontinue operation and remove their carriers from the air after completion of the Emergency Action Notification Procedures set forth in § 73.932.

(f) Stations in the International Broadcast Service operating under the jurisdiction of the Federal Communications Commission may under certain conditions be issued a NDEA by the Federal Communications Commission with concurrence of the Director, Office of Emergency Planning, and will transmit only Federal Government broadcasts or communications. The station's carrier must be removed from the air during periods of no broadcast or communications transmissions.

(g) No station shall broadcast its call letters during an Emergency Action Condition. Only State and Operational Area identifications shall be given.

(h) All stations operating and identified with a particular Operational Area will broadcast a common program.

(i) Stations are exempted from keeping operating or maintenance logs during an Emergency Action Condition. Program logs should be maintained where possible.

(j) Broadcast stations are specifically exempt from complying with § 73.57 (pertaining to maintenance of operating power) while operating under their National Defense Emergency Authorization.

§ 73.935 Emergency Broadcast System (EBS) Programing Priorities.

(a) Program priorities for the Emergency Broadcast System (EBS) are as follows:

Priority One—Presidential Messages.
Priority Two—State Programing.
Priority Three—Operational Area (Local) Programing.
Priority Four—National Programing and News and Regional Programing.

(b) The Common Program Control Broadcast Station is responsible for coordinating the operations of the participating stations in the Operational Area in the broadcast of a common program for the Operational Area in accordance with the program priorities set forth in paragraph (a) of this section.

(c) All authorized participating stations that remain on the air in accordance with the Basic Emergency Broadcast System (EBS) Plan and the Detailed State Emergency Broadcast System (EBS) Operational Plan must carry Presidential Messages "live" at time of transmission.

(d) The nationwide commercial Radio and Television (aural) Broadcast Network program distribution facilities shall be reserved exclusively for the distribution of Presidential Messages (Priority One) and National Programing and News (Priority Four). National Programing and News which is not broadcast at the time of original transmission shall be recorded locally by the Common Program Control Broadcast Station for broadcast at the earliest opportunity consistent with Operational Area requirements.

(e) Regional Programing (Priority Four), which utilizes the approved interconnecting distribution facilities for State Programing, as provided in the Detailed State Emergency Broadcast System (EBS) Operational Plans within the Federal Region, is an integrated and coordinated Regional/State operation. If not broadcast at the time of original transmission, Regional/State Programing shall be recorded at the Common Program Control Broadcast Station in each Operational Area for broadcast at the earliest opportunity.

§ 73.940 Termination of Emergency Action Condition.

Upon receipt of an Emergency Action Condition Termination, all stations operating in the Emergency Broadcast System (EBS) will broadcast the following Termination Message twice:

This concludes operations under the Emergency Broadcast System. All broadcast stations may now resume normal broadcast operation.

Unlimited time stations operating in the Emergency Broadcast System (EBS) will transmit the Termination Message twice, and then resume normal operation. Daytime Only and Limited Time broadcast stations operating in the Emergency Broadcast System (EBS) shall also broadcast the Termination Message twice, then operate in accordance with their regular authorization.

PARTICIPATION

§ 73.950 Participation in the Emergency Broadcast System (EBS).

(a) Any licensee desiring to participate voluntarily in the Emergency Broadcast System (EBS) must prepare in narrative form an application directed to the establishment of eligibility based upon the criteria set forth in the Basic Emergency Broadcast System (EBS) Plan. The application should be mailed to the appropriate FCC Regional Liaison Officer for processing. The Federal Communications Commission may then issue a National Defense Emergency Authorization to the licensee authorizing participation in the Emergency Broadcast System (EBS) consistent with the provisions of the approved Detailed Regional and State Emergency Broadcast System (EBS) Operational Plans.

(b) Any station participating in the Emergency Broadcast System (EBS) may withdraw from participation by giving 30 days written notice and by submitting its National Defense Emergency Authorization to the Federal Communications Commission through the appropriate FCC Regional Liaison Officer for cancellation.

(c) Any station that is denied participation in the Emergency Broadcast System (EBS) for any reason may appeal to the Federal Communications Commission for review.

TESTS

§ 73.961 Tests of the Emergency Action Notification System.

Tests of the Emergency Action Notification System will be made at regular intervals with appropriate entries in the station operating log, as follows:

(a) Test transmissions using the First Method of the Emergency Action Notification System utilizing the facilities of the Associated Press (AP) and United Press International (UPI) Radio Wire Teletype Networks will be conducted twice each week. These tests will be conducted on Saturday at 9:30 a.m., e.s.t., and on Sunday at 8:30 p.m., e.s.t. The Blue Card, identified as First Method EAN Tests, which has been furnished to all standard, FM, and television broadcast stations, sets forth details of these test transmissions.

(b) Test transmissions using the Second Method of the Emergency Action Notification System via dedicated teletype network between the White House Communications Agency, specified control points of the nationwide commercial Radio and Television Broadcast Networks, the American Telephone and Telegraph Co. and other specified points will be conducted once each week at a selected time in accordance with the test procedures set forth in the Emergency Broadcast System (EBS) Standing Operating Procedures (EBS SOP–3). Testing of the internal alerting facilities of the nationwide commercial Broadcast Networks is not necessary since these facilities are utilized in day-to-day operations.

(c) Test transmissions of the Third Method of the Emergency Action Notification System will be conducted by standard, FM, and television broadcast stations once each week on an unscheduled basis between the hours of 8:30 a.m. and local sunset. Noncommercial educational FM broadcast stations with a transmitter output of 10 watts or less are not required to conduct these tests. The Blue Card, identified as Third Method EAN Tests, which has been furnished to all standard, FM, and television broadcast stations, sets forth details of these test transmissions.

§ 73.962 Tests of Approved Interconnecting Systems and Facilities.

Tests of approved interconnecting systems and facilities voluntarily participating in the Emergency Broadcast System (EBS) will be conducted as set forth below. Appropriate entries shall be made in the station operating log.

(a) National program distribution interconnecting systems and facilities (the total NIAC Order No. 1 program distribution facilities) will be tested on a scheduled basis. This test consists of a closed circuit transmission from 12:40 to 12:50 p.m., Washington, D.C., time on the first Wednesday of each month except when such a Wednesday is a national holiday, then the test is conducted on the following Thursday. Due to varying program scheduling of the commercial Radio Broadcast Networks involved, the individual network facilities shall remain as separate entities for these tests. The audio networks associated with the video networks of ABC–TV, CBS–TV, or NBC–TV shall not be utilized nor are the Telephone Companies authorized to add any of the unaffiliated stations participating in the Emergency Broadcast System (EBS). The American Telephone and Telegraph Co. is authorized to interconnect the facilities of the Intermountain (IMN) Radio Network to any one of the nationwide commercial Radio Broadcast Networks for the duration of these closed circuit tests, then remove such interconnections. Periodic tests of program distribution facilities for other NIAC Orders (No. 2 through No. 63) may be conducted as desired and will be based on thoroughly coordinated arrangements between all parties involved.

(b) Tests of regional program distribution interconnecting systems and facilities will be conducted periodically on a closed circuit basis as a coordinated Regional/State operation and as provided in approved Detailed Regional and State Emergency Broadcast System (EBS) Operational Plans.

(c) Tests of State program distribution interconnecting systems and facilities should be conducted on

a day-to-day basis as periodic broadcast operations such as State Weather Networks, or State Association of Broadcasters Networks. Letters granting rebroadcast authority shall be exchanged between all participating licensees in accordance with the provisions of section 325(a) of the Communications Act of 1934, as amended, and Part 73 of this chapter.

(d) Operational Area common program distribution interconnecting systems, facilities, and procedures shall be tested on a closed circuit basis to insure emergency readiness of such interconnecting facilities in accordance with approved Detailed State Emergency Broadcast System (EBS) Operational Plans.

WEATHER WARNINGS

§ 73.971 Emergency Weather Warnings.

Upon receipt of notification from the U.S. Weather Bureau of an Emergency Weather Warning of a condition of immediate danger to life and property, all standard, commercial FM, and television broadcast stations may, at their option, during authorized hours of operation only, transmit the Emergency Action Notification Attention Signal as follows:

(a) Cut the transmitter carrier for 5 seconds. (Sound carrier only for TV stations.)

(b) Return carrier to the air for 5 seconds.

(c) Cut transmitter carrier for 5 seconds. (Sound carrier only for TV stations.)

(d) Return carrier to the air.

(e) Broadcast 1,000-cycle steady-state tone for 15 seconds; then, proceed to broadcast the text of the Emergency Weather Warning issued by the U.S. Weather Bureau, as provided in §§ 73.90 and 73.296, respectively. Nothing in this section shall be construed as permitting a standard broadcast station licensed to operate daytime only or limited time to operate during unauthorized hours.

NETWORK CONNECTION

§ 73.981 Participation by Telephone Companies.

(a) Telephone Companies which have facilities available in place may, without charge, connect an unaffiliated broadcast station to commercial networks operated by ABC, CBS, MBS, NBC, or IMN for the duration of an Emergency Action Condition: *Provided,* That:

(1) The station is authorized by the Federal Communications Commission to participate in the Emergency Broadcast System (EBS) under § 73.950, and is required by an approved Detailed State Emergency Broadcast System (EBS) Operational Plan to carry Presidential or National Programing and News.

(2) The station has in service a local channel from the station studio or transmitter directly to the nearest telephone company Principal Central Office (toll test).

(b) During an Emergency Action Condition and for testing the arrangements for the origination of Presidential Messages and National Programing and News as provided for in NIAC Orders No. 1 through No. 63, telephone companies which have facilities in place may, without charge, connect an originating source associated with an appropriate NIAC Order Number from the nearest Telephone Company Exchange to a selected Toll Test Center, thence to the authorized commercial Radio and Television (aural) Broadcast Networks: *Provided:*

(1) That the originating source has in service a telephone company local channel from the originating point to the nearest Telephone Company Exchange.

(2) That a NIAC Order covering this service is requested by the White House Communications Agency in accordance with the provisions of the Basic Emergency Broadcast System (EBS) Plan.

(c) Upon issuance of the Emergency Action Condition Termination, or completion of tests as provided in paragraph (b) of this section, such telephone companies shall disconnect the unaffiliated broadcast stations and the authorized origination source and then restore the Broadcast Networks to their original configuration as individual entities.

(d) Closed circuit tests of technical program origination and distribution channels associated with NIAC Order No. 1 will be conducted as provided in § 73.962(a). These tests are in conformance with the provisions of this section.

(e) Closed circuit tests of technical program origination and distribution channels associated with NIAC Orders No. 2 through No. 63 will be conducted when considered desirable and when advance coordinated arrangements and voluntary agreement is accomplished among the White House Communications Agency, the nationwide commercial Radio Broadcast Networks, and the AT&T. These tests are in conformance with the provisions of this section.

(f) Every such carrier rendering any such free service shall make and file, in duplicate, with the Federal Communications Commission, on or before the 31st day of July and on or before the 31st day of January in each year, reports covering the periods of 6 months ending on the 30th day of June and the 31st day of December, respectively, next prior to said dates. These reports shall show the call letters and locations of the broadcast stations to which free service was rendered pursuant to this rule and the charges in dollars which would have accrued to the carrier for such service rendered if charges therefor had been collected at the published tariff rates.

[*Subpart G (§ 73.901—73.981) amended eff. 8-4-67; III(64)-18.*]

RULES AND REGULATIONS

Part 74 | *Experimental, Auxiliary, and Special Broadcast Services*

JANUARY 1964

FEDERAL COMMUNICATIONS COMMISSION

NOTE: Part 4 was redesignated as Part 74 by Order adopted December 13, 1963, effective December 21, 1963. Section numbers were not otherwise changed.

Contents—PART 74

Subpart G—Television Broadcast Translator Stations

Subpart H—Television Broadcast Booster Stations

Subpart I—Instructional Television Fixed Services

Subpart J—Community Antenna Relay Stations

Subpart K—Community Antenna Television Systems

AUTHORITY: §§ 74.1 to 74.1109 issued under sec. 4, 303, 48 Stat. 1066, as amended, 1082, as amended; 47 U.S.C. 154, 303. Interpret or apply secs. 301, 303, 307, 48 Stat. 1081, 1082, as amended, 1083, as amended; 47 U.S.C. 301, 303, 307. Other statutory provisions constituting authority for or interpreted or applied by specific sections are cited to text.

GENERAL

§ 74.1 Services covered by this part.

(a) *Experimental and developmental broadcast.*

(1) Experimental television broadcast (Subpart A).

(2) Experimental facsimile broadcast (Subpart B).

(3) Developmental broadcast (Subpart C).

(b) *Auxiliary broadcast.*

(1) Remote pickup broadcast (Subpart D).

(2) Standard and FM broadcast STL and FM intercity relay (Subpart E).

(3) Television pickup (Subpart F).

(4) Television STL (Subpart F).

(5) Television intercity relay (Subpart F).

(c) *Special broadcast.* Television broadcast translator (Subpart G).

(2) Television broadcast booster (Subpart H).

(3) Instructional television fixed (Subpart I).

(d) Community antenna relay stations (Subpart J).

(e) Community antenna television systems (Subpart K).

[*§ 74.1(c)(4) deleted, and pars. (d) and (e) adopted eff. 4-18-66; III(64)-12*]

ADMINISTRATIVE PROCEDURE

§ 74.11 Cross reference.

See Subpart D of Part 1 of this chapter for general requirements as to applications, filing of applications, and description of forms; see § 1.1111 of Subpart G of that part for the fees to be paid in connection with applications for facilities in the services covered in this part; and with respect to Subpart K of this part, except where specific provision is made regarding practice and procedure, the provisions of Subpart A of Part 1 are applicable.

[*§ 74.11 amended eff. 2-28-67; III(64)-16*]

§ 74.12 Notification of filing of applications.

(a) *Radio Astronomy and Radio Research Installations.* In order to minimize harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocahontas County, West Virginia, and at the Naval Radio Research Observatory at Sugar Grove, Pendleton County, West Virginia, an applicant for authority to construct any class of station covered in § 74.1 except remote pickup broadcast mobile and TV pickup stations, or for authority to make changes in the frequency, power, antenna height, or antenna directivity of an existing station within the area bounded by 39°15′ N on the north, 78°30′ W on the east, 37°30′ N on the south, and 80°30′ W on the west shall, at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box No. 2, Green Bank, West Virginia 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of 20 days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(b) *Location on Government land.* Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

[*The text of § 74.12 redesignated (a) and (b) added eff. 3-20-67; III(64)-16*]

§ 74.13 Equipment tests.

(a) During the process of construction of any class of radio station listed in this part, the permittee, after notifying the Commission and Engineer in Charge of the district in which the station is located, may, without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations, and the applicable engineering standards.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 74.14 Service or program tests.

(a) Upon completion of construction of a radio station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and applicable engineering standards, and when an application for station license has been filed showing the station to be in satisfactory operating condition, the permittee of any class of station listed in this part may, without further authority of the Commission, conduct service

or program tests: *Provided*, That the Engineer in Charge of the district in which the station is located and the Commission are notified at least two (2) days (not including Sundays and Saturdays and legal holidays when the offices of the Commission are not open) in advance of the beginning of such operation.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of such tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked, program test authority will continue valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) The authorization for tests embodied in this section shall not be construed as approval by the Commission of the application for station license.

§ 74.15 License period.

(a) Licenses for the following classes of stations normally will be issued for a period of one year expiring as follows:

(1) Experimental television broadcast station: April 1.

(2) Experimental facsimile broadcast station: March 1.

(3) Developmental broadcast station: May 1.

(b) Licenses for stations in the Auxiliary Broadcast Services will be issued for a period running concurrently with the licenses of the broadcast station with which such auxiliary stations are used. A remote pickup broadcast station licensed for use with more than one broadcast station will be licensed for a period running concurrently with the license of the broadcast station having the longer license period.

(c) The license of a television broadcast booster station will be issued for a period running concurrently with the license of the television broadcast station (Primary Station) with which it is used.

(d) On and after the dates specified in this paragraph for stations located in the various States, licenses for television broadcast translator stations ordinarily will be issued for a period of three years, and, when regularly renewed, at three year intervals thereafter (initial licenses and renewals issued prior to the applicable date specified in this paragraph will normally run until such applicable date): *Provided, however*, That if the Commission finds that the public interest, convenience, and necessity will be served thereby, it may issue either an initial license or a renewal thereof for a lesser term. When regularly issued or renewed, licenses will be issued to expire at the hour of 3:00 a.m., eastern standard time, in accordance with the following schedule, and at three year intervals thereafter:

(1) For stations located in Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Delaware, West Virginia, Ohio, and the District of Columbia: June 1, 1962.

(2) For stations located in Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Missouri, Kentucky, Tennessee, Indiana, Illinois, Michigan, Wisconsin, Puerto Rico, and the Virgin Islands: August 1, 1962.

(3) For stations located in Oklahoma and Texas: October 1, 1962.

(4) For stations located in Kansas and Nebraska: December 1, 1962.

(5) For stations located in Iowa and South Dakota: February 1, 1963.

(6) For stations located in Minnesota and North Dakota: April 1, 1963.

(7) For stations located in Wyoming: June 1, 1963.

(8) For stations located in Montana: August 1, 1963.

(9) For stations located in Idaho: October 1, 1963.

(10) For stations located in Washington: December 1, 1963.

(11) For stations located in Oregon: February 1, 1964.

(12) For stations located in Alaska, Hawaii and Guam: April 1, 1964.

(13) For stations located in Colorado: June 1, 1964.

(14) For stations located in New Mexico: August 1, 1964.

(15) For stations located in Utah: October 1, 1964.

(16) For stations located in Arizona: December 1, 1964.

(17) For stations located in Nevada: February 1, 1965.

(18) For stations located in California: April 1, 1965.

(e) Licenses issued before June 1, 1962, for television translator stations located in the states listed in paragraph (d) (2) through (13) of this section, regardless of the expiration date specified in the license, will expire at 3:00 a.m., eastern standard time, on the dates specified in those subparagraphs for the respective states.

(f) Licenses for instructional television fixed stations will be issued for a period of 5 years beginning with the date of the grant.

(g) Licenses for community antenna relay stations will be issued for a period not to exceed five years. On and after February 1, 1966, licenses for community antenna relay stations ordinarily will be issued for a period expiring on February 1, 1971, and, when regularly renewed, at five year intervals thereafter. When a license is granted subsequent to the last renewal date for the community antenna relay class of stations, the license will be issued only for the unexpired period of the current license term of such class. The license renewal date applicable to this class of stations may be varied as necessary to permit the orderly processing of renewal applications, and individual station licenses within the class may be granted or renewed for a shorter period of time than that generally prescribed for the class, if the Commission finds that public interest, convenience, and necessity would be served by such action.

[§ 74.15(g) *as adopted eff. 11-22-65; III(64)-11*]

§ 74.16 Temporary extension of station licenses.

Where there is pending before the Commission any application, investigation or proceeding which, after hearing, might lead to or make necessary the modification of, revocation of, or the refusal to renew an existing auxiliary or experimental broadcast station license or a television broadcast translator station license, the Commission may, in its discretion, grant a temporary extension of such license: *Provided, however,* That no such temporary extension shall be construed as a finding by the Commission that the operation of any radio station thereunder will serve public interest, convenience, and necessity beyond the express terms of such temporary extension of license: *And provided further,* That such temporary extension of license will in no wise affect or limit the action of the Commission with respect to any pending application or proceeding.

Special Provisions

§ 74.21 Operation during an emergency.

(a) In an emergency where normal communication facilities have been disrupted or destroyed by storms, floods, or other disasters, the stations licensed under the rules of this part may be operated for the purpose of transmitting essential communications intended to alleviate distress, dispatch aid, assist in rescue operations, maintain order, or otherwise promote the safety of life and property. In the course of such operation, a station of any class may communicate with stations of other classes and in other services. However, such operation shall be conducted only on the frequency or frequencies for which the station is licensed and the power used shall not exceed the maximum power authorized in the station license. In cases where such operation involves the use of frequencies shared with other stations, licensees are expected to cooperate fully to avoid unnecessary or disruptive interference.

(b) Whenever such operation involves communications of a nature other than those for which the station is licensed to perform, the licensee shall, at the earliest practicable time, notify the Commission in Washington, D.C., and the Engineer-in-charge of the radio district in which the operation occurs, of the nature of the emergency and the use to which the station is being put and shall subsequently notify the same offices when the emergency operation has been terminated.

(c) Emergency operation undertaken pursuant to the provisions of this section shall be discontinued as soon as substantially normal communications facilities have been restored. The Commission may at any time order discontinuance of such operation.

§ 74.22 Use of common antenna structure.

The simultaneous use of a common antenna structure by more than one station authorized under the rules of any subpart of this part, or by one or more such stations and one or more stations of any other class or service, may be authorized: *Provided, however,* That each permittee or licensee using such structure shall be responsible for painting and lighting of the structure when obstruction marking is required by the Commission.

[§ 74.22 *as adopted 9-20-65; III(64)10*]

SUBPART A—EXPERIMENTAL TELEVISION BROADCAST STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.101 Experimental television broadcast station.

The term "experimental television broadcast station" means a station licensed for experimental transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public.

NOTE: The transmission of synchronized sound (aural broadcast) is considered an essential phase of television broadcast and one license will authorize both visual and aural broadcast.

§ 74.102 Purpose.

A license for an experimental television broadcast station will be issued for the purpose of carrying on research and experimentation for the advancement of television broadcasting which may include tests of equipment, training of personnel, and experimental programs as are necessary for the experimentation.

§ 74.103 Frequency assignment.

(a) Frequencies allocated to television broadcasting and the various categories of television auxiliary stations, in the Commission's Table of Frequency Allocations (Part 2 of this chapter), may be assigned respectively to experimental television broadcast and experimental television auxiliary stations.

(b) More than one frequency may be assigned upon a satisfactory showing of the need therefor.

(c) Frequencies best suited to the purpose of the experimentation and on which there appears to be the least likelihood of interference to established stations shall be selected.

(d) In a case of important experimentation which cannot be feasibly conducted on frequencies allocated to television broadcasting or the various categories of television auxiliary stations, the Commission may authorize an experimental television station of any class to operate on other frequencies upon a satisfactory showing of the need therefor and a showing that the proposed operation can be conducted without causing harmful interference to established services: *Provided, however*, That experimental operation which looks toward the development of radio transmitting apparatus or the rendition of any type of regular service using such frequencies will not be authorized prior to a determination by the Commission that the development of such apparatus or the rendition of such service would serve the public interest.

ADMINISTRATIVE PROCEDURE

§ 74.111 Cross reference.

See §§ 74.11 to 74.16.

§ 74.112 Supplementary statement with application for construction permit.

A supplementary statement shall be filed with and made a part of each application for construction permit for any experimental television broadcast station confirming the applicant's understanding:

(a) That all operation upon the frequency requested is for experimental purposes only.

(b) That the frequency requested may not be the best suited to the particular experimental work to be carried on.

(c) That the frequency requested need not be allocated for any service that may be developed as a result of the experimental operation.

(d) That any frequency which may be assigned is subject to change without advance notice or hearing.

(e) That any authorization issued pursuant to the application may be cancelled at any time without notice or hearing.

(Sec. 319, 48 Stat. 1089, as amended; 47 U.S.C. 319)

§ 74.113 Supplementary reports with application for renewal of license.

(a) A report shall be filed with each application for renewal of experimental television broadcast station license which shall include a statement of each of the following:

(1) Number of hours operated.

(2) Full data on research and experimentation conducted including the types of transmitting and studio equipment used and their mode of operation.

(3) Data on expense of research and operation during the period covered.

(4) Power employed, field intensity measurements and visual and aural observations and the types of instruments and receivers utilized to determine the station service area and the efficiency of the respective types of transmissions.

(5) Estimated degree of public participation in reception and the results of observations as to the effectiveness of types of transmission.

(6) Conclusions, tentative and final.

(7) Program for further developments in television broadcasting.

(8) All developments and major changes in equipment.

(9) Any other pertinent developments.

(b) Special or progress reports shall be submitted from time to time as the Commission shall direct.

(Sec. 308, 48 Stat. 1084, as amended; 47 U.S.C. 308)

LICENSING POLICIES

§ 74.131 Licensing requirements, necessary showing.

(a) An applicant for a new experimental television broadcast station, change in facilities of any existing station, or modification of license is required to make a satisfactory showing of compliance with the general requirements of the Communications Act of 1934, as amended, as well as the following:

(1) That the applicant has a definite program of research and experimentation in the technical phases of television broadcasting which indicates reasonable promise of substantial contribution to the developments of the television art.

(2) That upon the authorization of the proposed station the applicant can and will proceed immediately with its program of research and experimentation.

(3) That the transmission of signals by radio is essential to the proposed program of research and experimentation.

(4) That the program of research and experimentation will be conducted by qualified personnel.

(b) A license for an experimental television broadcast station will not authorize exclusive use of any frequency. In case interference would be caused by simultaneous operation of stations licensed experimentally, such licensees shall endeavor to arrange satisfactory time division. If such agreement cannot be reached, the Commission will determine and specify the time division.

(c) A license for an experimental television broadcast station will be issued only on the condition that no objectionable interference will result from the transmissions of the station to the regular program transmissions of television broadcast stations. It shall at all times be the duty of the licensee of an experimental television broadcast station to ascertain that no interference will result from the transmissions of its station. With regard to interference with the transmissions of an experimental television broadcast station or the experimental or test transmissions of a television broadcast station, the licensees shall make arrangements for operations to avoid interference.

§ 74.132 Power limitations.

Experimental television broadcast stations will be licensed with a power output not in excess of that necessary to render satisfactory service. The license for these stations will specify the maximum authorized power. The operating power shall not be greater than necessary to carry on the service and in no event more than 5 percent above the maximum power specified. Engineering standards have not been established for these stations. The efficiency factor for the last radio stage of transmitters employed will be subject to individual determination but shall be in general agreement with values normally employed for similar equipment operated within the frequency range authorized.

§ 74.133 Emission authorized.

In case emission of a different type than that specified in the license is necessary or desirable in carrying on any phases of experimentation, application setting out fully the needs shall be made by informal application.

§ 74.134 Multiple ownership.

No persons (including all persons under common control) shall control, directly or indirectly, two or more experimental television broadcast stations (other than television relay broadcast stations) unless a showing is made that the character of the programs of research requires a licensing of two or more separate stations.

Equipment

§ 74.151 Equipment changes.

The licensee of an experimental television broadcast station may make any changes in the equipment that are deemed desirable or necessary provided:

(a) That the operating frequency is not permitted to deviate more than the allowed tolerance;

(b) That the emissions are not permitted outside the authorized band;

(c) That the power output complies with the license and the regulations governing the same; and

(d) That the transmitter as a whole or output power rating of the transmitter is not changed.

Technical Operation and Operators

§ 74.161 Frequency tolerance.

The licensee of an experimental television broadcasting station shall maintain the operating frequency of its station within the tolerance specified in the instrument of authorization.

§ 74.162 Frequency monitors and measurements.

The licensee of an experimental television broadcast station shall provide the necessary means for determining that the frequency of the station is within the allowed tolerance. The date and time of each frequency check, the frequency as measured, and a description or identification of the method employed shall be entered in the station log. Sufficient observations shall be made to insure that the assigned carrier frequency is maintained within the prescribed tolerance.

§ 74.163 Time of operation.

(a) A licensee of an experimental television broadcast station is not required to adhere to a regular schedule of operation but shall actively conduct a program of research and experimentation.

(b) The program of research and experimentation as offered by an applicant in compliance with the requirements for obtaining a license for an experimental television broadcast station shall be adhered to in the main, unless the licensee is authorized to do otherwise by the Commission.

(c) The Commission may from time to time require that a station licensed experimentally conduct such experiments as are deemed desirable and reasonable for the development of the service.

§ 74.164 Station inspection.

The licensee of each experimental television broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 74.165 Station and operator licenses; posting of.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation of the station shall be posted so that all terms thereof are visible in a conspicuous place in the room in which the transmitter is located. However, if the station is licensed for portable-mobile operation, the station license or a photo copy thereof shall be affixed to the equipment or kept in the possession of the operator on duty at the transmitter. If a photo copy is used, the original license shall be available for inspection by an authorized Government representative.

(b) The original license of each station operator shall be posted at the place where he is on duty: *Provided, however,* If the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing that class of station and is there available for inspection by an authorized Commission representative, or if the station operated is licensed for portable-mobile operation, a verification card (Form 758–F) is acceptable in lieu of the posting of such license.

NOTE: The term portable-mobile as here used is intended to include any type of portable or mobile operation.

§ 74.166 Operator requirements.

One or more radio operators holding radiotelephone first-class or radiotelephone second-class operator licenses shall be on duty at the place where the transmitting apparatus of any experimental television broadcast station is located and in actual charge of its operation. The licensed operator on duty and in charge of a broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such stations. However, such duties shall in no wise interfere with the operation of the broadcast transmitter.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.167 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marketing, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41 and 17.42 of this chapter.

§ 74.168 Additional orders.

In case the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

OTHER OPERATING REQUIREMENTS

§ 74.181 Station records.

(a) The licensee of each experimental television broadcast station shall maintain adequate records of the operation, including:

(1) Hours of operation.

(2) Program transmitted.

(3) Frequency check.

(4) Pertinent remarks concerning transmission.

(5) In case of relay or pickup station, an entry giving points of program origination and receiver location shall be included.

(6) Research and experimentation conducted.

(b) Where an antenna structure(s) is required to be illuminated, see § 17.38 of this chapter.

(c) Station records shall be retained for a period of two years.

§ 74.182 Charges.

No charges, either direct or indirect, shall be made by the licensee of an experimental television broadcast station for the production or transmission of either aural or visual programs transmitted by such station except that this section shall not apply to the transmission of commercial programs by an experimental television relay or pickup broadcast station for retransmission by a television broadcast station.

§ 74.183 Station identification.

Each experimental television broadcast station shall make aural and visual announcements of its call letters and location at the beginning and end of each period of operation, and during operation, at least once every hour.

§ 74.184 Rebroadcasts.

(a) The term "rebroadcast" means reception by radio of the program of a radio station (including a television station), and the simultaneous or subsequent retransmission of such program by a broadcast station.

NOTE 1: As used in this section, the word "program" includes any complete program or part thereof.

NOTE 2: In case a program is transmitted from its point of origin to a broadcast station primarily by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast. The broadcasting of a program relayed by a remote pickup broadcast station is not considered a rebroadcast.

(b) No licensee of any experimental television broadcast station shall rebroadcast the program of any radio station without written authority having first been obtained from the Commission upon application. Informal application may be employed.

(c) An application for authority to rebroadcast the program of any radio station shall be accompanied by written consent or certification of consent of the licensee of the station originating the program.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

SUBPART B—EXPERIMENTAL FACSIMILE BROADCAST STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.201 Facsimile broadcast station.

The term "facsimile broadcast station" means a station licensed to transmit images of still objects for record reception by the general public.

§ 74.202 Frequency assignment.

(a) Frequencies allocated to broadcasting and the various categories of broadcast auxiliary stations, in the Commission's Table of Frequency Allocations (Part 2 of this chapter), may be assigned respectively to experimental facsimile broadcast or experimental facsimile broadcast auxiliary stations.

(b) More than one frequency may be assigned upon a satisfactory showing of the need therefor.

(c) Frequencies best suited to the purpose of the experimentation and on which there appears to be the least likelihood of interference to established stations shall be selected.

(d) In a case of important experimentation which cannot be feasibly conducted on frequencies allocated to broadcasting or the various categories of broadcast auxiliary stations, the Commission may authorize an experimental facsimile broadcast station of any class to operate on other frequencies upon a satisfactory showing of the need therefor and a showing that the proposed operation can be conducted without causing harmful interference to established services: *Provided, however,* That experimental operation which looks toward the development of radio transmitting apparatus or the rendition of any type of regular service using such frequencies will not be authorized prior to a determination by the Commission that the development of such apparatus or the rendition of such service would serve the public interest.

ADMINISTRATIVE PROCEDURE

§ 74.211 Cross reference.

See §§ 74.11 to 74.16.

§ 74.212 Supplementary statement with application for construction permit.

A supplementary statement shall be filed with and made a part of each application for construction permit for any experimental facsimile broadcast station confirming the applicant's understanding:

(a) That all operation upon the frequency requested is for experimental purposes only.

(b) That the frequency requested may not be the best suited to the particular experimental work to be carried on.

(c) That the frequency requested need not be allocated for any service that may be developed as a result of the experimental operation.

(d) That any frequency which may be assigned is subject to change without advance notice or hearing.

(e) That any authorization issued pursuant to the application may be cancelled at any time without notice or hearing.

(Sec. 319, 48 Stat. 1089, as amended; 47 U.S.C. 319)

§ 74.213 Supplemental report with renewal application.

A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following:

(a) Number of hours operated for transmission of facsimile programs.

(b) Comprehensive report of research and experimentation conducted.

(c) Conclusions and program for further developments of the facsimile broadcast service.

(d) All developments and major changes in equipment.

(e) Any other pertinent developments.

(Sec. 308, 48 Stat. 1084, as amended; 47 U.S.C. 308)

LICENSING POLICIES

§ 74.231 Licensing requirements, necessary showing.

(a) An applicant for a construction permit for a new experimental facsimile broadcast station, change in facilities of any existing station, or modification of license is required to make a satisfactory showing of compliance with the general requirements of the Communications Act of 1934, as amended, as well as with regard to the following:

(1) That the applicant has a program of research and experimentation which indicates reasonable promise of substantial contribution to the development of the facsimile broadcast service.

(2) That sufficient facsimile recorders will be distributed to accomplish the experimental program proposed.

(3) That the program of research and experimentation will be conducted by qualified personnel.

(b) A license for an experimental facsimile broadcast station will not authorize exclusive use of any frequency. In case interference would be caused by simultaneous operation of stations licensed experimentally, such licensees shall endeavor to arrange satisfactory time division. If such agreement cannot be reached, the Commission will determine and specify the time division.

§ 74.232 Power limitations.

Experimental facsimile broadcast stations will be licensed with a power output not in excess of that necessary to render satisfactory service. The license for these stations will specify the maximum authorized power. The operating power shall not be greater than necessary to carry on the service and in no event more than 5 percent above the maximum power specified. Engineering standards have not been established for these stations. The efficiency factor for the last radio stage of transmitters employed will be subject to individual determination but shall be in general agreement with values normally employed for

similar equipment operated within the frequency range authorized.

§ 74.233 Emission authorized.

In case emission of a different type than that specified in the license is necessary or desirable in carrying on any phases of experimentation, application setting out fully the needs shall be made by informal application.

§ 74.234 Multiple ownership.

No persons (including all persons under common control) shall control, directly or indirectly, two or more experimental facsimile broadcast stations unless a showing is made that the character of the programs of research requires a licensing of two or more separate stations.

EQUIPMENT

§ 74.251 Equipment changes.

The licensee of an experimental facsimile broadcast station may make any changes in the equipment that are deemed desirable or necessary provided:

(a) That the operating frequency is not permitted to deviate more than the allowed tolerance;

(b) That the emissions are not permitted outside the authorized band;

(c) That the power output complies with the license and the regulations governing the same; and

(d) That the transmitter as a whole or output power rating of the transmitter is not changed.

TECHNICAL OPERATION AND OPERATORS

§ 74.261 Frequency tolerance.

The licensee of an experimental facsimile broadcasting station shall maintain the operating frequency of its station within the tolerance specified in the instrument of authorization.

§ 74.262 Frequency monitors and measurements.

The licensee of an experimental facsimile broadcast station shall provide the necessary means for determining that the frequency of the station is within the allowed tolerance. The date and time of each frequency check, the frequency as measured, and a description or identification of the method employed shall be entered in the station log. Sufficient observations shall be made to insure that the assigned carrier frequency is maintained within the prescribed tolerance.

§ 74.263 Time of operation.

(a) A licensee of an experimental facsimile broadcast station is not required to adhere to a regular schedule of operation but shall actively conduct a program of research and experimentation.

(b) The program of research and experimentation as offered by an applicant in compliance with the requirements for obtaining a license for an experimental facsimile broadcast station shall be adhered to in the main, unless the licensee is authorized to do otherwise by the Commission.

(c) The Commission may from time to time require that a station licensed experimentally conduct such experiments as are deemed desirable and reasonable for the development of the service.

§ 74.264 Station inspection.

The licensee of each experimental facsimile broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 74.265 Station and operator licenses; posting of.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation of the station shall be posted so that all terms thereof are visible in a conspicuous place in the room in which the transmitter is located.

(b) The original license of each station operator shall be posted at the place where he is on duty: *Provided, however,* If the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing that class of station and is there available for inspection by an authorized Commission representative, a verification card (Form 758–F) is acceptable in lieu of the posting of such license.

§ 74.266 Operator requirements.

One or more radio operators holding radiotelephone first-class or radiotelephone second-class operator licenses shall be on duty at the place where the transmitting apparatus of any experimental facsimile broadcast station is located and in actual charge of its operation. The licensed operator on duty and in charge of a broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such stations. However, such duties shall in no wise interfere with the operation of the broadcast transmitter.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.267 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of this chapter.

§ 74.268 Additional orders.

In case the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

OTHER OPERATING REQUIREMENTS

§ 74.281 Station records.

(a) The licensee of each experimental facsimile broadcast station shall maintain adequate records of the operation, including:

(1) Hours of operation.

(2) Program transmitted.

(3) Frequency check.

(4) Pertinent remarks concerning transmission.

(5) Research and experimentation conducted.

(b) When an antenna structure(s) is required to be illuminated, see § 17.38 of this chapter.

(c) Station records shall be retained for a period of two years.

§ 74.282 Charges.

(a) A licensee of an experimental facsimile broadcast station shall not make any charge, directly or indirectly, for the transmission of programs.

(b) No licensee of any standard or FM broadcast station shall make any additional charge, directly or indirectly, for the transmission of some phase of its programs by an associated experimental facsimile broadcast station.

§ 74.283 Station identification.

Each experimental facsimile broadcast station shall transmit visual information which will permit it to be identified at the beginning and end of each period of operation, and during operation, at least once every hour.

§ 74.284 Rebroadcasts.

(a) The term "rebroadcast" means reception by radio of the program of a radio station (including television station), and the simultaneous or subsequent retransmission of such program by a broadcast station.

NOTE 1: As used in this section, the word "program" includes any complete program or part thereof.

NOTE 2: In case a program is transmitted from its point of origin to a broadcast station primarily by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast. The broadcasting of a program relayed by a remote pickup broadcast station is not considered a rebroadcast.

(b) No licensee of any experimental facsimile broadcast station shall rebroadcast the program of any radio station without written authority having first been obtained from the Commission upon application. Informal application may be employed.

(c) An application for authority to rebroadcast the program of any radio station shall be accompanied by written consent or certification of consent of the licensee of the station originating the program.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

SUBPART C—DEVELOPMENTAL BROADCAST STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.301 Developmental broadcast station.

The term "developmental broadcast station" means a station licensed experimentally to carry on development and research primarily in radiotelephony for the advancement of the broadcast services.

§ 74.302 Frequency assignment.

(a) Frequencies allocated to the various classes of aural broadcasting stations and broadcast auxiliary stations, in the Commission's Table of Frequency Allocations (Part 2 of this chapter), may be assigned to developmental broadcast stations.

(b) More than one frequency may be assigned upon a satisfactory showing of the need therefor.

(c) Frequencies best suited to the purpose of the experimentation and on which there appears to be the least likelihood of interference to established stations shall be selected.

(d) In a case of important experimentation which cannot be feasibly conducted on frequencies allocated to the various classes of aural broadcasting stations and broadcast auxiliary stations, the Commission may authorize a developmental broadcast station to operate on other frequencies upon a satisfactory showing of the need therefor and a showing that the proposed operation can be conducted without causing harmful interference to established services: *Provided, however*, That experimental operation which looks toward the development of radio transmitting apparatus or the rendition of any type of regular service using such frequencies will not be authorized prior to a determination by the Commission that the development of such apparatus or the rendition of such service would serve the public interest.

ADMINISTRATIVE PROCEDURE

§ 74.311 Cross reference.

See §§ 74.11 to 74.16.

§ 74.312 Supplementary statement with application for construction permit.

A supplementary statement shall be filed with and made a part of each application for construction permit for any developmental broadcast station confirming the applicant's understanding:

(a) That all operation upon the frequency requested is for experimental purposes only.

(b) That the frequency requested may not be the best suited to the particular experimental work to be carried on.

(c) That the frequency requested need not be allocated for any service that may be developed as a result of the experimental operation.

(d) That any frequency which may be assigned is subject to change without advance notice or hearing.

(e) That any authorization issued pursuant to the application may be cancelled at any time without notice or hearing.

(Sec. 319, 48 Stat. 1089, as amended; 47 U.S.C. 319)

§ 74.313 Supplemental report with renewal application.

A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following, among others:

(a) The number of hours operated.

(b) Comprehensive report on research and experiments conducted.

(c) Conclusions and program for further development of the broadcast service.

(d) All developments and major changes in equipment.

(e) Any other pertinent developments.

(Sec. 308, 48 Stat. 1084, as amended, 47 U.S.C. 308)

LICENSING POLICIES

§ 74.331 Licensing requirements; necessary showing.

(a) An applicant for a construction permit for a new developmental broadcast station, change of facilities or modification of an existing license is required to make a satisfactory showing of compliance with the general requirements of the Communications Act of 1934, as amended, as well as with regard to the following:

(1) That the applicant has a program of research and experimentation which can best be carried on under the license requested.

(2) That the program of research has reasonable promise of substantial contribution to the development of broadcasting.

(3) That the program of research and experimentation will be conducted by qualified personnel.

(b) A license for a developmental broadcast station will not authorize exclusive use of any frequency. In case interference would be caused by simultaneous operation of stations licensed experimentally, such licensees shall endeavor to arrange satisfactory time division. If such agreement cannot be reached, the Commission will determine and specify the time division.

§ 74.332 Power limitations.

Developmental broadcast stations will be licensed with a power output not in excess of that necessary to render satisfactory service. The license for these stations will specify the maximum authorized power. The operating power shall not be greater than necessary to carry on the service and in no event more than 5 percent above the maximum power specified. Engineering standards have not been established for these stations. The efficiency factor for the last radio stage of transmitters employed will be subject to individual determination but shall be in general agreement with values normally employed for similar equipment operated within the frequency range authorized.

§ 74.333 Emission authorized.

In case emission of a different type than that specified in the license is necessary or desirable in carrying on any phases of experimentation, application setting out fully the needs shall be made by informal application.

EQUIPMENT

§ 74.351 Equipment changes.

The licensee of a developmental broadcast station may make any changes in the equipment that are deemed desirable or necessary provided:

(a) That the operating frequency is not permitted to deviate more than the allowed tolerance;

(b) That the emissions are not permitted outside the authorized band;

(c) That the power output complies with the license and the regulations governing the same; and

(d) That the transmitter as a whole or output power rating of the transmitter is not changed. This limitation shall not apply to developmental broadcast stations licensed to operate in connection with the development and testing of commercial broadcast equipment.

TECHNICAL OPERATION AND OPERATORS

§ 74.361 Frequency tolerance.

The licensee of a developmental broadcasting station shall maintain the operating frequency of its station within the tolerance specified in the instrument of authorization.

§ 74.362 Frequency monitors and measurements.

The licensee of a developmental broadcast station shall provide the necessary means for determining that the frequency of the station is within the allowed tolerance. The date and time of each frequency check, the frequency as measured, and a description or identification of the method employed shall be entered in the station log. Sufficient observations shall be made to insure that the assigned carrier frequency is maintained within the prescribed tolerance.

§ 74.363 Time of operation.

(a) A licensee of a developmental broadcast station is not required to adhere to a regular schedule of operation but shall actively conduct a program of research and experimentation. However, licensees of developmental broadcast stations which are licensed to conduct special intermittent experiments, such as the development and testing of commercial broadcast equipment, are authorized to operate only when there is a need therefor.

(b) The program of research and experimentation as offered by an applicant in compliance with the requirements for obtaining a license for a developmental broadcast station shall be adhered to in the main, unless the licensee is authorized to do otherwise by the Commission.

(c) The Commission may from time to time require that a station licensed experimentally conduct such experiments as are deemed desirable and reasonable for the development of the service.

§ 74.364 Station inspection.

The licensee of each developmental broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 74.365 Station and operator licenses; posting of.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation of the station shall be posted so that all terms thereof are visible in a conspicuous place in the room in which the transmitter is located. However, if the station is licensed for portable-mobile operation, the station license or a photo copy thereof shall be affixed to the equipment or kept in the possession of the operator on duty at the transmitter. If a photo copy is used, the original license shall be available for inspection by an authorized Government representative.

(b) The original license of each station operator shall be posted at the place where he is on duty: *Provided, however,* If the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing that class of station and is there available for inspection by an authorized Commission representative, or if the station operated is licensed for portable-mobile operation, a verification card (Form 758–F) is acceptable in lieu of the posting of such license.

NOTE: The term portable-mobile as here used is intended to include any type of portable or mobile operation.

§ 74.366 Operator requirements.

One or more radio operators holding radiotelephone first-class or radiotelephone second-class operator licenses shall be on duty at the place where the transmitting apparatus of any developmental broadcast station is located and in actual charge of its operation. The licensed operator on duty and in charge of a broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such stations. However, such duties shall in no wise interfere with the operation of the broadcast transmitter.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.367 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of this chapter.

§ 74.368 Additional orders.

In case the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

OTHER OPERATING REQUIREMENTS

§ 74.381 Station records.

(a) The licensee of each developmental broadcast station shall maintain adequate records of the operation, including:

(1) Hours of operation.

(2) Program transmitted.

(3) Frequency check.

(4) Pertinent remarks concerning transmission.

(5) In case of relay or remote pickup station, an entry giving points of program origination and receiver location shall be included.

(6) Research and experimentation conducted.

(b) Where an antenna structure(s) is required to be illuminated, see § 17.38 of this chapter.

(c) Station records shall be retained for a period of two years.

§ 74.382 Program service; charges prohibited; announcements.

(a) A licensee of a developmental broadcast station shall broadcast programs only when they are necessary to the experiments being conducted. No regular program service shall be broadcast unless specifically authorized. If the license authorizes the carrying of programs, the developmental broadcast station may transmit the programs of a standard or FM broadcast station or networks provided that during the broadcast a statement is made identifying the station or network originating the program (by giving the call letters of the station or name of the network) and announcing that the program is being broadcast in connection with the experimental operation of a developmental broadcast station.

(b) No licensee of any standard or FM broadcast station shall make any additional charge, directly or indirectly, for the transmission of programs by a developmental broadcast station.

(c) The provisions of paragraphs (a) and (b) of this section shall be applicable to rebroadcasts of the programs of a standard or FM broadcast station or network by a developmental broadcast station.

§ 74.383 Station identification.

Each developmental broadcast station shall announce its call letters at the beginning and end of each period of operation, and during operation, at least once every hour.

§ 74.384 Rebroadcasts.

(a) The term "rebroadcast" means reception by radio of the program of a radio station (including a television station), and the simultaneous or subsequent retransmission of such program by a broadcast station.

NOTE 1: As used in this section, the word "program" includes any complete program or part thereof.

NOTE 2: In case a program is transmitted from its point of origin to a broadcast station primarily by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast. The broadcasting of a program relayed by a remote pickup broadcast station is not considered a rebroadcast.

(b) No licensee of any developmental broadcast station shall rebroadcast the program of any radio station without written authority having first been obtained from the Commission upon application. Informal application may be employed.

(c) An application for authority to rebroadcast the program of any radio station shall be accompanied by written consent or certification of consent of the licensee of the station originating the program.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

SUBPART D—REMOTE PICKUP BROADCAST STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.401 Definitions.

Associated broadcasting station. The broadcasting station with which a remote pickup broadcast base or mobile station is licensed as an auxiliary and with which it is principally used.

Attended operation. Operation of a station by a qualified operator on duty at the place where the transmitting apparatus is located with the transmitter in plain view of the operator.

Automatic mobile relay station. A remote pickup broadcast base station actuated by automatic means and used to relay communications between base and mobile stations, between mobile stations, and from mobile stations licensed under the rules of this subpart, to broadcast stations.

[*"Automatic mobile relay station" as adopted eff. 12–22–64; III(64)–4*]

Operational communications. Communications related to the technical operation of a broadcasting station and its auxiliaries, other than the transmission of program material and cues and orders directly concerned therewith.

Remote control operation. Operation of a station by a qualified operator at a control position from which the transmitter is not visible but which control position is equipped with suitable control and telemetering circuits so that the essential functions which could be performed at the transmitter can also be performed from the control point.

Remote pickup broadcast base station. A base station licensed for communicating with remote pickup broadcast mobile stations.

Remote pickup broadcast mobile station. A land mobile station licensed for the transmission of program material and related communications from the scene of events, which occur outside a studio, to broadcasting stations and for communicating with other remote pickup broadcast base and mobile stations. (As used in this part, land mobile station includes hand-carried, pack-carried, and other portable transmitters.)

Remote pickup broadcast stations. The term "remote pickup broadcast station" as used in this subpart includes "remote pickup broadcast base station" and "remote pickup broadcast mobile station" as defined in this section.

Studio. Any room or series of rooms equipped for the regular production of broadcast programs of various kinds. A broadcasting booth at a stadium, convention hall, church, or other similar place is not considered to be a studio.

§ 74.402 Frequency assignment.

(a) The following frequencies are allocated for assignment to remote pickup broadcast base and mobile stations:

(1)

Group A (*kc/s*)
[1] 1606
1622
1646

(2)

Group D (*Mc/s*)	*Group E* (*Mc/s*)	*Group F* (*Mc/s*)	*Group G* (*Mc/s*)	*Group H* (*Mc/s*)
[2] 25.87	[2] 25.91	[2] 25.95	[2] 25.99	[2] 26.03
26.15	26.17	26.19	26.21	26.23
26.25	26.27	26.29	26.31	26.33
26.35	26.37	26.39	26.41	26.43

(3)

Group I (*Mc/s*)	*Group J* (*Mc/s*)
[2] 26.07	[2] 26.09
26.11	26.13
26.45	26.47

(4)

Group K (*Mc/s*)		
[3] 152.87	[3] 153.17	[5] 161.64
[3] 152.93	[3] 153.23	[5] 161.67
[3] 152.99	[3] 153.29	[5] 161.70
[3] 153.05	[3] 153.35	[5] 161.73
[3] 153.11		[5] 161.76

(5)

Group L (*Mc/s*)	*Group M* (*Mc/s*)
[4] 166.25	[4] 170.15

(6)

Group N (*Mc/s*)			
450.05	450.55	455.05	455.55
450.15	450.65	455.15	455.65
450.25	450.75	455.25	455.75
450.35	450.85	455.35	455.85
450.45	450.95	455.45	455.95

[1] Subject to the condition that no harmful interference is caused to the reception of standard broadcast stations.

[2] Subject to the condition that no harmful interference is caused to the reception of broadcasting stations.

[3] Subject to the condition that no harmful interference is caused to the Industrial Radio Services.

[4] Operation on the frequencies 166.25 Mc/s and 170.15 Mc/s is not authorized (i) within the area bounded on the west by the Mississippi River, on the north by the parallel of latitude 37°30′ N., and on the east and south by that arc of the circle with center at Springfield, Ill., and radius equal to the airline distance between Springfield, Ill., and Montgomery, Alabama, subtended between the foregoing west and north boundaries; (ii) within 150 miles of New York City; and (iii) in Alaska or outside the continental United States; and is subject to the condition that no harmful interference is caused to government radio stations in the band 162–174 Mc/s.

[5] These frequencies may not be used by remote pickup stations in Puerto Rico or the Virgin Islands. In other areas, certain existing stations in the Public Safety and Land Transportation Radio Services have been permitted to con-

tinue operation on these frequencies on condition that no harmful interference is caused to remote pickup broadcast stations.

(b) The following frequencies are allocated for assignment to remote pickup base and mobile stations in Puerto Rico and the Virgin Islands only:

(Mc/s)	*(Mc/s)*	*(Mc/s)*
160.89	161.07	161.25
160.95	161.13	161.31
161.01	161.19	161.37

NOTE 1: These frequencies are shared with the Land Transportation Radio Service.

(c) A licensee is not limited with respect to the number of remote pickup broadcast stations which may be licensed for operation in a single area and each such station may be assigned one or more frequencies: *Provided, however,* That such frequency assignments shall be limited to those within a single frequency Group in any subparagraph of paragraph (a) of this section. This limitation does not preclude the assignment of frequencies listed in different subparagraphs to the same licensee. Applicants shall request the assignment of only those frequencies on which operation is contemplated and the transmitter shall be suitably equipped to operate on all assigned frequencies.

(d) Remote pickup broadcast stations will not be granted exclusive frequency assignments, and the same frequency or frequencies may be assigned to other licensees in the same area.

§ 74.403 Frequency selection to avoid interference.

(a) Where two or more remote pickup broadcast stations are licensed for the same frequency or group of frequencies in the same area and when simultaneous operation is contemplated, the licensees shall endeavor to select frequencies or schedule operation in such manner as to avoid mutual interference. If a mutual agreement to this effect cannot be reached the Commission shall be notified and it will specify the frequency or frequencies on which each station is to be operated.

(b) The following order of priority of transmissions shall be observed on all frequencies except those listed in § 74.402(a)(3):

(1) The transmission of program material for broadcast.

(2) The transmission of cues and orders immediately necessary thereto.

(3) Operational communications.

(4) Tests or drills to check the performance of stand-by emergency circuits.

NOTE: During an emergency or impending emergency, transmissions directly related to the safety of life and property shall take precedence over all other transmissions.

ADMINISTRATIVE PROCEDURE

§ 74.411 Cross reference.

See §§ 74.11 to 74.16.

LICENSING POLICIES AND GENERAL OPERATING REQUIREMENTS

§ 74.431 Permissible service.

(a) Remote pickup broadcast mobile stations may be used for the transmission of broadcast program material from the scene of events which occur outside a studio and for the transmission of cues and orders and other related communications necessary to the accomplishment of such broadcasts. The program material transmitted over a remote pickup broadcast mobile station shall be intended for simultaneous or delayed broadcast either by its associated broadcasting station or some other broadcasting station or stations. Editing or rearranging such material to suit the needs of the broadcasting station is not precluded. A remote pickup broadcast mobile station may communicate with the broadcasting station with which it is operating, with the base station or stations with which it is associated, and with other remote pickup broadcast mobile stations. Remote pickup broadcast mobile stations may relay the transmissions of an associated base station and other remote pickup broadcast mobile station.

(b) Remote pickup broadcast base stations may be used for the transmission of cues, orders, and instructions to remote pickup broadcast mobile stations for the purpose of dispatching them to the scenes of events to be broadcast, and directing their operation on the scene. Cueing may include the transmission of program material to the remote pickup unit, if necessary. Remote pickup broadcast base stations may also be used to relay transmissions to and from remote pickup broadcast mobile stations. Remote pickup broadcast base stations licensed pursuant to the provisions of § 74.432(d) (2) and (4) may communicate with other remote pickup broadcast base stations.

(c) Remote pickup broadcast base and mobile stations in Alaska, Guam, Hawaii, Puerto Rico, and the Virgin Islands may be used for any purpose related to the operation of the broadcasting station except for transmissions intended for direct reception by the general public.

(d) Remote pickup broadcast base and mobile stations may be used for operational communications on

condition that such use does not interfere with the transmission of program material or preparations for the transmission of program material by other remote pickup stations.

(e) In the event of damage or impairment of the regular communication and program circuits of a broadcasting station due to storms, floods, fires, strikes, equipment failures, or other similar causes, remote pickup broadcast base and mobile stations may be used to provide such temporary circuits as may be needed to continue the broadcasting operation, pending the restoration of the regular circuits.

(f) Remote pickup base and mobile stations associated with broadcasting stations participating in the Emergency Broadcast System, or a similar emergency survival communications system, may be used: (1) For the transmission, for broadcasting, of warnings, instructions, and information relating to war, threat of war, a state of public peril or disaster, or other national, state, or local emergency constituting a threat to the safety of life or property; (2) for coordination of effort in connection with such broadcasts; and (3) for periodic tests or drills to ascertain the reliability of the circuit. Drills should not be conducted more than once a week and should be completed as quickly as possible. Individual transmitters may be turned on for alignment, adjustment, and repair whenever necessary. The conduct of a test or drill is subject to the condition that no interference will be caused to remote pickup broadcast base or mobile stations engaged in the transmission of program material, the preparation for such transmission, or other authorized operation.

(g) A remote pickup broadcast mobile station may be operated in conjunction with other broadcasting stations in the area in which it is licensed, at the discretion of the licensee. Remote pickup broadcast mobile stations may be operated in conjunction with broadcasting stations in other areas without prior authority of the Commission, provided that whenever the transmitting equipment will be out of the area in which it is licensed to operate, for more than one day, the Commission in Washington, D.C., the Engineer-in-charge of the radio district in which the remote pickup station is licensed to operate, and the Engineer-in-charge of the radio district in which the operation will occur, are notified in writing in advance of such operation. In cases where the decision to continue operation for more than one day is not made until the operation has begun, the advance notice requirement is waived and the written notice shall be given when such decision is made. The same Commission offices shall be notified when the transmitting equipment has been returned to its licensed area. The licensee of the remote pickup station shall be responsible for the proper use and operation of the equipment regardless of whether it is used with its associated broadcasting station or with other broadcasting stations in the same or in other areas.

(h) The license of a remote pickup broadcast base or mobile station authorizes operation on only one of the assigned frequencies at any one time. A licensee may operate two or more remote pickup broadcast base or mobile stations simultaneously on different frequencies.

(i) Automatic mobile relay stations may be used to relay any authorized transmissions of other remote pickup base and mobile stations except other automatic relay stations operating on any authorized remote pickup frequency. Normally such transmissions will originate from remote pickup broadcast stations operated by the licensee of the automatic relay station. However, transmissions of remote pickup broadcast stations operated by other licensees on a frequency occupied by an automatic mobile relay station may be relayed for monitoring purposes to avoid interference which might be caused by actuating the automatic mobile relay station when the channel on which it operates is occupied. Operation of the automatic mobile relay station for monitoring observations shall be confined to the brief period necessary to determine whether the monitored frequency is in use.

(j) Remote pickup broadcast base and mobile stations operated by one licensee may communicate with remote pickup broadcast base and mobile stations operated by another licensee either directly or via an automatic mobile relay station, for the purpose of scheduling the use of shared remote pickup frequencies, in order to minimize the hazard of mutual interference.

[*§ 74.431 (i) and (j) as adopted eff. 12-22-64; III(64)-4*]

§ 74.432 Licensing requirements.

(a) A license for a remote pickup broadcast base or mobile station will be issued only to the licensee of a standard, FM, or television broadcasting station. More than one remote pickup broadcast base and mobile station may be authorized to a single licensee. A separate license is required for each transmitter. An application for a new remote pickup broadcast base or mobile station shall specify the frequency or frequencies desired and the transmitter shall be capable of operating on each frequency requested.

(b) The applicant shall specify the broadcasting station with which the remote pickup station is to be

used principally and the area of operation shall be considered to be the community which the associated broadcasting station is licensed to serve and the surrounding area considered to be served by the broadcast station. In cases where the applicant is the licensee of more than one class of broadcasting station (standard, FM, or television) in the same area, it may select one for designation as the associated broadcasting station; such designation does not preclude use with other broadcasting stations in the same area at the discretion of the licensee. Remote pickup broadcast mobile stations will not be licensed for operation in more than one area; such operation may be conducted pursuant to the provisions of § 74.431(f).

(c) Portable transmitters designed to be carried to the scene of events to be broadcast, and mobile transmitters, i.e., those permanently installed in mobile vehicles and capable of being operated while in motion as well as during halts at unspecified places, will both be licensed as remote pickup mobile stations. Portable transmitters should normally be stored at the studio or transmitter location of the associated broadcasting station when not in use. Vehicles equipped with mobile transmitters should be stored, when not in use, so as to be available for inspection upon request by any authorized representative of the Commission. In cases where a series of broadcasts are to be made from the same location, portable or mobile transmitters may be left at such locations for the duration of the series of broadcasts, provided that the transmitting apparatus is properly secured so that it may not be operated by unauthorized persons when unattended and it can be made available for inspection upon request by any authorized representatives of the Commission. Prior Commission authority shall be obtained for the installation of any transmitting antenna which will result in any increase in the height of an existing antenna supporting structure or will increase the height of any natural formation or manmade structure by more than 20 feet and will be in existence for more than 2 days.

(d) Transmitters permanently installed at fixed locations will be licensed as remote pickup broadcast base stations. The location of the transmitter will be specified in the station license and it may not be operated at any other location without prior authority of the Commission. Base stations will be licensed only for the following purposes:

(1) To provide communication with remote pickup broadcast mobile stations. Base stations licensed for this purpose will normally be located at the studio or transmitter location of the associated broadcasting station. Any of the frequencies listed in § 74.402 may be requested for this purpose.

(2) To provide one-way or two-way voice communication between the studio and transmitter of a broadcasting station which is the licensee of an aural or television broadcast STL station used for program transmission between the same two points, or to provide such voice communication between the point of origin and the destination of an aural or television broadcast intercity relay system operated by the same licensee. Such operation is limited to the frequencies listed in Groups I and J of § 74.402. Automatic relay stations will not be authorized.

(3) To operate as program circuits between the studio and the transmitter, or to relay programs between broadcasting stations in Alaska, Guam, Hawaii, Puerto Rico, or the Virgin Islands. Except in emergencies, such uses are not permitted within the 48 contiguous United States or the District of Columbia. Any of the frequencies listed in § 74.402 as available in the above places may be requested by applicant.

(4) Base stations may be authorized at suitable locations to provide:

(i) Stand-by program circuits from places where official broadcasts may be made during a war, threat of war, or a state of public peril or disaster or other national, state, or local emergency constituting a threat to the safety of life and property; and

(ii) Circuits to interconnect broadcasting stations participating in the Emergency Broadcast System or a similar emergency survival communications system. An applicant may request the assignment of any of the frequencies listed in § 74.402 for this purpose.

(5) Base stations may be authorized at suitable locations to operate as automatic mobile relay stations. Such operation will be authorized only on frequencies listed in Group N of § 74.402(a). A single licensee may be authorized to operate more than one automatic mobile relay station. However, each licensee will be limited to the use of not more than two frequencies for automatic mobile relay operation in any given area. The priorities of § 74.403(b) apply to the operation of automatic mobile relay stations. Base stations operated as automatic mobile relay stations shall comply with the requirements of § 74.438.

[§ 74.432(d)(5) *as adopted eff. 12-22-64; III(64)-4*]

§ 74.433 Temporary authorizations.

(a) Special temporary authority may be granted for operation, as a remote pickup broadcast station, of equipment already licensed to another class of station or equipment in use by a class of station which under

the Communications Act of 1934 does not require a construction permit.

(b) An application for special temporary authority for the operation of a remote pickup broadcast station shall be filed with the Commission at least 10 days previous to the date of operation. Any application received within less than 10 days may be accepted upon due showing of sufficient reasons for the delay in submitting such request. The application shall set forth full particulars of the purpose for which the request is made and shall show the licensee, call letters, and type of equipment of the station proposed to be used and specify the frequency or frequencies, time and date, location, transmitter power, and type emission proposed and the purpose of the operation requested.

(c) An application for special temporary authority to operate another class of station as a remote pickup broadcast station shall specify a frequency or frequencies allocated in § 74.402: *Provided, however,* In case of events of national interest and importance which cannot be transmitted successfully on these frequencies, other frequencies under the jurisdiction of the Commission may be requested if it is shown that the operation thereon will not cause interference to established stations: *And provided further,* That no remote pickup operation will be authorized on frequencies employed in the emergency service or otherwise employed for the safety of life and property.

(d) An application for special temporary authority to operate equipment as a remote pickup broadcast station filed by a person other than the licensee of such equipment shall contain a statement to show that temporary control of the transmissions therefrom has been secured for the duration of the special operation proposed. An application for special temporary authority to operate another class of station as a remote pickup broadcast station filed by a person other than the licensee of a standard or FM broadcast station shall contain a statement to show which broadcast station or stations contemplate broadcast of the program proposed to be transmitted.

NOTE: Informal application may be employed under this section.

§ 74.434 Remote control operation.

Remote-control operation of remote pickup stations will be permitted subject to the following conditions.

(a) A percentage modulation indicator or calibrated program level meter shall be provided at the operating position.

(b) The operator shall have off-and-on control of the power to the last radio stage.

(c) The transmitter shall be so installed and protected that it is not accessible to other than duly authorized persons.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.435 Power limitations.

Remote pickup broadcast stations will be licensed with a power output not in excess of that necessary to render satisfactory service. The license for these stations will specify the maximum authorized power. The operating power shall not be greater than necessary to carry on the service and in no event more than 5 percent above the maximum power specified. Engineering standards have not been established for these stations. The efficiency factor for the last radio stage of transmitters employed will be subject to individual determination but shall be in general agreement with values normally employed for similar equipment operated within the frequency range authorized.

§ 74.436 Emission authorized.

(a) The license for a remote pickup broadcast station operating on frequencies below 25 Mc/s will normally authorize A3 emission and may in addition authorize A1 and A2 emission where a need therefor is shown. A license for a remote pickup broadcast station operating on frequencies above 25 Mc/s will authorize A3 or F3 emission, depending upon the equipment employed. Stations licensed to employ F3 emission shall limit the frequency swing so that the bandwidth of emission will conform to the requirements of the channel widths authorized as follows:

(1) For stations operating on the frequencies 25.87 to 26.03 Mc/s, 40 kilocycles.

(2) For stations operating on the frequencies 26.07 to 26.47 Mc/s, 20 kilocycles.

(3) For stations operating on the frequencies 152.87 to 153.35, 160.89 to 161.37, 166.25, and 170.15 Mc/s, 60 kilocycles.

(4) For stations operating on the frequencies 450.05 to 450.95 and 455.05 to 455.95 Mc/s, 100 kilocycles.

(5) For stations operating on the frequencies 161.64 to 161.76 Mc/s, 30 kilocycles.

NOTE: The term "frequency swing" means the instantaneous departure of the frequency of the emitted wave from the center frequency resulting from modulation.

(b) Any emissions outside the authorized channel shall be limited to such an extent as not to constitute a source of potential interference to other stations and in no event shall such emissions be in excess of minus 40 decibels as compared to the emissions within the authorized channel.

§ 74.437 Special rules relating to low power broadcast auxiliary stations.

(a) The devices which will be licensed under this section are those which are normally intended to be operated over distances not in excess of a few hundred feet and will fall into two general categories: studio cueing transmitters and wireless microphones. Paragraphs (b) to (j) of this section will govern the licensing of such devices.

(b) A license for a low power broadcast auxiliary station will be issued only to the licensee of a standard, FM, or television broadcast station and for use with a specific station or combination of such broadcast stations within the same city. Such stations may be operated at other locations from time to time in accordance with the provisions of paragraph (f) of this section.

(c) The license of a low power broadcast auxiliary station authorizes the transmission of cues and orders to production personnel and participants in broadcast programs and in the preparation therefor, the transmission of program material by means of a wireless microphone worn by a performer or other participant in a program during rehearsal and during the actual broadcast, or the transmission of comments, interviews, and reports from the scene of a remote broadcast. Such transmissions shall be intended for reception at a receiving point within the same studio, building, stadium, or similar limited indoor or outdoor area or at the location of a nearby remote pickup broadcast mobile station where they will be relayed to a broadcasting station for simultaneous or delayed broadcast.

(d) An application for a new low power broadcast auxiliary station or for a change in an existing authorization shall specify the broadcast station or combination of stations in the same city, as set forth in paragraph (b) of this section, with which it is to be used principally. A single application, filed on FCC Form 313, in duplicate, may be used in applying for authority to construct and operate one or more low power broadcast auxiliary transmitting units provided that such transmitting units are designed for operation in a common frequency band and will be normally operated with the same broadcast station or combination of stations in a single city.

(e) The operation of low power broadcast auxiliary stations will be authorized only in the bands 26.10–26.48 Mc/s and 450–451 Mc/s. Transmitting units may be operated on any frequency within the band of frequencies for which the station is licensed, provided that the emissions are confined to the authorized band. Transmitting units are not required to maintain a constancy of frequency beyond that necessary to insure compliance with the requirement of this paragraph.

(f) A low power broadcast auxiliary station may be used in conjunction with broadcast stations of other licensees located in the same area as the broadcast station or stations with which it is licensed without further authority of the Commission, provided that such operation is conducted by the licensee of the low power broadcast auxiliary station. Low power broadcast auxiliary stations may also be operated in conjunction with broadcast stations of its licensee or other licensees in other locations provided that such operation is conducted by the licensee of the low power broadcast auxiliary station and provided further that, if such operation is to be conducted over a consecutive period of more than one day, the Engineer in Charge of the radio district in which the low power broadcast auxiliary station is licensed and the Engineer in Charge of the radio district in which the operation is to be conducted shall be notified in writing at least two days in advance of such operation and of the expected duration of the proposed operation.

(g) Low power broadcast auxiliary stations will not be licensed for a power input to the plate of the final radio frequency amplifier in excess of 1 watt and all operation thereof is subject to the condition that no harmful interference is caused to remote pickup broadcast base and mobile stations. Unusual transmitting antennas or antenna elevations shall not be used to extend the range of these low power devices beyond the limited areas defined in paragraph (c) of this section.

(h) No operator's license is required of the person actually using a low power broadcast auxiliary transmitting unit, provided that an operator holding any commercial radio operator license or permit, except an aircraft radiotelephone operator authorization or a temporary radiotelegraph second-class operator license, is on duty at the place where the transmitting unit is being operated to take immediate steps to correct any condition of improper operation observed. Any adjustments or repairs that could affect the proper operation of transmitting units shall be made by or under the immediate supervision of an operator holding a valid first or second-class radiotelephone license.

(i) Call signs will not be assigned to low power broadcast auxiliary stations. In lieu thereof, an announcement shall be made at the beginning and end of each period of operation at a single location, over the transmitting unit being operated, identifying the type of transmitting unit, its location, and the call sign of the broadcast station with which it is being used.

Transmitting units will normally fall into one of two types: a cueing transmitter or a wireless microphone. A period of operation may consist of a continuous transmission or intermittent transmissions in connection with a single program.

(j) The licensee of each low power broadcast auxiliary station shall maintain adequate records at the main studio or transmitter of the broadcast station with which the auxiliary is principally used, which will accurately show the current location of all transmitting units, the periods of operation at such locations and any other pertinent remarks concerning transmissions.

§ 74.438 Special requirements for automatic relay stations.

An automatic mobile relay station installation shall include a monitor receiver, a control unit, and one or more relay receivers.

(a) Monitor receiver: A receiver tuned to the frequency assigned to the automatic mobile relay station and connected to the transmitting antenna used by the automatic mobile relay station shall be in operation at the automatic mobile relay station site at all times when the relay transmitter is capable of being turned on automatically. The monitor receiver shall comply with the following requirements:

(1) The receiver shall be equipped with a control circuit which will prevent the relay transmitter from being turned on automatically whenever a signal other than the signal of the relay transmitter is being received.

(2) The sensitivity of the monitor receiver shall be such that a signal of 2 microvolts or more across the antenna input terminals will actuate the "lock-out" control which prevents the transmitter from being turned on automatically.

(3) The "lock-out" control shall be so designed that if the monitor receiver is inoperative the relay transmitter cannot be turned on automatically.

(b) Control unit: The control unit may be an integral part of the relay receiver or may be a separate unit into which the output of one or more relay receivers is fed. The control unit shall meet the following requirements:

(1) The control unit shall be so designed that it will turn the relay transmitter on only upon receipt of a predetermined coded signal consisting of at least two tones which may be transmitted either simultaneously or sequentially, or a series of at least three dissimilar pulse combinations transmitted sequentially. In lieu of the coded signal, the control unit may be designed so that the transmitter will remain operative only when receiving a continuous single tone superimposed on the material being relayed.

(2) The control unit shall be capable of turning the transmitter off upon receipt of an appropriate signal. The complexity of the signal used to turn off the relay transmitter is left to the discretion of the licensee.

(3) The control unit shall also be designed so that the absence of a signal from the relay receiver either due to cessation of operation of the station being relayed or failure of the relay receiver or control unit, will automatically place the relay transmitter in an inoperative condition. A suitable time-delay factor may be incorporated to prevent actuation of the automatic cut-off due to momentary failures of the incoming signals.

(c) Relay receiver: One or more receivers tuned to frequencies used by the stations which are to be relayed by the automatic mobile relay station, may be installed at the automatic mobile relay station site. The receivers shall be installed so that they will turn the relay transmitter on and off only through the control unit. The choice of receivers and receiving antennas is left to the discretion of the licensee.

(d) The automatic mobile relay station may accomplish the retransmission of the incoming signals by simple heterodyne frequency conversion or by modulating the transmitter with aural signals obtained by demodulation of the incoming signal. If the relay transmitter is to be modulated with such aural signals the transmitter or the receiver or both shall be equipped with automatic controls which will prevent overmodulation of the relay transmitter.

(e) The transmitting apparatus and control equipment shall be adequately protected against tampering by unauthorized persons.

(f) An application for authority to construct an automatic mobile relay station shall include a satisfactory showing as to the manner of compliance with the requirements of this section.

[*§ 74.438 as adopted eff. 12-22-64; III(64)-4*]

EQUIPMENT

§ 74.451 Equipment changes.

The licensee of a remote pickup broadcast station may make any changes in the equipment that are deemed desirable or necessary provided:

(a) That the operating frequency is not permitted to deviate more than the allowed tolerance;

(b) That the emissions are not permitted outside the authorized band;

(c) That the power output complies with the license and the regulations governing the same; and

(d) That the transmitter as a whole or output power rating of the transmitter is not changed.

TECHNICAL OPERATION AND OPERATORS

§ 74.461 Frequency tolerance.

The licensee of a remote pickup broadcast station shall maintain the operating frequency of its station in accordance with the following:

Frequency range	Tolerance (percent)	
	Base station	Mobile station
1605 to 4000 kc/s:		
200 watts or less	0.01	0.02
Over 200 watts [1]	.005	.02
4000 to 30,000 kc/s:		
5 watts or less	.005	.02
Over 5 watts	.005	.005
30 Mc/s to 300 Mc/s:		
5 watts or less	.005	.01
Over 5 watts	.005	.005
300 Mc/s to 500 Mc/s: All powers	.01	.01

[1] The listing of tolerance for power over 200 watts is in accordance with treaty values and shall not be construed as a finding that such power will be authorized.

§ 74.462 Frequency monitors and measurements.

(a) The licensee of a remote pickup broadcast station shall provide the necessary means for determining that the frequency of the station is within the allowed tolerance. The date and time of each frequency check, the frequency as measured, and a description or identification of the method employed shall be entered in the station log. Sufficient observations shall be made to insure that the assigned carrier frequency is maintained within the prescribed tolerance.

(b) Each frequency for which the remote pickup broadcast station is licensed shall be measured at least once during each calendar year.

§ 74.463 Station inspection.

The licensee of each remote pickup broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 74.464 Station and operator licenses; posting of.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation of the station shall be posted so that all terms thereof are visible in a conspicuous place in the room in which the transmitter is located: *Provided:*

(1) If the transmitter operator is located at a distance from the transmitter pursuant to § 74.434 the station license shall be posted in the above-described manner at the operating position.

(2) If the station is licensed for portable-mobile operation, the station license or a photo copy thereof shall be affixed to the equipment or kept in the possession of the operator on duty at the transmitter. If a photo copy is used the original license shall be available for inspection by an authorized Government representative.

(3) If the station is authorized to operate as an automatic relay station and is operated at an unattended site, the call sign and location of the associated broadcast station together with the legend "Automatic Relay Station" shall be displayed at the relay transmitter site on the transmitter housing or antenna supporting structure so as to be visible to a person standing on the ground at the transmitter site or if installed on the roof of a building, so as to be visible to a person standing on the roof. The display shall be prepared so as to withstand normal weathering for a reasonable period of time and shall be maintained in a legible condition by the licensee. The original of the station license and any other instrument of authorization or individual order, shall be kept in the files of the associated broadcast station so as to be available for inspection upon request of any authorized representative of the Commission.

(b) The original license of each station operator shall be posted at the place where he is on duty: *Provided, however,* If the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing that class of station and is there available for inspection by an authorized Commission representative, or if the station operated is licensed for portable-mobile operation, a verification card (Form 758-F) is acceptable in lieu of the posting of such license: *Provided further, however,* That if the operator on duty holds a restricted radiotelephone operator permit of the card form (as distinguished from the diploma form) he shall not post that permit but shall keep it in his personal possession.

NOTE: The term portable-mobile as here used is intended to include any type of portable or mobile operation.

[§ 74.438 *as adopted eff. 12-22-64; III(64)-4*]

§ 74.465 Operator requirements.

(a) Except as provided in paragraphs (b) and (c) of this section, an operator holding a valid radiotelephone first-class or second-class operator license or a valid radiotelegraph first-class or second-class operator license or a valid restricted radiotelephone operator permit shall be on duty at the place where the transmitting apparatus is located or at a remote control point established pursuant to the provisions of

§ 74.434, and in actual charge of the operation at all times when the transmitter is operating.

(b) In cases where a remote pickup broadcast mobile station is taken to the scene of an event to be broadcast and the operator-reporter wishes to leave the location of the transmitter in order to move about freely at the scene with a hand-carried or pack-carried transmitter in order to conduct interviews, obtain a better vantage point to view the scene or otherwise more effectively cover the event, the mobile station may be operated as a temporarily unattended automatic relay station subject to the following conditions:

(1) The input power to the plate of the final radio frequency amplifier of the hand-carried or pack-carried transmitter shall not exceed 1 watt.

(2) The unattended transmitter shall be so equipped that it will be activated by the carrier of the hand-carried or pack-carried transmitter and will transmit only when relaying the transmissions of the hand-carried or pack-carried transmitter or when relaying the transmissions of an associated base station operating on the same frequency as the hand-carried or pack-carried transmitter and directed to the operator-reporter at the scene of the event.

(3) Unless the operator-reporter is equipped to monitor continuously the frequency on which the unattended transmitter operates, while moving about at the scene of the event, he shall observe the frequency before leaving the location of the mobile transmitter to ascertain whether it is in use so as to avoid interference to other users.

(c) Automatic mobile relay stations authorized pursuant to the provisions of § 74.432(d)(5) may be operated unattended.

(d) The operator on duty and in charge of the operation of a remote pickup broadcast station may, at the discretion of the station licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator license held and the rules and regulations governing such other stations. However, such extra duties shall in no way interfere with the duties connected with the operation of the remote pickup station.

(e) Further provisions and restrictions concerning the operator's authority are contained in Part 13 of this chapter.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

[§ 74.465 (a), (c), and (d) as amended, (e) as adopted, eff. 12-22-64; III(64)-4]

§ 74.466 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of that part.

§ 74.467 Additional orders.

In case the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

Other Operating Requirements

§ 74.481 Station records.

(a) The licensee of each remote pickup broadcast station shall maintain adequate records of the operation, including:

(1) Hours of operation.

(2) Program transmitted.

(3) Frequency check.

(4) Pertinent remarks concerning transmission.

(5) An entry giving points of program origination and receiver location.

(b) Where an antenna structure(s) is required to be illuminated, see § 17.38 of this chapter.

(c) Station records shall be retained for a period of two years.

§ 74.482 Station identification.

(a) Except for stations licensed pursuant to the provisions of § 74.437, each remote pickup broadcast base and mobile station will be assigned an individual call sign. This call sign shall be transmitted over the transmitter to which it is assigned, at the beginning and end of each period of operation. A period of operation may consist of a single continuous transmission or a series of intermittent transmissions related to the broadcast of a single event.

(b) In cases where a period of operation is of more than one hour duration, identification of the remote pickup stations participating in the operation shall be accomplished either by the transmission of the call signs assigned to the individual transmitters or identification of the associated broadcast station.

(c) In cases where an automatic mobile relay station is a part of the circuit, the call sign of the relay transmitter may be transmitted automatically by the relay transmitter or by the remote pickup broadcast base or mobile station that actuates the automatic mobile relay station.

[§ 74.482 as amended eff. 12-22-64; III(64)-4]

SUBPART E—AURAL BROADCAST STL AND INTERCITY RELAY STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.501 Classes of stations.

(a) *Aural broadcast STL station.* A fixed station utilizing telephony for the transmission of aural program material between a studio and the transmitter of a broadcasting station other than an international broadcasting station, for simultaneous or delayed broadcast.

(b) *Aural broadcast intercity relay station.* A fixed station utilizing telephony for the transmission of aural program material between broadcasting stations other than international broadcasting stations, for simultaneous or delayed broadcast.

§ 74.502 Frequency assignment.

(a) The frequency band 942–952 Mc/s is divided into nineteen 500 kc/s channels for assignment to aural broadcast STL and intercity relay stations. Each of the following frequencies is the center frequency of a channel:

Mc/s	*Mc/s*	*Mc/s*	*Mc/s*
942.5	945.0	947.5	950.0
943.0	945.5	948.0	950.5
943.5	946.0	948.5	951.0
944.0	946.5	949.0	951.5
944.5	947.0	949.5	

A single broadcast station licensee will normally be limited to the assignment of one 500 kc/s channel between the same point of origin and destination. If the circuit carries only one aural program channel, the center frequency of the channel will be assigned. If a single licensee requires more than one aural program channel between the same point of origin and destination, more than one transmitter may be authorized to operate within a single 500 kc/s channel, employing carrier frequencies above and below the center frequency listed in this paragraph. Where such assignments are made the operating frequencies selected shall be such that the unmodulated carrier frequency plus or minus the sum of M+D does not extend beyond the upper or lower channel edge. M is the maximum modulating frequency and D is the maximum excursion of the carrier from the unmodulated carrier frequency due to modulation. Under these circumstances, the operating frequencies of the unmodulated carriers shall be maintained within .001 percent of the assigned frequencies.

(b) The use of the frequencies listed in paragraph (a) of this section by aural broadcast intercity relay stations is subject to the condition that no harmful interference is caused to other classes of stations operating in accordance with the Table of Frequency Allocations contained in § 2.106 of this chapter.

(c) Any aural broadcast STL or intercity relay station for which there was outstanding a valid construction permit or license on April 16, 1958, specifying operation on any frequency between 890 Mc/s and 942 Mc/s, may continue to be operated on such frequencies for the remainder of the term specified in such authorization and may, upon appropriate application therefor, be granted a renewal of such license, subject to the condition that no harmful interference shall be caused to the radiolocation service operating in the band 890–942 Mc/s and subject to the further condition that the licensee must accept any interference which may be caused by the operation of radiolocation stations in the band 890–942 Mc/s and industrial, scientific, and medical (ISM) equipment in the band 890–940 Mc/s.

§ 74.503 Frequency selection.

(a) Each application for a new station or change in an existing station shall be specific with regard to frequency. In general, the lowest suitable frequency will be assigned which, on an engineering basis, will not cause harmful interference to other stations operating in accordance with existing frequency allocations.

(b) Where it appears that interference may result from the operation of a new station or a change in the facilities of an existing station, the Commission may require a showing that harmful interference will not be caused to existing stations or that if interference will be caused the need for the proposed service outweighs the loss of service due to the interference.

ADMINISTRATIVE PROCEDURE

§ 74.511 Cross reference.

See §§ 74.11 to 74.16.

LICENSING POLICIES AND GENERAL OPERATING REQUIREMENTS

§ 74.531 Permissible service.

(a) An aural broadcast STL station is authorized to transmit aural program material between the studio and transmitter location of a broadcasting station, except international broadcasting station, for simultaneous or delayed broadcast.

(b) An aural broadcast intercity relay station is authorized to transmit aural program material between broadcasting stations, except international broadcasting stations, for simultaneous or delayed broadcast.

(c) Multiplexing of the STL or intercity relay transmitter may be employed to provide additional communication channels for the transmission of aural program material, operational communications, or material authorized to be transmitted over an FM broadcast station under a valid Subsidiary Communications Authorization (SCA). An aural broadcast STL or intercity relay station may not, however, be operated solely for the transmission of operational or subsidiary communications. Operational communications include cues, orders, and other communications directly related to the operation of the broadcast station as well as special signals used for telemetry or the control of apparatus used in conjunction with the broadcasting operations.

(d) All program material, including subsidiary communications, transmitted over an aural broadcast STL or intercity relay station shall be intended for use by broadcast stations owned or under common control of the licensee or licensees of the STL or intercity relay station. Other broadcast stations may simultaneously utilize such program material with permission of the STL or intercity relay station licensee.

(e) In any case where multiplexing is employed on an aural broadcast STL station for the simultaneous transmission of more than one aural channel, the STL transmitter must be capable of transmitting the multiple channels within the channel on which the STL station is authorized to operate and with adequate technical quality so that each broadcast station utilizing the circuit can meet the technical performance standards stipulated in the rules governing that class of broadcasting station. If multiplex operation is employed during the regular operation of the STL station, the additional circuits shall be in operation at the time that the required periodic performance measurements are made of the overall broadcasting system from the studio microphone input circuit to the broadcast transmitter output circuit.

§ 74.532 Licensing requirements.

(a) An aural broadcast STL or intercity relay station will be licensed only to the licensee or licensees of broadcasting stations other than international broadcasting stations, and for use with broadcast stations owned entirely by or under common control of the licensee or licensees.

(b) More than one aural broadcast STL or intercity relay station may be licensed to a single licensee upon a satisfactory showing that the additional stations are needed to provide different program circuits to more than one broadcast station, to provide program circuits from other studios, or to provide one or more intermediate relay stations over a path which cannot be covered with a single station due to terrain or distance.

(c) If more than one broadcast station or class of broadcast station is proposed to be served by a single STL or intercity relay station, this information shall be clearly set forth in the application for construction permit or license.

(d) Each aural broadcast STL or intercity relay station will be licensed at a specified transmitter location to communicate with a specified receiving location, and the direction of the main radiation lobe of the transmitting antenna will be one of the terms of the license.

§ 74.533 Remote control and unattended operation.

(a) Aural broadcast STL and intercity relay stations may be operated by remote control: *Provided*, That such operation is conducted in accordance with the conditions listed in this section: *And provided further*, That the Commission is notified at least 10 days prior to such operation and that such notification is accompanied by a detailed description of the proposed remote control installation showing the manner of compliance with the following conditions:

(1) The operating position shall be under the control and supervision of the licensee and shall be the place at which a licensed operator meeting the requirements of § 74.565 and responsible for the operation of the transmitter is stationed;

(2) A carrier operated device shall be provided at the operating position which shall give a continuous visual indication when the transmitter is radiating; or, in lieu thereof, a device shall be provided which will give a continuous visual indication when any transmitter control circuits have been placed in a condition to produce radiation;

(3) Facilities shall be provided at the operating position which will permit the operator to turn the transmitter carrier on and off at will; and

(4) The transmitter and all of its operating controls shall be so installed and protected that they are not accessible to other than authorized personnel.

(b) In cases where intermediate relay stations are employed in aural broadcast STL or intercity relay systems, such intermediate relay stations may be operated unattended if the following requirements are met:

(1) The transmitter shall be equipped with automatic circuits that will cause it to cease radiating at times when no signal is being received from the station which it is relaying.

(2) The transmitter shall be provided with adequate safeguards to prevent improper operation of the equipment.

(3) The transmitter installation shall be adequately protected against tampering by unauthorized persons.

(4) Whenever an intermediate relay station is in operation, appropriate observations shall be made at the receiving end of the STL or intercity relay circuits at intervals not exceeding one hour by a person holding a valid first or second class radiotelephone operator license, who shall take immediate steps to correct any condition of improper operation that may be observed.

(5) It shall be the responsibility of the licensee to insure that any repairs or adjustments that may be necessary are made by a person technically qualified to do so.

(c) The Commission may notify the licensee not to commence remote control or unattended operation, or to cancel, suspend, or change the date of the beginning of such operation as and when such action may appear to be in the public interest, convenience, and necessity.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.534 Power limitations.

Aural broadcast STL and intercity relay stations will be licensed with a power output not in excess of that necessary to render satisfactory service. The license for these stations will specify the maximum authorized power. The operating power shall not be greater than necessary to carry on the service and in no event more than 5 percent above the maximum power specified. Engineering standards have not been established for these stations. The efficiency factor for the last

radio stage of transmitters employed will be subject to individual determination but shall be in general agreement with values normally employed for similar equipment operated within the frequency range authorized.

§ 74.535 Emission and bandwith.

(a) Aural broadcast STL and intercity relay stations normally will be authorized to employ frequency modulation only. The maximum frequency excursion of the carrier resulting from modulation shall not exceed 200 kc/s above or below the assigned frequency.

(b) If multiplexing by means of one or more subcarriers is employed, the maximum sub-carrier frequency used shall be such that 2M+2D does not exceed 500 kc/s, where M is the maximum modulating frequency in cycles per second and 2D equals the total carrier frequency excursion as the result of modulation, expressed in cycles per second.

(c) The channels assigned to aural broadcast STL and intercity relay stations are 500 kc/s in width, the assigned frequency being at the center of the channel. Emissions appearing outside the assigned channel shall be attenuated as follows:

(1) Any emission appearing on a frequency removed from the assigned frequency by between 250 and 500 kc/s shall be attenuated at least 25 decibels below the level of the unmodulated carrier. Compliance with this specification will be deemed to show the occupied bandwidth to be 500 kc/s or less.

(2) Any emission appearing on a frequency removed from the assigned frequency by more than 500 kc/s and up to and including 750 kc/s shall be attenuated at least 35 decibels below the level of the unmodulated carrier.

(3) Any emission appearing on a frequency removed from the assigned frequency by more than 750 kc/s shall be attenuated at least $43+10 \log_{10}$ (power, in watts) decibels below the level of the unmodulated carrier.

§ 74.536 Directional antenna required.

Each aural broadcast STL and intercity relay station is required to employ a directional antenna. Considering one kilowatt of radiated power as a standard for comparative purposes, such antenna shall provide a free space field intensity at one mile of not less than 435 mv/m in the main lobe of radiation toward the receiver and not more than 20 percent of the maximum value in any azimuth 30 degrees or more off the line to the receiver. Where more than one antenna is authorized for use with a single station, the radiation pattern of each shall be in accordance with the foregoing requirement.

EQUIPMENT

§ 74.551 Equipment changes.

(a) Prior Commission approval, upon appropriate application (FCC Form 313) therefor, is required for any of the following changes:

(1) A change in the transmitter as a whole (except replacement with an identical transmitter), or a change in power output.

(2) A change of frequency assignment.

(3) A change in the location of the STL transmitter (except relocation of the equipment within the same building).

(4) Any change in the antenna system which will increase the height of the antenna above the natural formation or man-made structure upon which it is mounted by more than 20 feet or will result in an overall height above ground of more than 170 feet (except where the antenna is mounted below the top of an existing structure which is more than 170 feet high).

(5) Any change in the direction of the main radiation lobe of the transmitting antenna.

(b) Other equipment changes not specifically referred to in this section may be made at the discretion of the licensee, provided that the Engineer-in-charge of the radio district in which the station is located and the Commission in Washington, D.C., are promptly notified in writing upon the completion of such changes, and provided that the changes are set forth in the next application for renewal of license. Where such changes include the installation of multiplex equipment to provide additional aural channels, the purpose for which these added channels will be used shall be stated.

TECHNICAL OPERATION AND OPERATORS

§ 74.561 Frequency tolerance.

The licensee of each aural broadcast STL and intercity relay station shall maintain the operating frequency of the station within plus or minus 0.005 percent of the assigned frequency.

§ 74.562 Frequency monitors and measurements.

The licensee of each aural broadcast STL and intercity relay station shall provide the necessary means for determining that the frequency of the station is within the allowed tolerance. The date and time of each frequency check, the frequency as measured, and a description or identification of the method employed shall be entered in the station log. Sufficient observations shall be made to insure that the assigned carrier frequency is maintained within the prescribed tolerance.

§ 74.563 Station inspection.

The licensee of each aural broadcast STL and intercity relay station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 74.564 Station and operator licenses; posting of.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation

of the station shall be posted so that all terms thereof are visible, in a conspicuous place in the room in which the transmitter is located: *Provided,* That if the transmitter operator is located at a distance from the transmitter pursuant to § 74.533 the station license shall be posted in the above-described manner at the operating position.

(b) The original license of each station operator shall be posted at the place where he is on duty: *Provided, however,* If the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing that class of station and is there available for inspection by an authorized Commission representative, a verification card (Form 758–F) is acceptable in lieu of the posting of such license: *Provided further, however,* That if the operator on duty holds a restricted radiotelephone operator permit of the card form (as distinguished from the diploma form) he shall not post that permit but shall keep it in his personal possession.

§ 74.565 Operator requirements.

One or more radio operators holding any class of commercial radio operator license or permit shall be on duty at the place where the transmitting apparatus is located, except as provided in § 4.533, and in actual charge of its operation. Further provisions and restrictions concerning the operator's authority are contained in Part 13 of this chapter. The licensed operator on duty and in charge of a broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such stations. However, such duties shall in no wise interfere with the operation of the broadcast transmitter.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.566 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of this chapter.

§ 74.567 Additional orders.

In case the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

Other Operating Requirements

§ 74.581 Station records.

(a) The licensee of each aural broadcast STL and intercity relay station shall maintain adequate records of the operation, including:

(1) Hours of operation.

(2) Program transmitted.

(3) Frequency check.

(4) Pertinent remarks concerning transmission.

(b) Where an antenna structure(s) is required to be illuminated, see § 17.38 of this chapter.

(c) Station records shall be retained for a period of two years.

[*§ 4.581 as amended eff. 3–26–62; III (61)–2*]

§ 74.582 Station identification.

(a) Each aural broadcast STL or intercity relay station shall transmit its call sign at the beginning and end of each period of operation, and during operation, at least once every hour, it shall either transmit its call sign or the call sign of the broadcast station with which it is associated. In cases when an unattended intercity relay system is operated as an "off-the-air" pickup and relay, the transmission of the call sign of the broadcast station which it is relaying will satisfy the hourly identification requirement.

(b) Station identification transmissions during operation need not be made when to make such transmission would interrupt a single consecutive speech, play, religious service, symphony concert, or other such productions. In such cases, the identification transmission shall be made at the first interruption of the entertainment continuity and at the conclusion thereof.

(c) Where more than one aural broadcast STL or intercity relay station is employed in an integrated relay system, the station at the point of origination may originate the transmission of the call signs of all of the stations in the relay system.

(d) Voice transmissions shall normally be employed for station identification. However, other methods of station identification may be permitted or required by the Commission.

SUBPART F—TELEVISION AUXILIARY BROADCAST STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.601 Classes of television auxiliary broadcast stations.

(a) *Television pickup station.* A land mobile station used for the transmission of television program material and related communications from the scenes of events occurring at points removed from television broadcast station studios to television broadcast stations.

(b) *Television STL station (studio-transmitter link).* A fixed station used for the transmission of television program material and related communications from the studio to the transmitter of a television broadcast station.

(c) *Television intercity relay station.* A fixed station used for intercity transmission of television program material and related communications for use by television broadcast stations.

(d) *Television translator relay station.* A fixed station used for relaying the signals of television broadcast stations to television broadcast translator stations.

NOTE: Wherever used in this subpart, the term "television broadcast station licensee" includes a television broadcast station permittee.

[§ 74.601(d) *adopted eff. 1-10-67; III(64)-15*]

§ 74.602 Frequency assignment.

(a) The following frequencies are available for assignment to television pickup, television STL, and television intercity relay stations:

Band A Mc/s	Band B Mc/s	Band D Mc/s	
1990-2008	6875-6900	12700-12725	12975-13000
2008-2025	6900-6925	12725-12750	13000-13025
2025-2042	6925-6950	12750-12775	13025-13050
2042-2059	6950-6975	12775-12800	13050-13075
2059-2076	6975-7000	12800-12825	13075-13100
2076-2093	7000-7025	12825-12850	13100-13125
2093-2110[1]	7025-7050	12850-12875	13125-13150
2450-2467	7050-7075	12875-12900	13150-13175
2467-2484	7075-7100	12900-12925	13175-13200
2484-2500	7100-7125	12925-12950	13200-13225
		12950-12975	13225-13250

[1] The frequencies 2106.4 Mc/s and 2101.8 Mc/s may be assigned to Government earth stations at the locations listed below only, for transmissions in connection with Project Apollo until Dec. 31, 1970.

Goldstone, Calif. (35°23'20" N., 116°50'53" W.)
Guam, Mariana Islands (13°18'34" N., 144°44'10" E.)
Cape Kennedy, Fla. (28°28'54" N., 80°34'35" W.)
Corpus Christi, Tex. (27°39'19" N., 97°22'49" W.)
Kauai, Hawaii (22°07'31" N., 159°40'16" W.)

Full power operation will occur only when spacecraft launched as a part of Project Apollo are in actual flight and at such times TV auxiliary stations operating in the channel 2093-2110 Mc/s must accept any interference that may be caused by such operation. Operation at all other times shall be confined to laboratory testing and subdued radiation spacecraft tests, subject to the condition that no harmful interference is caused to TV auxiliary stations.

[§ 74.602(a) *Table footnote amended to include Guam, Mariana Islands eff. 10-25-65; III(64)-10*]

Frequencies in the bands 17700-19300 Mc/s, 19400-19700 Mc/s, 27525-31300 Mc/s, and 38600-40000 Mc/s are available for assignment on a case-by-case basis for television pickup, STL and intercity relay purposes. Channel widths and frequency tolerance will be specified in individual authorizations. Frequencies shown above between 2450 and 2500 Mc/s in band A are allocated to accommodate the incidental radiations of industrial, scientific, and medical (ISM) equipment, and stations operating therein must accept any interference that may be caused by the operation of such equipment. Frequencies between 2450 and 2500 Mc/s are also shared with other communication services and exclusive channel assignments will not be made, nor is the channeling shown above necessarily that which will be employed by such other services.

[§ 74.602(a) *table amended eff. 3-15-65; III(64)-6*]

(b) Except as provided in paragraph (a) of this section, each television broadcast station licensee in an area may request the assignment of one channel in Band A or Band B and one channel in Band D on an exclusive basis. In making such exclusive assignments, priority will be based on the filing date of an appropriate application (FCC Form 313) completed in accordance with the instructions thereon. Frequency assignments will normally be made as requested if the requested frequency is not assigned to another licensee on an exclusive basis. However, the Commission reserves the right to assign frequencies other than those requested if, in its opinion, such action is warranted.

(c) Where the relative locations of the studio and transmitter are such as to permit co-channel operation of television STL stations by two or more licensees in the same area, such licensees may, by mutual agreement, request the assignment of a common channel for STL use on an exclusive basis. In the event that such a shared assignment is made, each participating licensee may request the assignment of an individual exclusive channel in Band A, Band B, or Band D in addition to the shared STL channel.

(d) A television broadcast station licensee will normally be limited to the assignment of not more than three channels in Bands A and B combined, only one of which will be assigned on an exclusive basis: *Provided, however,* That additional channels in Bands A and B may be assigned on a non-exclusive basis upon a satisfactory showing that additional channels are necessary and that such additional channels, if assigned, will not be needed to provide an exclusive channel to some other licensee in the same area within the foreseeable future. The number of channels in Band D that may be assigned to a licensee in a single area is not restricted.

(e) Non-exclusive channel assignments are subject to withdrawal without advance notice to provide an exclusive channel assignment to a licensee pursuant to the provisions of paragraph (b) of this section. The

Commission reserves the right to select the non-exclusive channel assignment to be withdrawn; however, withdrawals will normally be made in the following order:

(1) The most recent channel assignment to the licensee having the greatest number of assignments in Band A, B, or D. Determination as to whether the withdrawal shall be made in Band A, Band B, or Band D will be based on the design of the equipment proposed to be used by the applicant for whom the exclusive channel is required.

(2) Where two or more licensees are assigned individually an equal number of non-exclusive channels in the same band and a greater number of channels in that band than any one of the other licensees, the assignment of most recent date.

(3) In all other cases the assignment of most recent date of a non-exclusive channel.

(f) The use of frequencies in the bands 1990–2110 Mc/s, 6875–7125 Mc/s and 12,950–13,200 Mc/s by television intercity relay stations shall be on a secondary basis, i.e., subject to the condition that no harmful interference is caused to stations operating in accordance with the table of frequency allocations in § 2.106 of this chapter. In the band 12,700–12,950 Mc/s, television pickup stations shall not cause harmful interference to community antenna relay, television intercity relay and television STL stations.

(g) In the event that a television broadcast station licensee engages a communications common carrier to provide television pickup or television STL service, the frequencies available to that licensee may be assigned to the communications common carrier for the purpose of providing such service to that licensee. For the purpose of applying the provisions with respect to exclusive channel assignments and the withdrawal of channels, channels assigned to communications common carriers to provide television pickup or television STL service to an individual television broadcast station licensee will be considered to be assigned to that television broadcast licensee.

(h) Certain frequencies in Band A (1990–2110 Mc/s) may be used by translator relay stations on a secondary basis, i.e., subject to the condition that no harmful interference is caused to television pickup, television STL, and television intercity relay stations, and that translator relay stations must accept any interference caused by such stations. The upper 6 Mc/s of each of the channels in Band A, except those between 2450 and 2500 Mc/s, is available for use by translator relay stations as follows:

Mc/s		
2002–2008	2053–2059	2087–2093
2019–2025	2070–2076	2104–2110
2036–2042		

(i) Channel assignments will be made to television pickup, television STL, and television intercity relay stations, without regard to the existence of television translator relay stations.

[*§ 74.602 amended in III(64)–11; (h) & (i) adopted eff. 1–10–67; III(64)–15*]

§ 74.603 Sound channels.

(a) The frequencies listed in § 74.602(a) may be used for the simultaneous transmission of the picture and sound portions of television broadcast programs and for cue and order circuits, either by means of multiplexing or by the use of a separate transmitter within the same channel. When multiplexing of a television STL station is contemplated, consideration should be given to the requirements of § 73.687 of this chapter regarding the overall system performance requirements. Applications for new television pickup, television STL, and television intercity relay stations shall clearly indicate the nature of any multiplexing proposed. Multiplexing equipment may be installed on licensed equipment without further authority of the Commission: *Provided*, That the Commission in Washington, D.C., and the Commission's engineer-in-charge of the radio district in which the station is located shall be promptly notified of the installation of such apparatus: *And provided further*, That the installation of such apparatus on a television STL station shall not result in degradation of the overall system performance of the television broadcast station below that permitted by § 73.687 of this chapter.

(b) The aural portion of television broadcast program material may be transmitted over an aural broadcast STL or intercity relay station licensed under the provisions of Subpart E of this part.

(c) Any television STL station or television intercity relay station used for the transmission of the sound portion only of television program material and for which there was outstanding a valid construction permit or license on April 16, 1958, specifying operation on any frequency between 890 Mc/s and 940 Mc/s may continue to be operated on such frequencies for the remainder of the term specified in such authorization and may, upon appropriate application therefor, be granted a renewal of license subject to the condition that no harmful interference shall be caused to the radiopositioning service operating in the band 890–942

Mc/s and subject to the further condition that the licensee must accept any interference which may be caused by the operation of radiopositioning stations in the band 890–942 Mc/s and industrial, scientific, and medical (ISM) equipment operating in the band 890–940 Mc/s.

(d) Remote pickup broadcast stations may be used in conjunction with television pickup stations for the transmission of the aural portion of television programs or events that occur outside a television studio and for the transmission of cues, orders, and other related communications necessary thereto. The rules governing remote pickup broadcast stations are contained in Subpart D of this part.

§ 74.604 Frequency selection to avoid interference.

(a) Applicants for new television pickup, television STL, and television intercity relay stations shall endeavor to select frequency assignments which will be least likely to result in mutual interference with other licensees in the same area. Consideration should be given to the relative locations of receiving points, normal transmission path, and nature of the contemplated operation.

(b) Because of the more or less continuous nature of the operation of television STL stations, frequency assignments to such stations will normally be designated as the exclusive channel of the licensee pursuant to § 74.602(b).

(c) Where two or more licensees are assigned a common channel for television pickup, television STL, or television intercity relay purposes in the same area and simultaneous operation is contemplated, they shall take such steps as may be necessary to avoid mutual interference. If a mutual agreement to this effect cannot be reached, the Commission shall be notified and it will take such action as may be necessary, including time-sharing arrangements, to assure an equitable distribution of available facilities.

ADMINISTRATIVE PROCEDURE

§ 74.621 Cross reference.

See §§ 74.11 to 74.16.

LICENSING POLICIES AND GENERAL OPERATING REQUIREMENTS

§ 74.631 Permissible service.

(a) The license of a television pickup station authorizes the transmission of program material, orders concerning such program material, and related communications necessary to the accomplishment of such transmissions, from the scenes of events occurring in places other than a television studio, to its associated television broadcast station, to such other stations as are broadcasting the same program material, or to the network or networks with which the television broadcast station is affiliated. Television pickup stations may be operated in conjunction with other television broadcast stations not aforementioned in this paragraph: *Provided,* That the transmissions by the television pickup station are under the control of the licensee of the television pickup station and that such operation shall not exceed a total of 10 days in any 30-day period. Television pickup stations may be used to provide temporary studio-transmitter links or intercity relay circuits consistent with § 74.632 without further authority of the Commission: *Provided, however,* That prior Commission authority shall be obtained if the transmitting antenna to be installed will increase the height of any natural formation or man-made structure by more than 20 feet and will be in existence for a period of more than 2 consecutive days.

NOTE: As used in this subpart, "associated television broadcast station" means a television broadcast station licensed to the licensee of the television auxiliary broadcast station and with which the television auxiliary station is licensed as an auxiliary facility.

(b) A television broadcast STL station is authorized to transmit visual program material between the studio and the transmitter of a television broadcast station for simultaneous or delayed broadcast.

(c) A television intercity relay station is authorized to transmit visual program material between television broadcast stations for simultaneous or delayed broadcast.

(d) The transmitter of an STL or intercity relay station may be multiplexed to provide additional communication channels for the transmission of aural program material and operational communications. Operational communications include voice communications, telemetry signals, alerting signals, fault reporting signals, and control signals all of which must be directly related to the technical operation of the associated broadcast station or the STL or intercity relay system of which the multiplexed transmitter is a part. Aural program material may include the sound accompanying the visual program material transmitted over the STL or intercity relay system or aural program material intended for broadcast by

other AM, FM, or TV broadcast stations owned by or under the common control of the licensee of the television STL or intercity relay station. A television broadcast STL or intercity relay station will be authorized only in those cases where the principal use is the transmission of television broadcast program material for use by its associated TV broadcast station. However, STL or intercity relay stations so licensed may be operated at any time for the transmission of aural program material and operational communications whether or not visual program material is being transmitted, provided that such operation does not cause harmful interference to television broadcast pickup, STL, or intercity relay stations transmitting television broadcast program material.

(e) Except as provided in paragraphs (a), (d), and (f) of this section, all program material transmitted over a television pickup, STL, or intercity relay station shall be used by or intended for use by a television broadcast station owned by or under the common control of the licensee of the television pickup, STL, or intercity relay station. Program material, transmitted over a television pickup, STL, or intercity relay station and so used by the licensee of such facility may, with the permission of the licensee of the broadcast auxiliary facility, be used by other television boadcast stations and by nonbroadcast closed circuit educational television systems operated by educational institutions.

(f) A television broadcast pickup, STL, or intercity relay station may, at times when it is not transmitting program material to its associated television broadcast station, be used for the transmission of program material to non-broadcast closed circuit educational television systems operated by educational institutions, provided that such use is less than 50 percent of the total use of the broadcast auxiliary facility during any one year of the license period. Use of the broadcast auxiliary facility for this purpose is subject to the condition that no harmful interference is caused to broadcast auxiliary stations operating in accordance with the basic frequency allocation. No charge either direct or indirect shall be made for this use. Licensees shall submit reports with their applications for renewals showing the breakdown of usage in terms of primary and alternate uses, during each year of the license term.

(g) A television translator relay station is authorized only to transmit the signals of a television broadcast station or another translator relay station that have been received directly through space, converted to a channel available under § 74.602(h) and suitably amplified, to television broadcast translator stations for simultaneous retransmission.

[*§ 74.631 amended in III(64)–4 and III(64)–14; (g) adopted eff. 1–10–67; III(64)–15*]

§ 74.632 Licensing requirements.

(a) A license for a television pickup, television STL, or television intercity relay station will be issued only to the licensee of a television broadcast station. A separate application is required for each transmitter and the application shall be specific with regard to the frequency requested. Except as provided in § 74.604(b), the first channel assigned in Band A or Band B to a licensee will be considered to be the exclusive assignment provided in § 74.602(b). Exclusive channel assignments in Band D will be designated only upon request. A licensee may request a change in its exclusive channel assignment only where there are unassigned channels available. In making such changes, the priority set forth in § 74.602(b) will be observed.

(b) A license for a television intercity relay station may be issued in any case where the circuit will operate between television broadcast stations either by means of "off-the-air" pickup and relay or location of the initial relay station at the studio or transmitter of a television broadcast station.

(c) An application for construction permit for a new television pickup station or for renewal of license of an existing station shall designate the television broadcast station with which it is to be operated and specify the area in which the proposed operation is intended.

(d) In case a licensee has two or more television broadcast stations located in different cities, it shall, in applying for a new television pickup station or for renewal of license of an existing station, designate the television broadcasting station in conjunction with which it is to be operated principally, and it shall not thereafter operate the television pickup station in conjunction with another of its television broadcast stations located in a different city for a total of more than 10 days in any 30-day period.

(e) A license for a television translator relay station will be issued only to the licensee of a television broadcast translator station. The application for construction permit shall designate the television broadcast stations to be relayed and the television broadcast translator station with which it is to be operated.

[*§ 74.632(e) adopted eff. 1–10–67; III(64)–15*]

§ 74.633 Temporary authorizations.

(a) Special temporary authority may be granted for the operation, as a television auxiliary broadcast station, of equipment licensed to another television broadcast station, or other class of station, or equipment of suitable design not heretofore licensed. Such authority will normally be granted only for special operation of a temporary nature.

(b) A request for special temporary authority for the operation of a television auxiliary broadcast station may be made by informal application, which shall be filed with the Commission at least 10 days prior to the date of the proposed operation: *Provided*, That an application filed within less than 10 days of the proposed operation may be accepted upon a satisfactory showing of the reasons for the delay in submitting the request.

(c) An application for special temporary authority shall set forth full particulars of the purpose for which the request is made, and shall show the type of equipment, power output, emission, and frequency or frequencies proposed to be used, as well as the time, date and location of the proposed operation. In the event that the proposed antenna installation will increase the height of any natural formation, or existing man-made structure, by more than 20 feet, a vertical plan sketch showing the height of the structure proposed to be erected, the height above ground of any existing structure, the elevation of the site above mean sea level, and the geographic coordinates of the proposed site, shall be submitted with the application.

(d) A request for special temporary authority shall specify a channel or channels consistent with the provisions of § 74.602: *Provided*, That in the case of events of wide-spread interest and importance which cannot be transmitted successfully on these frequencies, frequencies assigned to other services may be requested upon a showing that operation thereon will not cause interference to established stations: *And provided further*, That in no case will a television auxiliary broadcast operation be authorized on frequencies employed for the safety of life and property.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.634 Remote control operation.

(a) A television auxiliary station may be operated by remote control provided that such operation is conducted in accordance with the conditions listed below, and provided further that the Commission is notified at least 10 days prior to such operation and that such notification is accompanied by a detailed description of the proposed remote control installation showing the manner of compliance with the following conditions:

(1) The operating position shall be under the control and supervision of the licensee and shall be the place at which a licensed operator meeting the requirements of § 74.665 and responsible for the operation of the transmitter is stationed;

(2) A carrier operated device shall be provided at the operating position which shall give a continuous visual indication when the transmitter is radiating; or, in lieu thereof, a device shall be provided which will give a continuous visual indication when any transmitter control circuits have been placed in a condition to produce radiation;

(3) Facilities shall be provided at the operating position which will permit the operator to turn the transmitter carrier on and off at will; and

(4) The transmitter and all of its operating controls shall be so installed and protected that they are not accessible to other than duly authorized personnel.

(b) The Commission may notify the licensee not to commence remote control operation, or to cancel, suspend, or change the date of beginning for such operation as and when such action may appear to be in the public interest, convenience, and necessity.

§ 74.635 Unattended operation.

(a) Television intercity relay stations, television translator relay stations, and television STL stations, where the circuit requires the use of more than one STL transmitter, may be operated unattended: *Provided*, That such operation is conducted in accordance with the conditions listed below: *And provided further*, That the Commission is notified at least 10 days prior to the beginning of such operation and that such notification is accompanied by a detailed description of the proposed installation showing the manner of compliance with the following conditions:

(1) The transmitter is capable of retransmitting by self-actuating means a radio signal received from another radio station or stations;

(2) The transmitter shall be provided with adequate safeguards to prevent improper operation of the equipment;

(3) The transmitter shall be so installed and protected that it is not accessible to other than duly authorized persons;

(4) In the case of television intercity relay stations and television STL stations, appropriate observations shall be made, at intervals not exceeding 1 hour during

the period of their operation, at the receiving end of the circuit, by a person holding a valid first-or-second class radiotelephone operator license who shall immediately institute measures sufficient to assure prompt correction of any condition of improper operation that is observed; and

(5) The station licensee shall remain responsible for the proper operation of the station, and all adjustments or tests during or coincident with the installation, servicing, or maintenance of the station which may affect its proper operation shall be performed by or under the immediate supervision and responsibility of a licensed operator as provided in § 74.665.

(b) The Commission may notify the licensee not to commence unattended operation, or to cancel, suspend, or change the date of the beginning of such operation as and when such action may appear to be in the public interest, convenience, and necessity.

[§ 74.635(a) *amended eff. 1-10-67; III(64)-15*]

§ 74.636 Power limitations.

Television auxiliary broadcast stations will be licensed with a power output not in excess of that necessary to render satisfactory service. The license for these stations will specify the maximum authorized power. The operating power shall not be greater than necessary to carry on the service and in no event more than 10 percent above the maximum power specified. Engineering standards have not been established for these stations. The efficiency factor for the last radio stage of transmitters employed will be subject to individual determination but shall be in general agreement with values normally employed for similar equipment operated within the frequency range authorized.

§ 74.637 Emission and bandwidth.

(a) Television broadcast auxiliary stations operating on frequencies above 1000 Mc/s may be authorized to employ any type of emission suitable for the transmission of the visual and such accompanying aural signals as may be permitted under the rules of this subpart. Television translator relay stations will be authorized to use only amplitude modulation (A5) for the visual signal and frequency modulation (F3) for the aural signal, obtained by simple heterodyne frequency conversion of the signals of a television broadcast station. The electrical characteristics of the incoming signal shall not be significantly altered except as to frequency and amplitude.

(b) The channels assigned to television broadcast auxiliary stations are designated by upper and lower frequency limits. Emissions outside of these frequency limits shall be attenuated as follows:

(1) Any emission appearing on a frequency above the upper channel limit or below the lower channel limit by between zero and 50 percent of the assigned channel width shall be attenuated at least 25 decibels below the level of the unmodulated carrier. Compliance with this specification will be deemed to show that the occupied bandwidth is no greater than the assigned channel width.

(2) Any emission appearing on a frequency above the upper channel limit or below the lower channel limit by between 50 percent and 150 percent of the assigned channel width shall be attenuated at least 35 decibels below the level of the unmodulated carrier.

(3) Any emission appearing on a frequency above the upper channel limit or below the lower channel limit by more than 150 percent of the assigned channel width shall be attenuated at least $43+10 \log_{10}$ (power, in watts) decibels below the level of the unmodulated carrier.

[§ 74.637(a) *amended eff. 1-10-67; III(64)-15*]

EQUIPMENT

§ 74.651 Equipment changes.

(a) Commission authority, upon appropriate formal application (FCC Form 313) therefor, is required for any of the following equipment changes:

(1) A change of the transmitter as a whole (except replacement with an identical transmitter), or a change in the power output.

(2) A change of frequency assignment.

(3) A change in the location of a television STL or television intercity relay station (except relocation of the equipment within the same building) or a change in the area of operation of a television pickup station.

(4) Any change in the antenna system of a television STL or television intercity relay station which will result in a change of more than 20 feet in the height above ground of the antenna and supporting structure, or that will result in a change of the direction of the main radiation lobe.

(b) Other equipment changes not specifically referred to above may be made at the discretion of the licensee provided that the Engineer in Charge of the radio district in which the station is located, and the Commission at its Washington office, are notified in writing upon the completion of such changes, and provided that the changes are appropriately reflected in the next application for renewal of license of the television auxiliary broadcast station filed by the licensee.

(c) Multiplexing equipment may be installed on any licensed television broadcast STL or intercity relay station without further authority of the Commission, provided that the Engineer in Charge of the radio district in which the station is located and the Commission in Washington, D.C., are promptly notified in writing of such addition and the use which will be made of the additional aural circuits, and that the changes are shown in the next application for renewal of license for the station.

TECHNICAL OPERATION AND OPERATORS

§ 74.661 Frequency tolerance.

(a) The licensee of a television auxiliary broadcast station shall maintain the operating frequency of its station so that the normal sideband energy shall fall within the assigned channel. If transmission is by asymmetrical sideband operation, suitable filters or other devices shall be employed to insure a minimum of radiated energy outside the assigned channel.

(b) Television STL stations operating on frequencies shown in § 74.603(b) shall maintain their operating frequency within 0.005 percent of the assigned frequency.

(c) Television translator relay stations shall maintain their operating frequency within 0.002 percent of the assigned frequencies.

[*§ 74.661(c) adopted eff. 1-10-67; III(64)-15*]

§ 74.662 Frequency monitors and measurements.

The licensee of a television auxiliary broadcast station shall provide means for measuring the operating frequency in order to insure that the emissions are confined to the authorized channel. The date and time of each frequency check, the frequency as measured and a description or identification of the method employed shall be entered in the station log.

§ 74.663 Station inspection.

The licensee of each television auxiliary broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 74.664 Station and operator licenses; posting of.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation of the station shall be posted so that all terms thereof are visible in a conspicuous place in the room in which the transmitter is located: *Provided:*

(1) If the transmitter operator is located at a distance from the transmitter pursuant to § 74.634, the station license shall be posted in the above-described manner at the operating position.

(2) If the station is licensed for mobile operation, the station license or a photo copy thereof shall be affixed to the equipment or kept in the possession of the operators on duty at the transmitter. If a photo copy is used, the original license shall be available for inspection by an authorized government representative.

(b) The original license of each station operator shall be posted at the place where he is on duty: *Provided, however,* That if the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing that class of station and is there available for inspection by an authorized Commission representative, a duly issued verified statement (Form 759) may be posted at the television auxiliary broadcast station in lieu of such original license: *And provided further,* That if the television auxiliary broadcast station is licensed for mobile operation, a duly issued verification card (Form 758-F) attesting to the existence of such original license may be carried on the person of the operator in lieu of the posting of such license or verified statement.

NOTE: The term mobile as here used is intended to include any type of mobile operation.

§ 74.665 Operator requirements.

(a) One or more radio operators holding valid radiotelephone first-class or radiotelephone second-class operator licenses shall be on duty at the place where the transmitting apparatus of any television auxiliary broadcast station is located and in actual charge of its operation: *Provided, however,* That if a station is operated by remote control as provided in § 74.634, such operator or operators must be on duty at the control point in lieu of the transmitting location: *And provided further,* That, in case a station is operated unattended as provided in § 74.635 such an operator shall be on duty at the receiving end of the circuit and shall be responsible for the required observations and the proper operation of the station within the terms of its license.

(b) The licensed operator on duty and in charge of a television auxiliary broadcast station may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator license which he holds and the regulations governing such stations; how-

ever, such duties shall in nowise interfere with the operation of the television auxiliary broadcast station.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.666 Antenna structure, marking and lighting.

The provisions of Part 17 of this chapter (Construction, Marking, and Lighting of Antenna Structures) require that certain antenna structures be painted and/or lighted in accordance with the provisions of that part. Where the antenna structure of a facility authorized under this subpart is required to be painted or lighted, see §§ 17.37, 17.39, 17.40, 17.41, and 17.42 of this chapter.

§ 74.667 Additional orders.

In case the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

Other Operating Requirements

§ 74.681 Station logs.

(a) The licensee of each television auxiliary broadcast station shall maintain adequate records of the operation including:

(1) Hours of operation.

(2) Call letters of broadcast station to which program transmitted.

(3) Frequency check.

(4) Pertinent remarks concerning transmission.

(b) Where an antenna structure(s) is required to be illuminated, see § 17.38 of this part.

(c) Station records shall be retained for a period of two years.

§ 74.682 Station identification.

(a) Each television broadcast auxiliary station shall transmit station identification at the beginning and end of each period of operation and at intervals of no more than 1 hour during operation, by one of the following means:

(1) Transmission of its own call sign by visual or aural means or by automatic transmission in international Morse telegraphy.

(2) Visual or aural transmission of the call sign of the TV broadcast station with which it is licensed as an auxiliary.

(3) Visual or aural transmission of the call sign of the TV broadcast station whose signals are being relayed or, where programs are obtained directly from network lines and relayed, the network identification.

(b) Identification transmissions during operation need not be made when to make such transmission would interrupt a single consecutive speech, play, religious service, symphony concert, or any type of production. In such cases, the identification transmission shall be made at the first interruption of the entertainment continuity and at the conclusion thereof.

(c) During occasions when a television pickup station is being used to deliver program material for network distribution it may trasmit the network identification in lieu of its own or associated TV station call sign during the actual program pickup. However, if it is providing the network feed through its own asociated TV broadcast station it shall perform the station identification required by paragraph (a) of this section at the beginning and end of each period of operation.

(d) A period of operation is defined as a single uninterrupted transmission or a series of intermittent transmissions from a single location or continuous or intermittent transmission from a television pickup station covering a single event from various locations, within a single broadcast day.

(e) Regardless of the method used for station identification it shall be performed in a manner conducive to prompt association of the signal source with the responsible licensee. In exercising the discretion provided by this rule, licensees are expected to act in a responsible manner to assure that result.

(f) Television translator relay stations are exempt from the requirements of this section. However, they shall transmit the call sign of the television broadcast station, the signals of which they are retransmitting.

[*§ 74.682 amended eff. 1-10-67 and (f) adopted eff. 1-10-67; III(64)-15*]

SUBPART G—TELEVISION BROADCAST TRANSLATOR STATIONS

Definitions and Allocation of Frequencies

§ 74.701 Definitions.

(a) *Television broadcast translator station.* A station in the broadcasting service operated for the purpose of retransmitting the signals of a television broadcast station, another television broadcast translator station, or a television translator relay station, by means of direct frequency conversion and amplification of the incoming signals without significantly altering any characteristic of the incoming signal other than

its frequency and amplitude, for the purpose of providing television reception to the general public.

(b) *Primary station.* The television broadcasting station radiating the signals which are retransmitted by a television broadcast translator station.

(c) *VHF translator.* A television broadcast translator station operating on a VHF television broadcast channel.

(d) *UHF translator.* A television broadcast translator station operating on a UHF television broadcast channel.

(e) *UHF translator signal booster.* A station in the broadcasting service operated for the sole purpose of retransmitting the signals of a UHF translator station by amplifying and reradiating such signals which have been received directly through space, without significantly altering any characteristic of the incoming signal other than its amplitude.

[*§ 74.701(a) amended eff. 1-10-67; III(64)-15*]

§ 74.702 Frequency assignment.

(a) An applicant for a new television broadcast translator station or for changes in the facilities of an authorized station shall endeavor to select a channel on which its operation is not likely to cause interference to the reception of other stations. The application must be specific with regard to the frequency requested. Only one channel will be assigned to each station.

(b) Any one of the 12 standard VHF channels (2–13 inclusive) may be assigned to a VHF translator on condition that no interference is caused to the direct reception of any television broadcast station operating on the same or an adjacent channel: *Provided, however,* That channels 5 and 6 are allocated for nonbroadcast use in Alaska and Hawaii and will not be assigned to VHF translators in those states.

(c) Any one of the upper 14 standard UHF channels (70–83 inclusive) may be assigned to a UHF translator provided that the proposed translator site is not located:

(1) Within 20 miles of a television broadcast station or city which is assigned the second, third, fourth, fifth, or eighth channel above or below the requested channel.

(2) Within 55 miles of a television broadcast station or city which is assigned an adjacent channel.

(3) Within 60 miles of a television broadcast station or city which is assigned the seventh channel above or the seventh or fourteenth channel below the requested channel.

(4) Within 75 miles of a television broadcast station or city which is assigned the fifteenth channel below the requested channel.

(5) Within 155 miles of a television broadcast station or city which is assigned the same channel as the requested channel unless the requested channel is assigned in the Table of Assignments appearing in § 73.606(b) of this chapter, to the city in which the proposed translator is to be operated and has not been assigned to a television broadcast station in that city.

(d) The distances specified in paragraph (c) of this section are to be determined between the proposed site of the television broadcast translator station and the main Post Office location in any city listed in § 73.606 (b) of this chapter unless the channel shown therein has been assigned to a television broadcast station, in which case the distance shall be determined between the proposed site of the translator and the transmitter site of the television broadcast station. Changes in the Table of Assignments of § 73.606(b) of this chapter may be made without regard to existing or proposed television broadcast translator stations and, where such changes result in minimum separations less than those specified above, the licensee of an affected UHF television broadcast translator station shall file an application for a change in channel assignment to comply with the required separations. In the case of changes in the Table of Assignments affecting VHF channels, existing VHF television broadcast translator stations causing interference to reception of VHF broadcast channels shall eliminate the interference or file an application for a change in channel assignment.

(e) No minimum distance separation between TV translators operating on the same channel is specified. However, assignments which will obviously result in mutual interference between translators will not be made.

(f) Adjacent channel assignments will not be made to television broadcast translator stations intended to serve all or part of the same area.

(g) A VHF translator will also be authorized on any VHF assignment in the television table of assignments (§ 73.606(b) of this chapter) provided it has not been assigned to a television broadcast station and provided a transmitter power of 100 watts is used in the listed city. Section 73.607(b) of this chapter will not be applicable to such assignments.

(h) A UHF translator will also be authorized on any UHF channel provided the assignment is listed in the television table of assignments (§ 73.606(b) of this chapter) and has not been assigned to a television broadcast station, and provided a transmitter power of

100 watts is used for the assigned translator. Section 73.607(b) of this chapter will not be applicable to such assignments.

[§ 74.702(g) & (h) *as adopted eff. 8–16–65; III(64)–9*]

§ 74.703 Interference.

(a) An application for a new television broadcast translator station or for changes in the facilities of an authorized station will not be granted where it is apparent that interference will be caused. In general, the licensee of a new UHF translator shall protect existing UHF translators from interference resulting from its operation. If interference develops between VHF translators, the problem shall be resolved by mutual agreement among the licensees involved.

(b) It shall be the responsibility of the licensee of a VHF translator to correct at its expense any condition of interference to the direct reception of the signals of a television broadcast station operating on the same channel as that used by the VHF translator or on an adjacent channel, which occurs as the result of the operation of the translator. Interference will be considered to occur whenever reception of a regularly used signal is impaired by the signals radiated by the translator, regardless of the quality of such reception or the strength of the signal so used. If the interference cannot be promptly eliminated by the application of suitable techniques, operation of the offending translator shall be suspended and shall not be resumed until the interference has been eliminated. If the complainant refuses to permit the translator licensee to apply remedial techniques which demonstrably will eliminate the interference without impairment of the original reception, the licensee of the translator is absolved of further responsibility.

(c) It shall be the responsibility of the licensee of a television broadcast translator station to correct any condition of interference which results from the radiation of radio frequency energy by its equipment on any frequency outside the assigned channel. Upon notice by the Commission to the station licensee or operator that such interference is being caused, the operation of the television broadcast translator station shall be suspended immediately and shall not be resumed until the interference has been eliminated or it can be demonstrated that the interference is not due to spurious emissions by the television broadcast translator station: *Provided, however,* That short test transmissions may be made during the period of suspended operation to check the efficacy of remedial measures.

(d) In each instance where suspension of operation is required, the licensee shall submit a full report to the Commission after operation is resumed, containing details of the nature of the interference, the source of the interfering signals, and the remedial steps taken to eliminate the interference.

ADMINISTRATIVE PROCEDURE

§ 74.711 Cross Reference.

See §§ 74.11 to 74.16.

LICENSING POLICIES AND GENERAL OPERATING REQUIREMENTS

§ 74.731 Purpose and permissible service.

(a) Television broadcast translator stations provide a means whereby the signals of television broadcast stations may be retransmitted to areas in which direct reception of such television broadcast stations is unsatisfactory due to distance or intervening terrain barriers.

(b) A television broadcast translator station may be used only for the purpose of retransmitting the signals of a television broadcast station, another television broadcast translator station, or a television translator relay station, which have been received directly through space, converted to a different channel by simple heterodyne frequency conversion, and suitably amplified.

(c) The transmissions of each television broadcast translator station shall be intended for direct reception by the general public and any other use shall be incidental thereto. A television broadcast translator station shall not be operated solely for the purpose of relaying signals to one or more fixed receiving points for retransmission, distribution, or further relaying.

(d) The technical characteristics of the retransmitted signals shall not be deliberately altered so as to hinder reception on conventional television broadcast receivers.

(e) A television broadcast translator station shall not deliberately retransmit the signals of any station other than the station it is authorized by license to retransmit. Precautions shall be taken to avoid unintentional retransmission of such other signals.

[§ 74.731(b) *amended eff. 1–10–67; III(64)–15*]

§ 74.732 Eligibility and licensing requirements.

(a) Subject to the restrictions set forth in paragraph (e) of this section, a license for a television broadcast translator station may be issued to any qualified individual, organized group of individuals,

broadcast station licensee, or local civil governmental body, upon an appropriate showing that plans for financing the installation and operation of the station are sufficiently sound to insure prompt construction of the station and dependable service for the duration of the licensed period.

(b) More than one television broadcast translator station may be licensed to the same applicant, whether or not such stations serve substantially the same area, upon an appropriate showing of need for such additional stations. TV translators operated by TV broadcast station licensees are not counted as TV stations for purposes of § 73.636 of this chapter, concerning multiple ownership.

(c) Only one channel will be assigned to each television broadcast translator station. Additional television broadcast translator stations may be authorized to provide additional reception. A separate application is required for each television broadcast translator station and each application shall be complete in all respects.

(d) A VHF translator will not be authorized to serve an area which is receiving satisfactory service from one or more UHF television broadcast stations or UHF translators unless, upon consideration of all applicable public interest factors, it is determined that, exceptionally, such intermixture of VHF and UHF service is justified.

(e) The licensee or permittee of a television broadcasting station, an applicant financially supported by such licensee or permittee, or any person associated with the licensee or permittee, either directly or indirectly, will not be authorized to operate a VHF translator under any of the following circumstances:

(1) Where the proposed translator is intended to provide reception beyond the Grade B contour of the television broadcast station proposed to be rebroadcast except those using 100 watts on assignments listed in the television table of assignments (§ 73.606(b) of this chapter).

(2) Where the proposed VHF translator is intended to provide reception to all or a part of any community located within the Grade A contour of any other television broadcast station for which a construction permit or license has been granted and the programs rebroadcast by the proposed VHF translator will duplicate all or any part of the programs broadcast by such other television broadcast station or stations: *Provided, however,* That this will not preclude the authorization of a VHF translator intended to improve reception of the parent station's signal to any community, any part of the corporate limits of which is within the principal city service contour of such station.

NOTE: The contours of a television broadcast station shall be determined in accordance with the procedures set forth in § 73.684 of this chapter.

(f) Any authorization for a VHF translator issued to an applicant described in paragraph (e) of this section will be issued subject to the condition that it may be terminated at any time, upon not less than sixty (60) days notice where the circumstances in the community or area served are so altered as to have prohibited grant of the application had such circumstances existed at the time of its filing.

(g) Paragraphs (e) and (f) of this section will not be applicable to noncommercial educational stations.

(h) The Commission will not act on applications for new television broadcast translator stations or for changes in the facilities of an existing station where such changes will result in an increase in signal range in any horizontal direction until 30 days have elapsed since the date on which "Public Notice" is given by the Commission of acceptance for filing of such application, in order to afford licensees of existing television broadcast stations an opportunity to comment with respect to the effect of the proposed translator on their operations.

(i) VHF and UHF translators proposed to be operated with powers of 100 watts on an assignment and in a city listed in the television table of assignments (§ 73.606(b) of this chapter) will normally be authorized to licensees of regular television broadcast stations. Other parties may be authorized to operate such stations upon a satisfactory showing that they have available personnel of sufficient technical knowledge to insure that no interference will occur to other radio services and that satisfactory technical performance will be maintained.

[*§ 74.732(e)(1) as amended, par. (i) as adopted; eff. 8-16-65; III(64)-9*]

§ 74.733 UHF translator signal boosters.

(a) The licensee of a UHF television broadcast translator station may be authorized to operate one or more signal boosters for the purpose of providing reception to small shadowed areas within the area intended to be served by the translator.

(b) The transmitting apparatus shall consist of a simple linear radio frequency amplifier, with one or more amplifying stages, which is capable of receiving, amplifying, and retransmitting the signals of the parent translator without significantly altering any electrical characteristic of the received signal other than its amplitude. The maximum power input to the plate of the final radio frequency amplifier shall not exceed 5 watts.

(c) The amplifier shall be equipped with suitable circuits which will automatically cause it to cease radiating if no signal is being received from the parent translator station. Care shall be taken in the design of the apparatus to insure that out-of-band radiation is not excessive and that adequate isolation is maintained between the input and output circuits to prevent unstable operation.

(d) The installation of the apparatus and its associated receiving and transmitting antennas shall be in accordance with accepted principles of good engineering practice. Either horizontal, vertical, or circular polarization of the electric field of the radiated signal may be employed. If the isolation between the input and output circuits depends in part upon the polarization or directive properties of the transmitting and receiving antennas, the installation shall be sufficiently rugged to withstand the normal hazards of the environment.

(e) The operation of a UHF translator signal booster is subject to the condition that no harmful interference is caused to the reception of any station, broadcast or non-broadcast, other than the parent translator. The licensee of the UHF translator signal booster is expected to use reasonable diligence to minimize interference to the direct reception of the parent translator station.

(f) UHF translator signal boosters may be operated unattended. Repairs and adjustments shall be made by a qualified person. The required qualifications are set forth in § 74.750 (g) and (h).

(g) An individual call sign will not be assigned to a UHF translator booster station. The retransmission of the call sign of the parent translator will serve as station identification.

(h) Applications for authority to construct and operate a UHF translator signal booster shall be submitted on FCC Form 346A. No construction of facilities or installation of apparatus at the proposed transmitter site shall be made until a construction permit therefor has been issued by the Commission.

(i) The provisions of § 74.765 concerning posting of station license shall apply to a UHF translator signal booster except that the parent UHF translator call sign, followed by the word "Booster", shall be displayed at the signal booster site.

(j) The provisions of §§ 74.767 and 74.781 concerning marking and lighting of antenna structures and station records, respectively, apply to UHF translator signal boosters.

§ 74.734 Unattended operation.

(a) A televison broadcast translator station may be operated without a licensed radio operator in attendance if the following requirements are met:

(1) If the transmitter site cannot be reached promptly at all hours and in all seasons, means shall be provided so that the transmitting apparatus can be turned on and off at will from a point which is readily accessible at all hours and in all seasons.

(2) The transmitter shall also be equipped with suitable automatic circuits which will place it in a nonradiating condition in the absence of a signal on the input channel.

(3) The transmitting apparatus and the on-and-off control, if at a location other than the tranmitter site, shall be adequately protected against tampering by unauthorized persons.

(4) The Commission shall be supplied with the name, address, and telephone number of a person or persons who may be contacted to secure prompt suspension of operation of the translator should such action be deemed necessary by the Commission.

(5) In cases where the antenna and supporting structure are considered to be a hazard to air navigation and are required to be painted and lighted under the provisions of Part 17 of this chapter, the licensee shall make suitable arrangements for the daily inspection and logging of the hazard markings required by §§ 17.37 and 17.38 of this chapter.

(b) An application for authority to construct a new television broadcast translator station or to make changes in the facilities of an authorized station, and which proposes unattended operation, shall include an adequate showing as to the manner of compliance with this section.

(c) Unless the applicant specifically requests unattended operation and makes the showing required by paragraph (b) of this section, a licensed radio operator meeting the requirements of § 74.766 shall be on duty at the transmitter site whenever the station is operated.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.735 Power limitations.

(a) The power output of the final radio frequency amplifier of a VHF translator (except as provided for in paragraph (d) of this section) shall not exceed 1 watt peak visual power. This power may be fed into a single transmitting antenna or may be divided between two or more transmitting antennas or antenna arrays in any manner found useful or desirable by the licensee. In individual cases, the Commission may authorize the use of more than one 1-watt final radio frequency amplifier at a single VHF translator station under the following conditions:

(1) Each such amplifier shall be used to serve a different community or area. More than one final radio frequency amplifier will not be authorized to provide

service to all or a part of the same community or area.

(2) Each final radio frequency amplifier shall feed a separate transmitting antenna or antenna array. The transmitting antennas or antenna arrays shall be so designed and installed that the outputs of the separate radio frequency amplifiers will not combine to reinforce the signals radiated by the separate antennas or otherwise achieve the effect of radiated power in any direction in excess of that which could be obtained with a single antenna of the same design fed by a 1-watt radio frequency amplifier.

(3) VHF translators employing multiple final radio frequency amplifiers will be licensed as a single station. The separate final radio frequency amplifiers will not be licensed to different licensees.

(b) The transmitter power output of a UHF translator shall be limited to a maximum of 100 watts peak visual power. In no event shall the transmitting apparatus be operated with power output in excess of the manufacturer's rating.

(c) No limit is placed upon the effective radiated power which may be obtained by the use of horizontally or vertically directive transmitting antennas.

(d) VHF and UHF translators authorized on assignments listed in the table of assignments in §73.606(b) of this chapter will be authorized power output of the final radio frequency amplifier of 100 watts peak visual power only. VHF translators authorized before August 16, 1965, on such assignments need not operate with as much as 100 watts peak visual power, but if they operate with less, their operation will be subject to termination upon grant of an application for the assignment using 100 watts.

[*§ 74.735 as amended eff. 8–16–65; III(64)–9*]

§ 74.736 Emissions and bandwidth.

(a) The license of a television broadcast translator station authorizes the transmission of the visual signal by amplitude modulation (A5) and the accompanying aural signal by frequency modulation (F3).

(b) Standard width television channels will be assigned and the transmitting apparatus shall be operated so as to limit spurious emissions to the lowest practicable value. Any emissions including intermodulation products and radio frequency harmonics which are not essential for the transmission of the desired picture and sound information shall be considered to be spurious emissions.

(c) Any emissions appearing on frequencies more than 3 megacycles above or below the upper and lower edges respectively of the assigned channel shall be attenuated no less than 30 decibels below the peak power of the visual signal.

(d) Greater attenuation than that specified in paragraph (c) of this section may be required if interference results from emissions outside the assigned channel.

§ 74.737 Antenna location.

(a) An applicant for a new television broadcast translator station or for a change in the facilities of an authorized station shall endeavor to select a site which will provide a line-of-sight transmission path to the entire area intended to be served and at which there is available a suitable signal from the primary station. The transmitting antenna should be placed above growing vegetation and trees lying in the direction of the area intended to be served, to minimize the possibility of signal absorption by foliage.

(b) A site within 5 miles of the area intended to be served is to be preferred if the conditions in paragraph (a) of this section can be met.

(c) Consideration should be given to accessibility of the site at all seasons of the year and to the availability of facilities for the maintenance and operation of the television broadcast translator station.

(d) The transmitting antenna should be located as near as is practical to the transmitter to avoid the use of long transmission lines and the associated power losses.

(e) Consideration should be given to the existence of strong radio frequency fields from other transmitters at the translator site and the possibility that such fields may result in the retransmission of signals originating on frequencies other than that of the primary station.

EQUIPMENT

§ 74.750 Equipment and installation.

(a) The transmitting apparatus employed at a television broadcast translator station must meet the requirements for type acceptance by the Commission. These requirements are set forth in paragraph (c) of this section.

(b) Transmitting antennas, antennas used to receive the signals to be rebroadcast, and transmission lines do not have to be type accepted. External preamplifiers may also be used provided that they do not cause improper operation of the translator and compliance with specifications in paragraph (c) of this section does not depend upon the use of such preamplifiers.

(c) The following requirements must be met before translator equipment will be type accepted by the Commission:

(1) The frequency converter and associated amplifiers shall be so designed that the electrical characteristics of a standard television signal introduced into the input terminals will not be significantly altered

by passage through the apparatus except as to frequency and amplitude. The overall response of the apparatus within its assigned channel when operating at its rated power output and measured at the output terminals, shall provide a smooth curve, varying within limits separated by no more than 4 decibels: *Provided, however,* That means may be provided to reduce the amplitude of the aural carrier below those limits, if necessary to prevent intermodulation which would mar the quality of the retransmitted picture or result in emissions outside of the assigned channel.

(2) Radio frequency harmonics of the visual and aural carriers, measured at the output terminals of the transmitter, shall be attenuated no less than 60 decibels below the peak visual output power within the assigned channel. All other emissions appearing on frequencies more than 3 megacycles above or below the upper and lower edges, respectively, of the assigned channel shall be attenuated no less than:

(i) 30 decibels for transmitters rated at less than 10 watts power output.

(ii) 50 decibels for transmitters rated at 10 watts or more power output.

(3) The local oscillator employed in the frequency converter shall maintain its operating frequency within 0.02 percent of its rated frequency when subjected to variations in ambient temperature between minus 30 degrees and plus 50 degrees Centigrade and variations in power main voltage between 85 percent and 115 percent of the rated supply voltage.

(4) The apparatus shall contain automatic circuits which will maintain the peak visual power output constant within 2 decibels when the strength of the input signal is varied over a range of 30 decibels and which will not permit the peak visual power output to exceed the maximum rated power output under any condition. If a manual adjustment is provided to compensate for different average signal intensities, provision shall be made for determining the proper setting for the control, and if improper adjustment of the control could result in improper operation, a label shall be affixed at the adjustment control bearing a suitable warning.

(5) The apparatus shall be equipped with automatic controls which will place it in a non-radiating condition when no signal is being received on the input channel, either due to absence of a transmitted signal or failure of the receiving portion of the translator. The automatic control may include a time delay feature to prevent interruptions in the translator operation caused by fading or other momentary failures of the incoming signal.

(6) The tube or tubes employed in the final radio frequency amplifier shall be of the appropriate power rating to provide the rated power output of the translator. The normal operating constants for operation at the rated power output shall be specified. The apparatus shall be equipped with suitable meters or meter jacks so that appropriate voltage and current measurements may be made while the apparatus is in operation.

(7) Transmitters of over 1 watt peak visual power shall be equipped with an automatic keying device which will transmit the call sign assigned to the station, in International Morse Code, within 5 minutes of the hour and half hour. Transmission of the call sign shall be accomplished either by interrupting the radiated signals in the proper code sequence or by amplitude modulating the radiated signals with an audio frequency tone containing the telegraphic identification. The modulating signal may be inserted at any suitable stage in the apparatus but shall result in at least 30 percent amplitude modulation of the aural carrier. If an audio frequency tone is used it shall not be within 200 cycles of the 1,000 cycle tone used for Emergency Broadcast System alerting: *Provided, however,* That apparatus intended to be used solely for rebroadcasting the signals of another translator need not be equipped for such automatic transmission of its call sign if its call sign will be transmitted by the translator which it is rebroadcasting.

(8) Wiring, shielding, and construction shall be in accordance with accepted principles of good engineering practice.

(d) Type acceptance will be granted only upon a satisfactory showing that the apparatus is capable of meeting the requirements of paragraph (c) of this section. The following procedures shall apply:

(1) Any manufacturer of apparatus intended for use at television broadcast translator stations may request type acceptance by following the procedures set forth in Part 2, Subpart F, of this chapter. Equipment found to be acceptable by the Commission will be listed in the "Radio Equipment List, Part A, Television Broadcast Equipment," published by the Commission. These lists are available for inspection at any Field

Office of the Commission and at the Washington, D.C., offices of the Commission.

(2) Television broadcast translator apparatus which has been type accepted by the Commission will normally be authorized without additional measurements by the applicant.

(3) Construction permits may be granted for the installation of custom-built apparatus which has not been type accepted by the Commission. In such cases, the permittee shall submit the information required by Part 2, Subpart F, of this chapter, together with sufficient measurements and data to show that the apparatus meets the requirements of paragraph (c) of this section. The measurements shall be made by a qualified electronic engineer with instruments of sufficient accuracy to insure the reliability of the data.

(4) Other rules concerning type acceptance, including information regarding withdrawal of type acceptance, modification of type accepted equipment and limitations on the findings upon which type acceptance is based, are set forth in Part 2, Subpart F, of this chapter.

(e) The installation of a television broadcast translator station employing custom-built apparatus or apparatus which has not been type accepted by the Commission, shall be made by or under the direct supervision of a person having the technical skill and engineering knowledge required to make a proper installation.

(f) The installation of a television broadcast translator station employing type accepted apparatus may be made by a person with sufficient technical knowledge and skill to correctly follow the manufacturer's instructions.

(g) Simple repairs such as the replacement of tubes, fuses, or other plug-in components and the adjustment of non-critical circuits which require no particular technical skill may be made by an unskilled person. Repairs which require the replacement of attached components, adjustment of critical circuits, or technical measurements shall be made only by a person with the knowledge and skill to perform such tasks.

(h) Any tests or adjustments which require the radiation of signals for their completion and which could result in improper operation of the apparatus, shall be made by or under the immediate supervision of a licensed first or second class radiotelephone operator.

(i) The transmitting antenna may be designed to produce either horizontal, vertical, or circular polarization.

[§ 74.750 *amended in III(64)-9, as further amended re par.* (c)(7) *eff. 4-15-66; III(64)-13*]

§ 74.751 Equipment changes.

(a) No change, either mechanical or electrical, may be made in apparatus which has been type accepted by the Commission without prior authority of the Commission. If such prior authority has been given to the manufacturer of type accepted equipment, the manufacturer may issue instructions for such changes citing its authority. In such cases, individual licensees are not required to secure prior Commission approval but shall notify the Commission when such changes are completed.

(b) Formal application (FCC Form 346) is required for any of the following changes:

(1) Replacement of the transmitter as a whole except in those cases where the replacement is an identical transmitter or is a transmitter of identical power rating and is listed in the Commission's "Radio Equipment List, Part A, Equipment Acceptable for Use in Television Broadcast and Television Translator Stations." The Commission's office in Washington, D.C., and the Engineer in Charge of the Radio District in which the translator is located shall be promptly notified of transmitter replacements made without formal authorization pursuant to the exceptions of this paragraph giving the manufacturer and type number of the new transmitter together with a statement certifying that the new installation is operating in accordance with Commission rules and the terms of the license.

(2) A change in the transmitting antenna system, including the direction of radiation, directive antenna pattern, or transmission line.

(3) Any change in the antenna which will increase the overall height above ground by more than 20 feet or will result in an overall height of more than 170 feet above ground.

(4) Any change in the location of the transmitter except a move within the same building or upon the same pole or tower.

(5) Any horizontal change in the location of the transmitting antenna of more than 500 feet.

(6) A change of frequency assignment.

(7) A change of the primary TV station being retransmitted.

(8) A change of authorized operating power.

(c) Other equipment changes not specifically referred to above may be made at the discretion of the licensee, provided that the Engineer in Charge of the radio district in which the television broadcast translator station is located and the Commission's Washington, D.C. office are notified in writing upon completion of such changes, and provided further that the changes are appropriately reflected in the next application for renewal of license of the television broadcast translator station.

[§ 74.751(b)(1) *as amended eff. 4-22-66; III(64)-13.*]

TECHNICAL OPERATION AND OPERATORS

§ 74.761 Frequency tolerance.

The licensee of a television broadcast translator station shall maintain the visual carrier frequency and the aural center frequency at the output of the translator within 0.02 percent of its assigned frequencies.

[§ 74.761 *amended eff. 1-10-67; III(64)-15*]

§ 74.762 Frequency monitors and measurements.

(a) The licensee of a television broadcast translator station is not required to provide means for measuring the operating frequencies of the transmitter. However, only equipment having the required stability will be approved for use at a television broadcast translator station.

(b) In the event that a television broadcast translator station is found to be operating beyond the frequency tolerance prescribed in § 74.761, the licensee shall promptly suspend operation of the translator and shall not resume operation until the translator has been restored to its assigned frequencies. Adjustment of the frequency determining circuits of a television broadcast translator station shall be made only by a qualified person in accordance with § 74.750(g).

§ 74.763 Time of operation.

(a) A television broadcast translator station is not required to adhere to any regular schedule of operation. However, the licensee of a television translator station is expected to provide a dependable service to the extent that such is within its control and to avoid unwarranted interruptions to the service provided.

(b) If causes beyond the control of the licensee require that a television broadcast translator station remain inoperative for a period in excess of 10 days, the Engineer in Charge of the radio district in which the station is located shall be notified promptly in writing, describing the cause of failure and the steps taken to place the station in operation again, and shall be notified promptly when the operation is resumed.

(c) Failure of a television broadcast translator station to operate for a period of 30 days or more, except for causes beyond the control of the licensee, shall be deemed evidence of discontinuance of operation and the license of the station will be cancelled.

(d) A television broadcast translator station shall not be permitted to radiate during extended periods when signals of the primary station are not being retransmitted.

§ 74.764 Station inspection.

The licensee of a television broadcast translator station shall make the station and the records required to be kept by the rules in this subpart available for inspection by representatives of the Commission.

§ 74.765 Posting of station license.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the station or the manner of operation shall be kept in the station record file maintained by the licensee so as to be available for inspection upon request to any authorized representative of the Commission.

(b) The call sign of the translator together with the name, address, and telephone number of the licensee or local representative of the licensee if the licensee does not reside in the community served by the translator, shall be displayed at the translator site on the structure supporting the transmitting antenna, so as to be visible to a person standing on the ground at the transmitter site. The display shall be prepared so as to withstand normal weathering for a reasonable period of time and shall be maintained in a legible condition by the licensee.

§ 74.766 Operator requirements.

(a) No licensed radio operator is required for the routine operation of a television broadcast translator station provided that the requirements of § 74.734 are met. Otherwise, an operator holding a valid restricted radiotelephone operator permit or a first or second class radiotelephone operator license shall be on duty at the place where the transmitting apparatus is located at all times when the apparatus is being operated.

(b) A licensed operator employed to operate a TV translator may, at the discretion of the licensee, be employed for other duties or for the operation of another class of station or stations in accordance with the class of license which he holds and the rules and regulations governing such other stations. However, such duties shall in nowise interfere with the operation of the TV translator station.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.767 Marking and lighting of antenna structures.

The marking and lighting of antenna structures employed at a television broadcast translator station, where required, will be specified in the authorization issued by the Commission. Part 17 of this chapter sets forth the conditions under which such marking and lighting will be required and the responsibility of the licensee with regard thereto.

§ 74.768 Additional orders.

In cases where the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

§ 74.769 Copies or rules.

The licensee of a television broadcast translator station shall have current copies of Part 73, Part 74, and in cases where antenna marking is required, Part 17 of this chapter available for use by the operator in charge, and is expected to be familiar with those rules relating to the operation of a television broadcast translator station. Copies of the Commission's rules may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, at nominal cost.

Other Operating Requirements

§ 74.781 Station records.

(a) The licensee of a television broadcast translator station shall maintain adequate station records, including the current instrument of authorization, official correspondence with the Commission, maintenance records, contracts, permission for rebroadcasts, and other pertinent documents.

(b) Where an antenna structure is required to be painted or illuminated, see § 17.38 of this chapter.

(c) The station records shall be made available upon request to any authorized representative of the Commission.

(d) Station records shall be retained for a period of two years.

§ 74.783 Station identification.

(a) Each television broadcast translator station of over 1 watt peak visual power shall transmit its call sign in International Morse Code at the beginning of each period of operation and, during operation, within 5 minutes of the hour and half hour. The transmission may be accomplished either by means of an automatic device incorporated in the translator apparatus, which will modulate the local oscillator or a suitable amplifier stage in the translator with an audio frequency tone keyed in the proper sequence so as to cause the modulation to appear on the visual and aural carriers emitted by the translator; or by rebroadcasting the signals of another translator which transmits the call signs of translators which are rebroadcasting its signals. The audio frequency tone shall produce no less than 30 percent amplitude modulation of the emitted aural carrier and shall not be within 200 cycles of the 1,000 cycle tone used for Emergency Broadcast System alerting. In cases where a translator transmits more than one call sign, the individual call signs shall be separated by the International Morse Code character for the fraction bar composed of a dash, two dots, a dash, and a dot, sent as a single character (— .. — .). Call sign transmissions shall be made at a code speed not in excess of 20 words per minute. At this speed the transmission of each individual call sign will require approximately 4 seconds.

(b) The Commission may, in its discretion, specify other methods of identification.

(c) Call signs for television broadcast translator stations will be made up of the initial letter K or W followed by the channel number assigned to the translator and two letters. The use of the initial letter will generally follow the pattern used in the broadcast service, i.e., stations west of the Mississippi River will be assigned an initial letter K and those east of the Mississippi River the letter W. The two letter combinations following the channel number will be assigned in order and requests for the assignment of particular combinations of letters will not be considered. The channel number designator for Channels 2 through 9 will be incorporated in the call sign as a two-digit number, i.e., Ø2, Ø3, Ø4, Ø5, Ø6, Ø7, Ø8, or Ø9, to avoid similarities with call signs assigned to Amateur Radio Stations.

[*§ 74.783(a) as amended eff. 4-15-66: III(64)-13*]

§ 74.784 Rebroadcasts.

(a) The term "rebroadcast" means the reception by radio of the programs or other signals of a radio or television station and the simultaneous or subsequent retransmission of such programs or signals for direct reception by the general public.

(b) The licensee of a television broadcast translator station shall not rebroadcast the programs of any television broadcast station or other television broadcast translator station without obtaining prior consent of the station whose signals or programs are proposed to be retransmitted. The Commission shall be notified of the call letters of each station rebroadcast and the licensee of the television broadcast translator station shall certify that written consent has been received from the licensee of the station whose programs are retransmitted.

(c) A television broadcast translator station is not authorized to rebroadcast the transmissions of any class of station other than a television broadcast station or another television broadcast translator station.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

PRE-EXISTING REPEATERS

§ 74.790 Special requirements for pre-existing VHF repeaters.

(a) Until July 31, 1962, the provisions of this section shall apply to repeater stations which are rebroadcasting TV signals on VHF Channels 2-13, and which were constructed on or before July 7, 1960. The term "repeater station" is used in this section to refer to low power devices for the reception, amplification and retransmission of television signals, irrespective of whether the output channel is the same as the input channel, or is a different channel as in the case of VHF translators.

(b) On or before December 30, 1960, the operators of all devices covered in paragraph (a) of this section shall file with the Commission at its Washington offices an application for temporary authorization to continue operation. Such application shall be filed on FCC Form 347-A in accordance with instructions accompanying that form.

(c) Applicants must comply with requirements imposed by law, including those found in the following sections of the Communications Act of 1934:

(1) Section 308(b) which requires that the application be signed by the applicant under oath or affirmation.

(2) Section 310 which, among other things, prohibits the issuance of a license to an alien or an organization of which any officer or director is an alien.

(3) Section 325 which prohibits rebroadcasting of the programs of another broadcasting station without the express authority of the other station. Applicants must certify that such consent has been obtained in writing and is available for inspection by the Commission.

(d) An applicant for a temporary authorization under this section shall certify in his application that on or before June 1, 1961, he will file an application on FCC Form 346 for authority to replace or modify the facility for which temporary authorization is sought, so as to conform to all the requirements set out in §§ 74.701 through 74.784 with respect to television broadcast translators.

(e) Existing repeaters may not be modified, and no new translator may be constructed, prior to the issuance of Commission approval of an application filed on FCC Form 346 for authorization to make a desired modification or to construct a new translator.

(f) Temporary authorizations issued under this section will be valid until July 31, 1962, provided that the holder of such authorization has filed on or before October 31, 1961, an application on FCC Form 346 for authority to replace or modify the facility for which the temporary authority is held, so as to conform in all respects with the requirements of §§ 74.701 through 74.784. The replacement or modification authorized under the construction permit so issued shall be completed by July 31, 1962.

(Sec. 319, 48 Stat. 1089, as amended by 74 Stat. 363; 47 U.S.C. 319)

SUBPART H—TELEVISION BROADCAST BOOSTER STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.801 Definitions.

(a) *Television broadcast booster station.* A station in the broadcasting service operated for the sole purpose of retransmitting the signals of a television broadcast station by amplifying and reradiating such signals which have been received directly through space, without significantly altering any characteristic of the incoming signal other than its amplitude.

(b) *Primary station.* The television broadcast station radiating the signals which are retransmitted by a television broadcast booster station.

§ 74.802 Frequency assignment.

A television broadcast booster station will be assigned the channel and carrier frequencies assigned to its primary station.

§ 74.803 Interference to primary station.

(a) An application for a new television broadcast booster station or for a change in the facilities of an existing station shall be accompanied by a detailed showing and discussion of the areas of potential interference. The showing shall include:

(1) A suitable map of the area in which the booster is proposed to be operated showing the location of the booster, the direction from the booster toward the primary station and the distance to the primary station, the radiation pattern of the booster, and the areas in which an unfavorable ratio is likely to exist between the direct signal and the boosted signal. If certain terrain features are expected to confine or otherwise minimize interference, these shall be clearly marked.

(2) A statement as to the approximate number of existing receiving installations which may be adversely affected by the proposed booster operation and the measures which will be employed by the applicant to restore reception, including an estimate of the cost of such restoration and how this cost will be borne.

(b) It shall be the responsibility of the licensee of a television broadcast booster station to correct any condition of interference resulting from the operation of the booster to a receiving installation existing at the time the booster is placed in operation, which causes loss or degradation of an otherwise acceptable service from the primary station if requested to do so by the owner of the affected TV receiver. The licensee of the booster is expected to provide such advice, technical assistance, and materials as may be required to restore the lost service either by rejecting the booster signals to the extent necessary to restore the direct service to its original condition or by utilizing the booster service to replace the lost direct service. Refusal of the complainant to permit the application of remedies which are demonstrably capable of restoring the lost service will relieve the booster licensee of further responsibility for the correction of interference to that complainant.

§ 74.804 Interference to other stations and services.

(a) The licensee of a television broadcast booster station is responsible for the correction of interference to reception of other television broadcast stations or stations in other services, caused by:

(1) Radiation of radio frequency energy outside the channel assigned to the booster.

(2) Radiation of spurious emissions, i.e., emissions not contained in the visual and sound signal received from the primary TV station, within the channel assigned to the booster.

(3) Authorized emissions which produce a field strength at the affected receiver in excess of the theoretical field which would be produced at that same location by the primary TV station if the primary TV station were operating with 5 megawatts effective radiated power from an antenna 2,000 feet above average terrain over a path of normal terrain. The theoretical value of field strength which could be produced by the primary station, under the conditions stipulated, shall be determined by the use of the F(50,50) field strength charts for Channels 14–83, contained in § 73.699 of this chapter.

(b) Upon notification by the Commission that such interference has been reported, operation of the booster shall be suspended and shall not be resumed until the interference has been eliminated or it can be demonstrated that the interference is not due to any of the above causes: *Provided, however,* That short test transmissions may be made during the period of suspended operation to check the efficacy of remedial measures. In each case where suspension of operation is required, the licensee of the TV booster shall, within 10 days after operation is resumed, submit a full report to the Commission of the cause and nature of the interference and the remedial steps taken to eliminate the interference.

(c) An application for a new television broadcast booster station shall contain a suitable map showing the locations of the proposed booster and all other TV boosters and television broadcast stations within 75 miles of the proposed booster site and operating on the same channel as the proposed booster or on any related channel shown in the columns opposite the proposed booster channel in Table IV of § 73.698 of this chapter.

ADMINISTRATIVE PROCEDURE

§ 74.811 Administrative procedure.

See §§ 74.11 to 74.16 inclusive.

LICENSING POLICIES AND GENERAL OPERATING REQUIREMENTS

§ 74.831 Purpose and permissible service.

Television broadcast booster stations provide a means whereby the licensees of television broadcast stations operating in the UHF television broadcast band may provide service to areas of low signal intensity in any region which would be encompassed by the theoretical Grade A contour if the station were assumed to be operating with an effective radiated power of 5,000 kilowatts from an antenna 2,000 feet above average terrain over a transmission path of normal terrain. For the purpose of this section, the distance from a UHF television broadcast station to its theoretical Grade A contour under the above assumptions is 68 miles.

(a) A television broadcast booster station is authorized to retransmit only the signals of its primary station. It shall not retransmit the signals of any other station nor make independent transmissions; *Provided, however,* That locally generated signals may be used to excite the booster apparatus for the purpose of conducting tests and measurements essential to the proper installation and maintenance of the apparatus.

(b) A television broadcast booster station will not be authorized to operate at any location more than 68 miles from its primary station and shall not be operated to produce a field strength greater than 5 millivolts per meter at a height of 30 feet above ground at a distance of more than 68 miles from its primary station.

(c) The transmissions of a television broadcast booster station shall be intended for direct reception by the general public. Such stations may not be used to establish a point-to-point television relay system.

§ 74.832 Eligibility and licensing requirements.

(a) A license for a television broadcast booster station will be issued only to the licensee of a television broadcast station operating in the UHF television broadcast band, and solely for the purpose of retransmitting the signals of such television broadcast station.

(b) An application for a television broadcast booster station shall contain an adequate showing that:

(1) The proposed booster can be installed and operated so as to provide satisfactory reception without causing harmful interference to existing service, by the application of acceptable techniques.

(2) That a signal of sufficient magnitude is available from the primary station at the site of the proposed booster.

(c) No numerical limit is placed upon the number of boosters which may be licensed to a single licensee. A separate application is required for each booster transmitter. Television broadcast booster stations will not be counted as TV stations in applying the multiple ownership provisions of §73.636 of this chapter.

§ 74.834 Remote control operation.

(a) A television broadcast booster station may be operated by remote control provided that such operation is conducted in accordance with the conditions set forth in subparagraphs (1) through (4) of this paragraph.

(1) The transmitter shall be equipped with automatic devices, which, in the absence of a signal from the primary station, will render the transmitter incapable of emitting radio frequency energy.

(2) The transmitter shall be further equipped with a device, which may be actuated by a coded signal or tone transmitted by the primary station, and which will permit turning the transmitter on and off at will from the primary station. The signal required to be transmitted by the primary station for this purpose shall be of such nature or of duration so short that it will not appreciably degrade normal reception of the primary station.

(3) As a precaution against loss of control due to failure of the control circuit, the circuit shall be designed so as to require reception of a cue signal from the primary station at intervals of one hour or less and failure to receive the cue signal will automatically place the booster transmitter in an inoperative condition.

(4) The transmitter and its associated controls shall be so installed and protected as to be inaccessible to unauthorized persons.

(b) An application for a new television broadcast booster station, or for a change in the facilities of an existing station which proposes remote control operation, shall be accompanied by a satisfactory showing as to the manner of compliance with the above conditions. Unless remote control is specifically authorized pursuant to the above requirements, the booster transmitter shall be under the direct supervision of a qualified operator in accordance with § 74.866.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.835 Power limitations.

(a) A television broadcast booster station will not be authorized to operate with power in excess of that required to provide an adequate signal over the area intended to be served by the booster. Due consideration should be given to the provisions of § 74.804 which requires the licensee of a television broadcast booster station to correct any condition of interference which results from field strengths in excess of those which could be produced by the primary station at the place where interference occurs.

(b) In no event will a television broadcast booster station be authorized to operate with an effective radiated power of more than 5 kilowatts peak visual.

(c) In no event will a television broadcast booster station be authorized to operate at a location, and

with an effective radiated power, and antenna height above average terrain, which would produce a predicted field strength of more than 5 millivolts per meter at any location more than 68 miles from the primary station. The predicted field strength of a television broadcast booster station shall be determined in accordance with the procedures set forth in § 73.684 of this chapter. If a directive transmitting antenna is to be used to suppress radiation so as to comply with this requirement, the proposed directive pattern shall be supported with adequate engineering data.

(d) No minimum power is specified for television broadcast booster stations.

§ 74.836 Emissions and bandwidth.

(a) The license of a television broadcast booster station authorizes the transmission of the visual signal by amplitude modulation (A5) and the accompanying aural signal by frequency modulation (F3).

(b) Standard width television channels will be assigned and the emission of a television broadcast booster station shall be confined to the authorized channel in accordance with the Television Technical Standards contained in Part 73, Subpart E, of this chapter, except as provided in paragraph (c) of this section.

(c) Radio frequency harmonics of the visual and aural carriers shall be attenuated no less than 60 decibels for transmitters operating with more than 1 kilowatt power output. For transmitters operating with power output of 1 kilowatt or less, the power in such radio frequency harmonics shall not exceed 1 milliwatt. Other spurious emissions on frequencies more than 3 megacycles outside the assigned channel, including intermodulation products, signals other than those received from the primary station, and radio frequency energy generated within the booster apparatus, shall be attenuated no less than 40 decibels below the peak visual carrier amplitude. Greater attenuation of all spurious emissions may be required if interference is caused to any radio service.

§ 74.837 Antenna location.

(a) The transmitting antenna of a television broadcast booster station shall be located within the Grade A contour of the primary station, as defined in § 74.831.

(b) An applicant for a new television broadcast booster station or for changes in an existing station shall endeavor to select a site which will provide a line-of-sight transmission path to the area intended to be served and at which there is a suitable signal available from the primary station. The transmitting antenna should be placed above growing vegetation lying in the direction of the area intended to be served to minimize the possibility of signal absorption by foliage.

(c) Consideration should be given to accessibility of the site at all seasons of the year and to the availability of facilities for the maintenance and operation of the television broadcast booster station.

(d) Consideration should be given to the existence of strong radio frequency fields from other transmitters at the booster site and possibility that such fields may result in the retransmission of signals originating on frequencies other than that of the primary station.

EQUIPMENT

§ 74.850 Equipment and installation.

(a) An application for a new television broadcast booster station or for changes in the facilities of an existing station shall supply complete technical details of the apparatus to be employed and the overall installation. The functioning of such automatic features or other safeguards as may be incorporated to prevent improper operation shall be fully described. If the apparatus is to be remotely controlled, a detailed description of the control features shall be included.

(b) The overall characteristics of the complete installation shall be essentially linear so as to accomplish retransmission of the incoming signals of the primary station without significantly altering any electrical characteristics other than the overall amplitude. Intermodulation products which may be generated shall be adequately removed from the transmissions of the booster so as not to constitute a source of potential interference. Provision shall be made, in the circuits employed, to prevent the amplifier being driven into a non-linear condition over the full range of signal intensities within which the booster may be called upon to operate, or to cause it to cease radiating should non-linear operation or oscillation of any stage occur.

(c) The isolation between the input and output circuits of the booster, including the receiving and transmitting antenna systems, shall be at least 20 decibels greater than the maximum overall gain of the booster amplifier.

(d) The overall response of the amplifier shall not vary by more than 2 decibels over the entire assigned channel: *Provided, however,* That the amplitude of the aural signal may be decreased by a suitable amount if necessary to minimize intermodulation effects or eliminate interference between the sound and picture signals. The apparatus shall be capable of complying with the requirements of § 4.836(c) with respect to spurious emissions.

(e) In general, the transmitter shall be mounted on racks and panels or in totally enclosed frames protected as required by Article 810 of the National Electrical Code.

(f) The installation of a television broadcast booster station shall be made only by, or under the direct supervision of, a qualified electronics engineer and any repairs or adjustments made during or subsequent to the installation, which could result in improper operation, shall be made by or under the direct supervision of such an engineer or an operator holding a

valid first or second class radiotelephone operator license issued by the Commission.

(g) In cases where the electrical characteristics of the transmitting and receiving antennas of a booster station are used to provide the required degree of isolation between the input and output circuits, the installation of such antennas shall be sufficiently rugged and protected as to withstand such hazards as may reasonably be expected to be encountered due to their exposure to the elements and the local environment.

(h) Prior to placing a television broadcast booster station in regular operation, the permittee shall perform sufficient measurements of the completed installation to insure compliance with this section. These measurements together with a detailed description of the methods used in obtaining the measurements shall be submitted with the application for license for the booster station.

(i) Type acceptance of television booster amplifiers may be granted upon request in accordance with the type acceptance procedure set forth in Part 2 of this chapter, provided that measurement data and descriptive information submitted shows that the amplifier is capable of meeting the technical requirements of this subpart. The following measurement data must be supplied:

(1) Radio frequency power output (visual peak power).

(2) Over-all gain of the amplifier vs. frequency throughout the entire channel in which it is designed to operate.

(3) Spurious emissions appearing on frequencies outside the channel in which it is designed to operate, including radio frequency harmonics up to 2,000 megacycles.

§ 74.851 Equipment changes.

(a) Formal application (FCC Form 343) is required for any of the following changes:

(1) Replacement of the transmitter as a whole, except replacement with an identical transmitter, or any modification which could result in a change in the electrical characteristics or overall performance of the booster installation.

(2) A change in the transmitting antenna system, including the direction of radiation, directive pattern, or transmission line.

(3) An increase in the authorized overall height of the antenna above ground of more than 20 feet or which will result in an overall height above ground of more than 170 feet.

(4) A change in the control system.

(5) Any change in the location of the transmitter except a move within the same building or upon the same tower or pole, and any horizontal change in the antenna location of the transmitting antenna in excess of 500 feet.

(6) A change of frequency assignment.

(7) A change of authorized operating power.

(b) Other equipment changes not specifically referred to above may be made at the discretion of the licensee, provided that the Engineer in Charge of the radio district in which the television broadcast booster station is located and the Commission's Washington, D.C. office are notified in writing upon completion of such changes, and provided, further, that the changes are appropriately reflected in the next application for renewal of license of the television broadcast booster station.

Technical Operation and Operators

§ 74.861 Frequency tolerance.

The visual carrier frequency and the aural center frequency of the television signals transmitted by a television broadcast booster station shall be identical with those of the primary station.

§ 74.862 Frequency monitors and measurements.

The licensee of a television broadcast booster is not required to provide means for measuring the operating frequencies of the booster transmitter.

§ 74.863 Time of operation.

(a) A television broadcast booster station is not required to adhere to any regular schedule of operation. However, the licensee of a television booster station is expected to provide a dependable service to the extent that such is within its control and to avoid unwarranted interruptions to the service provided.

(b) If causes beyond the control of the licensee require that a television broadcast booster station remain inoperative for a period in excess of 10 days, the Engineer in Charge of the radio district in which the station is located shall be notified promptly in writing, describing the cause of failure and the steps taken to place the station in operation again, and shall be notified promptly when the operation is resumed.

(c) Failure of a television broadcast booster station to operate for a period of 30 days or more, except for causes beyond the control of the licensee, shall be deemed evidence of discontinuance of operation and the license of the station will be automatically forfeited.

(d) A television broadcast booster station shall not be operated during periods when the primary station is not operating.

§ 74.864 Station inspection.

The licensee of a television broadcast booster station shall make the station and the records required to be kept available for inspection upon request by representatives of the Commission.

§ 74.865 Posting of station and operator licenses.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation shall be posted at the place where the transmitter is located, so that all of the terms thereof are visible: *Provided, however,* That if the booster transmitter is operated by remote control and is located more than 20 miles from the primary station, the station license and other instruments of authorization shall be posted in the above-described manner at the transmitter of the primary station.

(b) The call letters and assigned channel of the primary station shall be displayed at the booster site on the structure supporting the transmitting antenna so as to be visible to a person standing on the ground at the booster transmitter site. The display shall be prepared so as to withstand normal weathering for a reasonable period of time and shall be maintained in a legible condition by the licensee.

(c) The original of each station operator license shall be posted at the place where he is on duty: *Provided, however,* That if the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing that class of station and is there available for inspection by a representative of the Commission, a verification card (Form 758–F) is acceptable in lieu of the posting of such license: *Provided further, however,* That if the operator in charge holds a restricted radiotelephone operator permit of the card form (as distinguished from the diploma form), he shall not post that permit but shall keep it in his personal possession.

§ 74.866 Operator requirements.

(a) The actual operation of the transmitting apparatus at a television broadcast booster station shall be carried on only by a person holding a valid first or second class radiotelephone operator license; *Provided, however,* That where the booster transmitter is remotely controlled by the transmission of coded signals from the primary station, an unlicensed person may turn the power supplied to the booster by the power mains, on and off upon instructions from the operator on duty at the primary station.

(b) The licensed operator on duty and in charge of a television broadcast booster station may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of license which he holds and the rules and regulations governing such stations. However, such duties shall in nowise interfere with the operation of the television broadcast booster station.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.867 Marking and lighting of antenna structures.

The marking and lighting of antenna structures employed at a television broadcast booster station, where required, will be specified in the authorization issued by the Commission. Part 17 of this chapter sets forth the conditions under which such marking and lighting will be required and the responsibility of the licensee with regard thereto.

§ 74.868 Additional orders.

In case the rules contained in this part do not cover all phases of operation or experimentation with respect to external effects, the Commission may make supplemental or additional orders, in each case as may be deemed necessary.

§ 74.869 Copies of rules.

The licensee of a television broadcast booster station shall have current copies of Part 73 and Part 74, and in cases where antenna marking is required, Part 17 of this chapter, available for use by the operator in charge, and is expected to be familiar with those rules relating to the operation of a television broadcast booster station. Copies of the Commission's rules may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, at nominal cost.

Other Operating Requirements

§ 74.881 Station records.

(a) The licensee of a television broadcast booster station shall maintain an operating log showing the following:

(1) Hours of operation.

(2) A record of all repairs, adjustments, maintenance, tests, and equipment changes, showing the date of such events, the name and qualifications of the person performing the operation, and a brief description of the matter logged.

(b) Where an antenna structure is required to be illuminated, see § 17.38 of this chapter.

(c) The operating log shall be made available upon request to any authorized representative of the Commission.

(d) Station records shall be retained for a period of two years.

§ 74.883 Station identification.

(a) Television broadcast booster stations will not be assigned individual call signs. Station identification will be accomplished by the retransmission of the call sign of the primary station.

(b) The Commission may request the operator on duty at the primary station to interrupt the transmissions of the booster station for short intervals of time in order to facilitate identification of a particular booster.

§ 74.884 Rebroadcasts.

(a) The term "rebroadcast" means the reception by radio of the programs or other signals of a radio or television station and the simultaneous or subsequent retransmission of such programs or signals for direct reception by the general public.

(b) A television broadcast booster station is authorized to rebroadcast only the signals of the primary station with which it is associated. In cases where the booster is located at a site where the signals of other television broadcast stations or other classes of stations may be received, care shall be exercised in the installation to insure that such other signals are not retransmitted: *Provided, however,* That occasional inadvertent retransmission of the signals of other co-channel TV stations, caused by abnormal propagation conditions, will not be considered to be non-compliance.

SUBPART I—INSTRUCTIONAL TELEVISION FIXED STATIONS

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.901 Definitions.

Attended operation. Operation of a station by a qualified operator on duty at the place where the transmitting apparatus is located with the transmitter in plain view of the operator.

Instructional television fixed station. A fixed station operated by an educational organization and used primarily for the transmission of visual and aural instructional, cultural, and other types of educational material to one or more fixed receiving locations.

Remote control. Operation of a station by a qualified operator on duty at a control position from which the transmitter is not visible but which control position is equipped with suitable control and telemetering circuits so that the essential functions that could be performed at the transmitter can also be performed from the control point.

Unattended operation. Operation of a station by automatic means whereby the transmitter is turned on and off and performs its functions without attention by a qualified operator.

§ 74.902 Frequency assignments.

(a) The following frequencies may be assigned to instructional television fixed stations:

Group A		Group B		Group C		Group D	
Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s
A-1	2500-2506	B-1	2506-2512	C-1	2548-2554	D-1	2554-2560
A-2	2512-2518	B-2	2518-2524	C-2	2560-2566	D-2	2566-2572
A-3	2524-2530	B-3	2530-2536	C-3	2572-2578	D-3	2578-2584
A-4	2536-2542	B-4	2542-2548	C-4	2584-2590	D-4	2590-2596

Group E		Group F		Group G		Group H	
Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s	Channel No.	Band limits Mc/s
E-1	2596-2602	F-1	2602-2608	G-1	2644-2650	H-1	2650-2656
E-2	2608-2614	F-2	2614-2620	G-2	2656-2662	H-2	2662-2668
E-3	2620-2626	F-3	2626-2632	G-3	2668-2674	H-3	2674-2680
E-4	2632-2638	F-4	2638-2644	G-4	2680-2686		

(b) The frequency band 2500–2690 Mc/s is shared with operational fixed and international control stations. Assignments to new instructional television fixed stations will not be made where interference will be caused to existing stations operating in accordance with the Table of Frequency Allocations in § 2.106 of this chapter. Similarly, assignments to new operational fixed or international control stations will not be made where interference will be caused to existing instructional television fixed stations. Existing operational fixed and international control stations may employ different channeling and this fact should be kept in mind in assessing potential interference.

(c) A licensee is limited to the assignment of no more than four channels for use in a single area of operation, all of which must be selected from the same Group listed in paragraph (a) of this section. An area of operation is defined as the area in which the use of channels by one licensee precludes their use by other licensees. Applicants shall not apply for more channels than they intend to construct within a reasonable time, simply for the purpose of reserving additional channels. Applicants applying for more than one channel shall submit to the Commission a plan indicating when they intend to begin and complete construction of each channel applied for, and the Commission will determine whether or not a grant of the channels requested would serve the public interest. Applicants intially proposing the operation of less than four transmitters may request that the remaining channels in the same Group be reserved for future expansion of the system. The Commission will undertake to avoid assigning the remaining channels in the Group to other applicants as long as such action is feasible in the judgment of the Commission. The provision for a maximum of four channels to a single licensee shall not be construed as a guarantee that four channels will be assigned.

(d) The same channel may be assigned to more than one station or more than one licensee in the same area if the geometric arrangement of the transmitting and receiving points or the times of operation are such that interference is not likely to occur.

[*§ 74.902 amended in III(64)–1; (c) amended eff. 9–15–66; III(64)–14*]

§ 74.903 Interference.

(a) Since interference in this service will occur only when an unfavorable desired-to-undesired signal ratio exists at the antenna input terminals of the affected receiver, the directive properties of receiving an-

tennas can be used to minimize the hazard of such interference. Interference may also be controlled through the use of directive transmitting antennas, geometric arrangement of transmitters and receivers, and the use of the minimum power required to provide the needed service.

(b) An application for a new instructional television fixed station is expected to take full advantage of such techniques to prevent interference to the reception of any existing operational fixed, international control station or instructional television fixed station at authorized receiving locations. In cases where it can be demonstrated that potential interference could be effectively controlled with practical refinements at such existing receiving locations, the user of the receiving installation is expected to make the needed refinements if interference-free reception is desired.

(c) Existing licensees and prospective applicants are expected to cooperate fully in attempting to resolve problems of potential interference before bringing the matter to the attention of the Commission.

ADMINISTRATIVE PROCEDURE

§ 74.911 Cross reference.

See §§ 74.11 to 74.16.

LICENSING POLICIES AND GENERAL OPERATING REQUIREMENTS

§ 74.931 Purpose and permissible service.

(a) Instructional television fixed stations are intended primarily to provide a means for the transmission of instructional and cultural material in visual form with an associated aural channel to specified receiving locations for the primary purpose of providing a formal education and cultural development to students enrolled in accredited public and private schools, colleges, and universities.

(b) Such stations may also be used for the additional purpose of transmitting visual and aural material to selected receiving locations for in-service training and instruction in special skills and safety programs, extension of professional training, informing persons and groups engaged in professional and technical activities of current developments in their particular fields, and other similar endeavors.

(c) During periods when the circuits provided by these stations are not being used for the transmission of instructional and cultural material, they may be used for the transmission of material directly related to the administrative activities of the licensee such as the holding of conferences with personnel, distribution of reports and assignments, exchange of data and statistics, and other similar uses. Stations will not be licensed in this service solely for the transmission of administrative traffic.

(d) Stations may be licensed in this service for operation as relay stations to interconnect instructional television fixed station systems in adjacent areas, to deliver instructional and cultural material to commercial and noncommercial educational television cultural material to, and obtain such material from, commercial and noncommercial educational television broadcast stations for use on the instructional television fixed system, and to deliver instructional and cultural material to, and obtain such material from, nearby terminals or connection points of closed circuit educational television systems employing wired distribution systems or radio facilities authorized under other parts of this chapter.

(e) Material transmitted by these stations may be intended for simultaneous reception and display or may be recorded for use at a later time.

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§ 74.932 Eligibility and licensing requirements.

(a) A license for an instructional television fixed station will be issued only to an institutional or governmental organization engaged in the formal education of enrolled students or to a nonprofit organization formed for the purpose of providing instructional television material to such institutional or governmental organizations, and which is otherwise qualified under the statutory provisions of the Communications Act of 1934, as amended. A nonprofit organization which would be eligible for a license for a noncommercial educational television broadcast station is considered to be eligible for a license for an instructional television fixed station.

(1) In determining the eligibility of publicly supported educational organizations, the accreditation of the appropriate state department of education will be taken into consideration.

(2) In determining the eligibility of privately controlled educational organizations, the accreditation of the appropriate state department of education or the recognized regional and national accrediting organizations will be taken into consideration.

(b) No numerical limit is placed on the number of stations which may be licensed to a single licensee. However, individual licensees will be governed by the limitation of § 74.902 as to the number of channels which may be used. A single license may be issued for more than one transmitter if they are to be located at a common site and operated by the same licensee. Applicants are expected to accomplish the proposed operation by the use of the smallest number of channels required to provide the needed service.

(c) An application for a new instructional television fixed station or for changes in the facilities of an existing station shall specify the location of the transmitter and all proposed receiving installations which will be under the control of the applicant or will be equipped for reception by the applicant. If reception is also intended at unspecified locations, i.e., if power is deliberately radiated to locations or areas so that voluntary reception will be possible, the applications shall include a complete statement as to the purpose of such additional reception.

§ 74.933 Remote control operation.

(a) An instructional television fixed station may be operated by remote control if the following conditions are met:

(1) The transmitter and associated control system shall be installed and protected in a manner designed to prevent tampering or operation by unauthorized persons.

(2) An operator meeting the requirements of § 4.965 shall be on duty at the remote control position and in actual charge thereof at all times when the station is in operation.

(3) Facilities shall be provided at the control position which will permit the operator to turn the transmitter on and off at will. The control position shall also be equipped with devices suitable for observing the overall characteristics of the transmissions and a carrier-operated device which will give a continuous visual indication whenever the transmitting antenna is radiating a signal. The transmitting apparatus shall be inspected as often as may be necessary to insure proper operation and in any event at least once a day.

(4) The control circuits shall be so designed and installed that short circuits, open circuits, other line faults, or any other cause which would result in

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loss of control of the transmitter, will automatically cause the transmitter to cease radiating.

(b) An application for authority to construct a new station or to make changes in the facilities of an existing station and which proposes operation by remote control shall include an adequate showing of the manner of compliance with the requirements of this section.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.934 Unattended operation.

(a) Unattended operation of an instructional television fixed station will be permitted only when it is used for relaying the signals of another station which is employing the transmission standards specified for stations operating in this service and then only if the following requirements are met:

(1) The transmitter shall be equipped with automatic circuits which will permit it to radiate only when a signal on the channel which it is intended to retransmit is present at the input terminals of the apparatus. The automatic circuit may be provided with a reasonable time-delay factor to prevent the transmitter from being turned off during momentary failures of the incoming signal.

(2) The transmitter shall accomplish the relaying of the incoming signal by direct heterodyne frequency conversion to a different channel, or linear amplification of the incoming signal. The use of a common oscillator to convert the incoming signal to a low frequency for amplification and to reconvert it to its original channel will be considered to be the same as linear amplification. In cases where frequency conversion to a different channel is employed, the electrical characteristics of the incoming signal when retransmitted shall not be significantly altered except as to frequency and amplitude. In cases where linear amplification is employed, the electrical characteristics of the incoming signal when retransmitted shall not be significantly altered except as to amplitude. Care shall be taken in the design and installation of an unattended relay station to prevent instability which could result in spurious or other unwanted radiation.

(3) If the transmitting apparatus is located at a site which is not readily accessible at all hours and in all seasons, means shall be provided for turning the transmitter on and off at will from a location which can be reached promptly at all hours and in all seasons.

(4) The transmitter and any associated control circuits shall be installed and protected in a manner designed to prevent tampering or operation by unauthorized persons.

(5) In cases where the antenna supporting structure of an unattended station is required to have aeronautical hazard markings pursuant to the provisions of Part 17 of this chapter, the licensee shall provide for inspection and logging of observations of such markings as required by §§ 17.37 and 17.38 of this chapter.

(b) An application for authority to construct a new station or to make changes in the facilities of an existing station and which proposes unattended operation shall include an adequate showing as to the manner of compliance with the requirements of this section.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.935 Power limitations.

(a) The power of an instructional television fixed station will be limited to that required to perform the proposed service. Applicants are expected to take full advantage of the power-concentrating properties of directive transmitting antennas and the collective properties of directive receiving antennas to provide the needed service.

(b) An application for a new instructional television fixed station or for changes in the facilities of an existing station proposing a peak visual power output from the transmitter in excess of 10 watts shall include a showing as to the distance and direction to each specified receiving point, the elevation above ground and the power gain of each receiving antenna at such receiving points, the vertical and horizontal directive patterns of the proposed transmitting antenna system in terms of power gain, the elevation of the transmitting antenna above ground and the nature of significant terrain features over the transmission path or paths.

(c) The operating power (peak visual) of an instructional television fixed station shall not be permitted to exceed the authorized power by more than 10 percent at any time.

(d) The transmitter power output of the aural signal shall not be more than 70 percent nor less than 10 percent of the peak power output of the visual signal.

§ 74.936 Emissions and bandwidth.

(a) An instructional television fixed station shall normally employ amplitude modulation (A5) for the transmission of the visual signal and frequency modulation (F3) for the transmission of the aural signal.

(b) The average power of radio frequency harmonics of the visual and aural carriers, measured at the output terminals of the transmitter, shall be attenuated no less than 60 decibles below the peak visual output power within the assigned channel. All other emissions appearing on frequencies more than 3 Mc/s above or below the upper and lower edges, respectively, of the assigned channel shall be attenuated no less than:

(1) 30 decibels for transmitters rated at less than 10 watts visual peak power output.

(2) 40 decibels for transmitters rated at 10 watts or more visual peak power output.

(c) Should interference occur as the result of emissions outside the assigned channel, greater attenuation may be required.

§ 74.937 Antennas.

(a) In order to minimize the hazard of harmful interference from other stations, directive receiving an-

tennas should be used at all receiving points. The choice of receiving antennas is left to the discretion of the licensee. However, should interference occur and it can be demonstrated that such interference could be eliminated through the use of a more suitable yet practical directive receiving antenna, the licensee of the station causing the interference is absolved of the responsibility of correcting the interference condition.

(b) Directive transmitting antennas shall be used wherever feasible so as to minimize the hazard of harmful interference to other licensees. The radiation pattern shall be designed to minimize radiation in directions where no reception is intended.

(c) In selecting a location for the transmitting antenna, it should be borne in mind that interference to the reception of its transmission is most likely to come from the direction in which receiving antennas must be aimed to receive its transmissions. Whenever possible the location should be chosen so that the receiving antennas in its system are aimed in directions from which interfering signals are least likely to come.

(d) The use of elevated receiving antennas is preferable to the use of elevated transmitting antennas or greater power to provide the desired service.

(e) The use of vertical or horizontal plane polarization or right-hand or left-hand rotating (circular) polarization may be used to minimize the hazard of harmful interference between systems. The Commission reserves the right to specify the polarization to be used.

(f) The power gain compared to an isotropic antenna and the directive properties of the transmitting and receiving antennas proposed to be employed, as well as the geometric distribution of the transmitting and receiving points, shall be supplied with each application for a new educational television fixed station or for changes in the antenna facilities of an existing station.

§ 74.938 Transmission standards.

(a) Except as otherwise provided in this section, the transmission standards employed by television broadcast stations and set forth in § 73.682 of this chapter shall apply to instructional television fixed stations.

(b) Instructional television fixed stations are not required to attenuate the lower sideband by any specified amount unless interference to the reception of another station results from emissions in excess of those permitted television broadcast stations, in which case the attenuation specified in § 73.687(a)(3) of this chapter shall apply. However, in no case shall the amplitude of any lower sideband component exceed the amplitude of the upper sideband component having the highest amplitude.

(c) The visual transmission amplitude characteristics may vary from those specified in § 73.682 of this chapter to the extent that such variations result from permissible lower sideband radiation. Care should be exercised in the adjustment of the transmitter to insure correct overall response of the transmitter for transmission of the upper and vestigial lower sideband.

(d) The provisions of § 74.937 in lieu of § 73.682(a)(14) of this chapter apply with respect to polarization of the radiated signal.

(e) The provisions of § 74.935(d) in lieu of § 73.682(a)(15) of this chapter apply with respect to the ratio of visual to aural power.

Equipment

§ 74.950 Equipment performance and installation.

(a) Except as otherwise provided in this section, the requirements of § 73.687 of this chapter regarding the installation and performance of television broadcast transmitters and associated equipment shall apply to instructional television fixed stations.

(b) The overall attenuation characteristics of the transmitter may vary from those specified in § 73.687 of this chapter to the extent that such variations result from permissible lower sideband radiation. However, care should be exercised in the adjustment of the transmitter to insure correct overall response of the transmitter for proper transmission of the upper and vestigial lower sideband.

(c) The provisions of § 74.961 in lieu of § 73.687(c)(1) of this chapter apply with respect to the frequency tolerance for the visual carrier.

(d) The provisions of § 74.936 in lieu of § 73.687(i)(1) of this chapter apply with respect to spurious emissions and radiofrequency harmonics.

(e) The requirements of § 73.687(c)(2) of this chapter will be considered to be met insofar as measurements of operating power are concerned, if the transmitter is equipped with instruments for determining the combined visual and aural operating power. However, licensees are expected to maintain the operating powers within the limits specified in the rules of this part. Measurements of the separate visual and aural operating powers should be made at sufficiently frequent intervals to insure compliance with the rules and in no event less often than once a month.

(f) Transmitting apparatus used solely for relaying signals received from other stations and operating in the manner described in § 74.934(a)(2) shall, in lieu of the requirements of § 73.687 of this chapter, comply with requirements of § 74.750 (c), (e), and (f).

§ 74.951 Equipment changes.

(a) Formal application (FCC Form 330P) is required for any of the following changes:

(1) Replacement of the transmitter as a whole, except replacement with an identical transmitter, or any change in equipment which could result in a change in the electrical characteristics or performance of the station.

(2) Any change in the transmitting antenna system, including the direction of radiation, directive pattern, antenna gain, or transmission line.

(3) Any change in the height of the antenna above ground or any horizontal change in the location of the antenna in excess of 500 feet.

(4) Any change in the transmitter control system.

(5) Any change in the location of the transmitter except a move within the same building or upon the same tower or pole.

(6) Any change of frequency assignment.

(7) Any change of authorized operating power.

(b) Other equipment changes not specifically referred to in paragraph (a) of this section may be made at the discretion of the licensee, provided that the Engineer in Charge of the radio district in which the station is located and the Commission in Washington, D.C., are notified in writing upon the completion of such changes and provided further, that the changes are appropriately reflected in the next application for renewal of license of the station.

§ 74.952 Acceptability of equipment for licensing.

(a) Transmitters employed in this service must have type acceptance by the Commission. Type acceptance may be given under either of the following conditions:

(1) A transmitter or translator may be type accepted upon the request of any manufacturer of such equipment built in quantity by following the type acceptance procedure set forth in Part 2 of this chapter, provided that the date and information submitted indicate that the equipment meets all technical requirements applicable to this service. If accepted, such transmitting equipment will be included on the Commission's "Radio Equipment List, Part C, Equipment Acceptable for Licensing in the Radio Services Other than Broadcast." Applicants specifying equipment included on such a list need not submit detailed descriptions and diagrams where the correct type number is specified, provided that the equipment proposed is identical with that accepted. Copies of the Radio Equipment List, Part C, are available for inspection at the Commission's office in Washington, D.C., and at each of its field offices.

(2) An application specifying a transmitter or translator not included on the Radio Equipment List, Part C, may be accepted upon the request of a prospective licensee submitting, with the application for construction permit, a complete description of the equipment, including the circuit diagram, listing of all tubes used, function of each, multiplication in each stage, plate current and voltage applied to each tube, and a description of the oscillator circuit together with any devices installed for the purpose of frequency stabilization. However, if this data has been filed with the Commission by a manufacturer in connection with a request for type acceptance, it need not be submitted with the application for construction permit but may be referred to as "on file." Measurement data for type acceptance made in accordance with subparagraph (1) of this paragraph shall be submitted with the license application.

(b) Additional rules with respect to withdrawal of type acceptance, modification of type accepted equipment, and limitations on the findings upon which type acceptance is based are set forth in Part 2 of this chapter.

TECHNICAL OPERATION AND OPERATORS

§ 74.961 Frequency tolerance.

(a) The frequency of the visual carrier shall be maintained within 60 kilocycles of the assigned frequency at all times when the station is in operation.

(b) The frequency of the aural carrier shall be maintained in accordance with the provisions of § 73.687(c)(1) of this chapter.

§ 74.962 Frequency monitors and measurements.

(a) Suitable means shall be provided to insure that the operating frequencies of the station are within the prescribed tolerances.

(b) The operating frequencies shall be checked as often as is necessary to insure that they are within the prescribed tolerances at all times and in all cases the operating frequencies shall be checked at intervals of no more than 1 month.

(c) A determination of the operating frequencies of the visual and aural carriers may be made by measuring any exact submultiple of the actual output frequency. Any crude but suitable device, including a roughly calibrated receiver, may be used to determine that the output frequency is the correct multiple of the frequency controlling element in the transmitter.

§ 74.963 Time of operation.

(a) An instructional television fixed station is not required to adhere to any regular schedule of operation. Unless otherwise specified in the license, the hours of operation are not limited.

(b) Except for purposes of tests and adjustments, the transmitter shall not be permitted to radiate unmodulated carriers or otherwise make unnecessary transmissions for extended periods of time.

§ 74.964 Station inspection.

The station and all records required to be kept by the licensee shall be made available for inspection upon request by any authorized representative of the Commission.

§ 74.965 Posting of station and operator licenses.

(a) The station license and any other instrument of authorization or individual order concerning the construction of the equipment or manner of operation shall be posted at the place where the transmitter is located, so that all terms thereof are visible, except as otherwise provided in paragraphs (b) and (c) of this section.

(b) In cases where the transmitter is operated by remote control, the documents referred to in paragraph (a) of this section shall be posted in the manner described at the control point of the transmitter, and

(c) In cases where the transmitter is operated unattended, the name of the licensee and the call sign of the unattended station shall be displayed at the trans-

mitter site on the structure supporting the transmitting antenna, so as to be visible to a person standing on the ground at the transmitter site. The display shall be prepared so as to withstand normal weathering for a reasonable period of time and shall be maintained in a legible condition at all times by the licensee. The station license and other documents referred to in paragraph (a) of this section shall be kept at the nearest attended station operated by the licensee of the unattended station or in cases where the licensee of the unattended station does not operate attended stations, at the point of destination of the signals relayed by the unattended station.

(d) The original of each station operator license shall be posted at the place where he is on duty: *Provided, however,* That if the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing the class of station and is there available for inspection by a representative of the Commission, a verification card (FCC Form 758–F) is acceptable in lieu of the posting of such license: *Provided further, however,* That if the operator on duty holds an operator permit of the card form (as distinguished from the diploma form), he shall not post that permit but shall keep it in his personal possession.

§ 74.966 Operator requirements.

(a) An instructional television fixed station, used for the origination of visual and aural program material or the transmitter of which is modulated with visual and aural program material received from other sources, shall not be operated unless there is one (or more) operators holding a valid radiotelephone first-class or second-class operator license or radiotelephone third-class operator permit, on duty at the place where the transmitter is located or at an authorized control point established pursuant to the provisions of § 74.933, and in actual charge thereof.

(b) Except when under the immediate supervision of a radiotelephone first-class or second-class operator, the radiotelephone third-class operator permit holder may perform only the following functions:

(1) Those necessary to turn the transmitter on and off.

(2) Such adjustments as may be made by means of external controls and which are necessary to maintain modulation of the transmitter within the prescribed limits.

(3) Such adjustments as may be made by means of external controls and which are necessary to compensate for fluctuations of the power supply voltage which would otherwise result in changes in the authorized operating power.

(4) Make routine meter readings and inspection of antenna hazard marking for logging purposes.

(c) In cases where a transmitter is operated unattended pursuant to the provisions of § 74.934, an operator of the grade specified in paragraph (a) of this section shall observe the transmissions at the receiving point for the station or some other suitable place where the transmissions of the unattended station can be observed, at intervals of no more than 1 hour whenever the station is in operation. Should any condition of improper operation be observed, immediate measures shall be instituted to correct the condition of improper operation.

(d) Any tests, adjustments, or repairs made while the transmitter is in operation and which require technical skill and knowledge to avoid improper operation, shall be made by or under the immediate supervision of an operator holding a valid radiotelephone first-class or second-class operator license.

(e) The licensed operator on duty and in charge of an instructional television fixed station may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator license or permit which he holds and the rules and regulations governing such stations. However, such duties shall in no way impair or impede the required supervision of the instructional television fixed station.

(Sec. 318, 48 Stat. 1089, as amended; 47 U.S.C. 318)

§ 74.967 Marking and lighting of antenna structures.

The marking and lighting of antenna structures authorized by the Commission, where required, will be specified in the authorization issued by the Commission. Part 17 of this chapter sets forth the circumstances under which such marking and lighting will be required and the responsibility of the licensee with regard thereto.

§ 74.968 Additional orders.

In case the rules of this part do not cover all phases of operation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

§ 74.969 Copies of the rules.

The licensee of an instructional television fixed station shall have current copies of Parts 73 and 74, and in cases where aeronautical hazard marking of antennas is required, Part 17 of this chapter available for use by the operator in charge. Both the licensee and the operator or operators responsible for the proper operation of the station are expected to be familiar with the pertinent rules governing instructional television fixed stations.

§ 74.970 Modulation limits.

(a) *Visual transmitter.* The maximum excursion of the luminance signal in the white direction shall not exceed the value specified in § 73.682(a)(13) of this chapter for the reference white level.

(b) *Aural transmitter.* The maximum frequency swing of the aural carrier shall not be permitted to exceed ±25 kc/s on peaks of frequent occurrence during any transmission. This is defined as 100 percent modulation.

§ 74.971 Modulation monitors and measurements.

Suitable means shall be provided to insure that the modulation limits specified in § 74.970 are observed.

OTHER OPERATING REQUIREMENTS

§ 74.981 Logs.

(a) The licensee of an instructional television fixed station shall maintain an operating log showing the following:

(1) The date and time of the beginning of each period of operation of the transmitter.

(2) The date and time of any unscheduled interruptions to the transmissions of the station, the duration of such interruptions, and the causes thereof.

(3) The date and time of the end of each period of operation of the transmitter.

(4) A record of all repairs, adjustments, maintenance, tests, and equipment changes, showing the date and time of such events, the name and qualifications of the person or persons performing such tasks, and a brief description of the matter logged.

(5) Where an antenna structure is required to have aeronautical hazard markings, the information required by § 17.38 of this chapter.

(b) The log entries shall be made by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty.

(c) The log shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required are readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

(d) No log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention required by rule. Any necessary correction may be made only by the person who made the original entry who shall strike out the erroneous portion, initial the correction made, and show the date the correction was made.

(e) Operating logs shall be retained for a period of not less than 2 years. The Commission reserves the right to order, in individual cases, retention of logs for a longer period of time. In cases where the licensee has notice of any claim or complaint to which information contained in the log may be pertinent, the log shall be retained until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 74.982 Station identification.

(a) Call signs for instructional television fixed stations will consist of three letters and two digits pursuant to the provisions of § 2.302 of this chapter relating to fixed stations.

(b) Except as otherwise provided in paragraphs (c) and (d) of this section, each instructional television fixed station shall transmit its call sign at the beginning and end of each period of operation and, during operation, on the hour. Visual or aural transmissions shall be employed.

(c) The hourly station identification announcement during operation may be deferred if it would interrupt a single consecutive demonstration, lecture, or other similar discourse or otherwise impair the continuity of a program in progress. In such cases the station identification announcement shall be made at the first normal break in the continuity of the program.

(d) In cases where an instructional television fixed station is operating as a relay for signals originating at some other station operated by the same licensee, its call sign shall be announced by the originating station at the times and in the manner prescribed in paragraph (b) of this section.

(e) In cases where an instructional television fixed station is operating as a relay for signals originating at a station operated by some other licensee, its call sign may be transmitted by the originating station if suitable arrangements can be made with the other licensee or in lieu thereof, means shall be provided for the transmission of the call sign by the relay transmitter itself. If the transmitter is operating unattended or if it is not equipped for direct modulation by a locally generated signal, the transmission of the call sign may be made automatically in the manner prescribed in § 74.783(a).

§ 74.984 Retransmissions.

An instructional television fixed station may not retransmit the signals of any class of station without consent of the station originating the signals to be retransmitted.

(Sec. 325, 48 Stat. 1091; 47 U.S.C. 325)

SUBPART J—COMMUNITY ANTENNA RELAY STATIONS

[*Subpart J (§§ 74.1001-74.1083) as adopted eff. 10-22-65; III (64)-11*]

DEFINITIONS AND ALLOCATION OF FREQUENCIES

§ 74.1001 Definitions.

(a) *Community Antenna Relay (CAR) Station.* A fixed station used for the transmission of television signals and related audio signals, and signals of standard and FM broadcast stations, from the point of reception to a terminal point from which the signals are distributed to the public by cable.

(b) *Attended operation.* Operation of a station by a qualified operator on duty at the place where the transmitting apparatus is located with the transmitter in plain view of the operator.

(c) *Unattended operation.* Operation of a station by automatic means whereby the transmitter is turned on and off and performs its functions without attention by a qualified operator.

(d) *Remote control operation.* Operation of a station by a qualified operator on duty at a control position from which the transmitter is not visible but which control position is equipped with suitable control and telemetering circuits so that the essential functions that could be performed at the transmitter can also be performed from the control point.

(e) As used in §§ 74.1031 and 74.1033.

(1) *Community antenna television system.* The term "community antenna television system" ("CATV system") means any facility which, in whole or in part, receives directly or indirectly over the air and amplifies or otherwise modifies the signals transmitting programs broadcast by one or more television stations and distributes such signals by wire or cable to subscribing members of the public who pay for such service, but such term shall not include (1) any such facility which serves fewer than 50 subscribers, or (2) any such facility which serves only the residents of one or more apartment dwellings under common ownership, control, or management, and commercial establishments located on the premises of such an apartment house.

(2) *Television station; television broadcast station; television translator station.* The terms "television station" and "television broadcast station" mean any television broadcasting station operating on a channel regularly assigned to its community by § 73.606 of this chapter. The term "television translator station" means a television broadcast translator station as defined in § 74.701 of this chapter. A television translator station which is licensed to and rebroadcasts the programing of a television broadcast station within that station's Grade B contour shall be deemed an extension of the originating station.

(3) *Principal community contour.* The term "principal community contour" means the signal contour which a television station is required to place over its entire principal community by § 73.685(a) of this chapter.

(4) *Grade A and Grade B contours.* The terms "Grade A contour" and "Grade B contour" mean the field intensity contours defined in § 73.683(a) of this chapter.

(5) *Network programming.* The term "network programming" means the programming supplied by a national television network organization.

(6) *Substantially duplicated.* The term "substantially duplicated" means regularly duplicated by the network programming of one or more other stations, singly or collectively, in a normal week during the hours of 6 to 11 p.m., local time, for a total of 14 or more hours.

(7) *Priority.* The term "priority" means the priority among stations established in § 74.1033.

(8) *Independent station.* The term "independent station" means a television station which is not affiliated with any national television network organization.

(9) *Distant signal.* The term "distant signal" means the signal of a television broadcast station which is extended or received beyond the Grade B contour of that station.

[*§ 74.1001(e) (1) and (2) amended, and (9) as adopted eff. 4-18-66; III(64)-12*]

§ 74.1003 Frequency assignments.

(a) Pending a final decision in Docket No. 15586, the following frequencies may be assigned to community antenna relay stations:

Mc/s	*Mc/s*
12700–12725	12825–12850
12725–12750	12850–12875
12750–12775	12875–12900
12775–12800	12900–12925
12800–12825	12925–12950

(b) In the band 12,700–12,950 Mc/s, television pickup stations shall not cause harmful interference to CAR, television intercity relay, and television STL stations.

(c) An application for a CAR station shall be specific with regard to the frequency or frequencies requested.

§ 74.1005 Interference.

(a) Applicants for community antenna relay stations shall endeavor to select an assignable frequency or frequencies which will be least likely to result in interference to other licensees in the same area.

(b) Applicants for community antenna relay stations shall take full advantage of all known techniques, such as the geometric arrangement of transmitters and receivers, the use of minimum power required to provide the needed service, and the use of highly directive transmitting and receiving antenna systems, to prevent interference to the reception of television STL, television intercity relay, and other CAR stations.

ADMINISTRATIVE PROCEDURE

§ 74.1007 Cross reference.

See §§ 74.11 to 74.16.

LICENSING POLICIES

§ 74.1030 Purpose and permissible service.

(a) Community antenna relay stations are authorized to relay television programs (visual and audio), and standard and FM broadcast station programs, from the point of reception of the broadcast to a point of reception by or in connection with community antenna television systems (CATV). CAR licensees may interconnect their facilities with those of other CAR or common carrier licensees.

(b) Community antenna relay station licenses may be issued to CATV owners or operators and to cooperative enterprises wholly owned by CATV owners or operators.

(c) Program material shall be transmitted over a community antenna relay system solely for use by one or more CATV systems.

(d) Community antenna relay systems shall supply program material to CATV systems only in the following circumstances:

(1) Where the licensee of the CAR is owner or operator of the CATV systems supplied with program material; or

(2) Where the licensee of the CAR supplies program material to CATV systems either without charge or on a nonprofit, cost-sharing basis pursuant to a written contract between the parties involved which provides that the CAR licensee shall have exclusive control over the operation of the community antenna relay stations licensed to him and that contributions to capital and operating expenses are accepted only on a cost-sharing, nonprofit basis, prorated on an equitable basis among all CATV systems being supplied with program material in whole or in part. Records showing the cost of the service and its nonprofit, cost-sharing nature shall be maintained by the CAR licensee and held available for inspection by the Commission.

(e) A licensee shall file a notification with the Commission thirty (30) days prior to supplying program material to any CATV system that has not been specified in its license application or in a prior notification to the Commission containing the following information:

(1) A copy of the contract between the parties pursuant to which the program material will be supplied;

(2) Network and station origin of the signals to be transmitted;

(3) Location of the point at which reception will be made;

(4) Location of intermediate relay stations in the system through which the signal will be transmitted;

(5) Location of the relay station which will supply the program material to the CATV system;

(6) Name of each community to be served by the CATV system;

(7) Current number of subscribers of the CATV system; and

(8) Identity of the owner or owners of the CATV system.

The CAR licensee may institute the service described in such notification thirty days after filing unless the Commission during that period notifies the licensee that the information supplied is inadequate or that the proposed service is not authorized under these rules, and the licensee shall then have the right to amend or file another notification to remedy the inadequacy or defect and to institute the service thirty days thereafter, or at such earlier date as the Commission may set upon finding that the inadequacy or defect has been remedied.

(f) Each licensee providing program material to a CATV system pursuant to paragraph (d)(2) of this section shall file an annual report with the Commission within ninety days of the close of its fiscal year containing:

(1) A financial statement of such operations in sufficient detail to show compliance with the requirements of this section;

(2) The names of those who have shared the use of the licensed facilities;

(3) A brief statement as to the use of the facilities made by each person sharing the use and an estimate of the approximate percentage of use by each participant; and

(4) Any change in the items previously reported to the Commission in the application for the license or in a notification under this section.

(g) The provisions of paragraphs (b) and (d) of this section and § 74.1031(a) shall not apply to a licensee who has been licensed in the CAR service pursuant to § 21.709 of this chapter, except that paragraph (d) of this section shall apply with respect to facilities added or CATV systems first served after February 1, 1966.

§ 74.1031 Eligibility and contents of application.

(a) A license for a community antenna relay station will be issued only to the owner of a CATV system or to a cooperative enterprise wholly owned by CATV owners or operators upon a showing that applicant is qualified under the Communications Act of 1934, that frequencies are available for the proposed operation, and that the public interest, convenience and necessity will be served by a grant thereof.

(b) An application for a new community antenna relay station or for changes in the facilities of an existing station shall specify the call sign and location of any television, standard and FM broadcast station or stations to be received, the location of the point at which reception will be made, the number and location of any intermediate relay stations in the system, the location of the terminal receiving point(s) in the system, the name or names of the communities to be served by the CATV system or systems to which the programs will be delivered, the current number of subscribers of each such CATV system, and the name of any other CAR licensee to whom the same programs will be delivered through interconnection of facilities.

(c) An application for any authorization subject to § 74.1033 shall contain a statement that the applicant(s) have notified the licensee or permittee of any television station, within whose predicted Grade B contour the CATV system(s) operate or will operate, in whole or in part, and the licensee or permittee of any 100 watts or higher power translator station operating in the community of each such system, of the filing of the application. Where it is proposed to extend the signal of any noncommercial educational television station beyond its Grade B contour into a community with an unoccupied reserved educational television channel assignment under § 73.606 of this chapter, the notice shall also be served upon the superintendents of schools in the community and county and the local, area, and State educational television agencies, if any. Such statement of the applicant shall be supported by copies of the letters of notification directed to such licensees or permittees and educational interests. The notice shall include the fact of filing by the applicant(s), identification of each CATV system served or to be served under the authorization sought, identification of the community served or to be served by each such CATV system, and the television, standard broadcast and FM station(s) whose programs will be distributed by each such CATV system.

NOTE 1: As used in § 74.1031(c), the term "predicted Grade B contour" means the field intensity contour defined in § 73.683(a) of this chapter, the location of which is determined exclusively by means of the calculations prescribed in § 73.684 of this chapter.

[§ 74.1031(c) *as amended eff. 4-18-66; III(64)-12*]

§ 74.1033 Licensing requirements.

Authorizations (including initial grants, modifications, assignments or transfers of control, and renewals) in the Community Antenna Relay Service to construct or operate point-to-point operational fixed stations to relay television signals to community antenna television systems (CATV systems), either directly or indirectly, will contain the following conditions:

(a) *Stations required to be carried.* Within the limits of its channel capacity, any such CATV system shall carry the signals of operating or subsequently authorized and operating television broadcast and 100 watts or higher power translator stations in the following order of priority, upon the request of the licensee or permittee of the relevant station:

(1) First, all commercial and noncommercial educational stations within whose principal community contours the system or the community of the system is located, in whole or in part;

(2) Second, all commercial and noncommercial educational stations withthin whose Grade A contours the system or the community of the system is located, in whole or in part;

(3) Third, all commercial and noncommercial educational stations within whose Grade B contours the system or the community of the system is located, in whole or in part; and

(4) Fourth, all commercial and noncommercial educational television translator stations operating in the community of the system, in whole or in part, with 100 watts or higher power.

(b) *Exceptions.* Notwithstanding the requirements of paragraph (a) of this section,

(1) The system need not carry the signal of any station, if (i) that station's network programming is substantially duplicated by one or more stations of higher priority and (ii) carrying it would, because of limited channel capacity, prevent the system from carrying the signal of an independent commercial station or a noncommercial educational station.

(2) In cases where (i) there are two or more signals of equal priority which substantially duplicate each other, and (ii) carrying all such signals would, because of limited channel capacity, prevent the system from carrying the signal of an independent commercial station or a noncommercial educational station, the system need not carry all such substantially duplicating signals, but may select among them to the extent necessary to preserve its ability to carry the signals of independent commercial or noncommercial educational stations.

(3) The system need not carry the signal of any television translator station if: (i) The system is carrying the signal of the originating station, or (ii) the system is within the Grade B or higher priority con-

tour of a station carried on the system whose programing is substantially duplicated by the translator; *Provided, however*, That where the originating station is carried in place of the translator station, the priority for purposes of paragraph (e) of this section shall be that of the translator station unless the priority of the originating station is higher.

(4) In the event that the system operates, or its community is located, within the Grade B or higher priority contours of both a satellite station and its parent station, the system need carry only the station with the higher priority; if the satellite station and its parent station are of equal priority, the system may select between them.

[§ 74.1033 (a) and (b)(3) amended, (b)(4) adopted eff. 2-28-67; III(64)-16]

(c) *Special requirements in the event of noncarriage.* Where the system does not carry the signals of one or more stations within whose Grade B or higher priority contour it operates, or the signals of one or more 100 watts or higher power translator stations located in its community, the system shall offer and maintain, for each subscriber, an adequate switching device to allow the subscriber to choose between cable and noncable reception, unless the subscriber affirmatively indicates in writing that he does not desire this device.

(d) *Manner of carriage.* Where the signal of any station is required to be carried under this section:

(1) The signal shall be carried without material degradation in quality (within the limitations imposed by the technical state of the art);

(2) The signal shall, upon request of the station licensee or permittee, be carried on the system on the channel on which the station is transmitting (where practicable without material degradation); and

(3) The signal shall, upon the request of the station licensee or permittee, be carried on the system on no more than one channel.

(e) *Stations entitled to program exclusivity.* Any such system which operates, in whole or in part, within the Grade B or higher priority contour of any commercial or noncommercial educational television station or within the community of a fourth priority television translator station, and which carries the signal of such station shall, upon request of the station licensee or permittee, maintain the station's exclusivity as a program outlet against lower priority or more distant duplicating signals, but not against signals of equal priority, in the manner and to the extent specified in paragraphs (f) and (g) of this section.

(f) *Program exclusivity; extent of protection.* Where a station is entitled to program exclusivity, the CATV system shall, upon the request of the station licensee or permittee, refrain from duplicating any program broadcast by such station on the same day as its broadcast by the station, if the CATV operator has received notification from the requesting station of the date and time of its broadcast of the program and the date and time of any broadcast to be deleted, as soon as possible and in any event no later than 48 hours prior to the broadcast to be deleted. Upon request of the CATV system such notice shall be given at least 8 days prior to the date of any broadcast to be deleted.

(g) *Exceptions.* Notwithstanding the requirements of paragraph (f) of this section,

(1) The CATV system need not delete reception of a network program if, in so doing, it would leave available for reception by subscribers, at any time, less than two network programs (including those broadcast by any stations whose signals are being carried and whose program exclusivity is being protected pursuant to the requirements of this section);

(2) The system need not delete reception of a network program which is scheduled by the network between the hours of 6 and 11 p.m., Eastern Time, but is broadcast by the station requesting deletion, in whole or in part, outside of the period which would normally be considered prime time for network programming in the time zone involved; and

(3) The system need not delete reception of any program consisting of the broadcast coverage of a speech or other event as to which the time of presentation is of special significance, except where the program is being simultaneously broadcast by a station entitled to program exclusivity.

(4) The system need not delete reception of any program which would be carried on the system in color

but will be broadcast in black and white by the station requesting deletion.

(h) *Interim requirement.* No CATV system shall be provided with microwave service, either directly or indirectly, if the operation of such CATV system would be inconsistent with § 74.1107 of this chapter.

[*§ 74.1033 (a), (b)(3), (c), (e), and (f) amended; pars. (g)(4) and (h) adopted, and note deleted eff. 4-18-25; III(64)-12*]

§ 74.1035 Remote control operation.

(a) A community antenna relay station may be operated by remote control provided the following conditions are met:

(1) The transmitter and associated control system shall be installed and protected in a manner designed to prevent tampering or operation by unauthorized persons.

(2) An operator meeting the requirements of § 74.1073 shall be on duty at the remote control position and in actual charge thereof at all times when the station is in operation.

(3) Facilities shall be provided at the control position which will permit the operator to turn the transmitter on and off at will. The control position shall also be equipped with suitable devices for observing the overall characteristics of the transmissions and a carrier operated device which will give a continuous visual indication whenever the transmitting antenna is radiating a signal. The transmitting apparatus shall be inspected as often as may be necessary to insure proper operation.

(4) The control circuits shall be so designed and installed that short circuits, open circuits, other line faults, or any other cause which would result in loss of control of the transmitter will automatically cause the transmitter to cease radiating.

(b) An application for authority to construct a new station or to make changes in the facilities of an existing station and which proposes operation by remote control shall include an adequate showing of the manner of compliance with the requirements of this section.

§ 74.1037 Unattended operation.

(a) Unattended operation of a community antenna relay station will be permitted only if the following requirements are met:

(1) The transmitter and any associated control circuits shall be installed and protected in a manner designed to prevent tampering or operation by unauthorized persons.

(2) The transmitter shall be equipped with automatic circuits which will permit it to radiate only when a signal on the frequency which it is intended to retransmit is present at the input terminals of the apparatus.

(3) If the transmitting apparatus is located at a site which is not readily accessible at all hours and in all seasons, means shall be provided for turning the transmitter on and off at will from a location which can be reached promptly at all hours and in all seasons.

(4) Appropriate observations shall be made, at intervals not exceeding one hour during the period of its operation, at the receiving end of the circuit by an operator meeting the requirements of § 74.1073, who shall take immediate corrective action if any condition of improper operation is observed.

(5) The station licensee shall be responsible for the proper operation of the station, and all adjustments or tests during or coincident with the installation, servicing, or maintenance of the station which may affect its operation shall be performed by or under the immediate supervision and responsibility of a licensed operator as provided in § 74.1073.

(b) An application for authority to construct a new station or to make changes in the facilities of an existing station and which proposes unattended operation shall include an adequate showing as to the manner of compliance with the requirements of this section.

§ 74.1039 Power limitations.

The transmitter output power shall not be greater than necessary and, in any event, shall not exceed 5 watts.

§ 74.1041 Emissions and bandwidth.

Pending a final decision on Part IV of Docket No. 15586, the rule contained in § 74.637 shall govern emission and bandwidth in the CAR Service.

§ 74.1043 Antennas.

(a) Community antenna relay stations shall use directive transmitting antennas. The maximum beam width in the horizonal plane between half power points of the major lobe shall not exceed 3 degrees. Either vertical, horizontal, or rotating polarization may be employed. The Commission reserves the right to specify the polarization of the transmitted signal.

(b) The choice of receiving antennas is left to the discretion of the licensee. However, licensees will not be protected from interference which results from the lack of adequate antenna discrimination against unwanted signals.

EQUIPMENT

§ 74.1050 Equipment and installation.

(a) Pending a final decision in Docket No. 15586 with regard to bandwidth and channelling, no technical performance standards will be applied to CAR stations other than those of §§ 74.635, 74.661, and 74.1061 relating to bandwidth, frequency stability, and frequency tolerance.

(b) The installation of a community antenna relay station shall be made by or under the immediate supervision of a qualified engineer. Any tests or adjustments requiring the radiation of signals and which could result in improper operation shall be conducted by or under the immediate supervision of an operator holding a valid first- or second-class radiotelephone operator license.

(c) Simple repairs such as the replacement of tubes, fuses, or other plug-in components which require no particular skill may be made by an unskilled person. Repairs requiring replacement of attached components or the adjustment of critical circuits or corroborative measurements shall be made only by a person with the knowledge and skill to perform such tasks.

§ 74.1053 Equipment changes.

(a) Formal application is required for any of the following changes:

(1) Replacement of the transmitter as a whole, except replacement with an identical transmitter, or any change in equipment which could result in a change in the electrical characteristics or performance of the station.

(2) Any change in the transmitting antenna system including the direction of the main radiation lobe, directive pattern, antenna gain, or transmission line.

(3) Any change in the height of the antenna above ground, or any horizontal change in the location of the antenna.

(4) Any change in the transmitter control system.

(5) Any change in the location of the transmitter, except a move within the same building or upon the tower or mast.

(6) Any change in frequency assignment.

(7) Any change of authorized operation power.

(b) Other equipment changes not specifically referred to in paragraph (a) of this section may be made at the discretion of the licensee, provided that the Engineer in Charge of the radio district in which the station is located and the Commission in Washington, D.C., are notified in writing upon the completion of such changes and provided further, that the changes are appropriately reflected in the next application for renewal of licenses of the station.

TECHNICAL OPERATION

§ 74.1061 Frequency tolerance.

The frequency of the unmodulated carrier of a community antenna relay station shall be maintained within 0.02 percent of the center of the assigned channel.

§ 74.1063 Frequency monitors and measurements.

(a) Suitable means shall be provided to insure that the operating frequency is within the prescribed tolerance at all times. The operating frequency shall be checked as often as is necessary to insure compliance with § 74.1061 and in any case at intervals of no more than one month.

(b) The choice of apparatus to measure the operating frequency is left to the discretion of the licensee. However, failure of the apparatus to detect departures of the operating frequency in excess of the prescribed tolerance will not be deemed an acceptable excuse for the violation.

§ 74.1065 Modulation limits.

(a) If amplitude modulation is employed, negative modulation peaks shall not exceed 100 percent modulation.

(b) Pending a final decision on Part IV of Docket No. 15586, no modulation limits are specified where frequency modulation is employed other than the requirements of § 74.637.

§ 74.1067 Time of operation.

(a) A community antenna relay station is not expected to adhere to any prescribed schedule of operation. However, it is limited to operation only when the originating station, or stations, is transmitting the programs which it relays except as provided in paragraph (b) of this section.

(b) The transmitter may be operated for short periods of time to permit necessary tests and adjustments. The radiation of an unmodulated carrier for extended

periods of time or other unnecessary transmissions are forbidden.

§ 74.1069 Station inspection.

The station and all records required to be kept by the licensee shall be made available for inspection upon request by any authorized representative of the Commission.

§ 74.1071 Posting of station and operator licenses.

(a) The station license and any other instrument of authorization or individual order concerning the construction or the equipment or manner of operation shall be posted at the place where the transmitter is located, so that all terms thereof are visible except as otherwise provided in paragraphs (b) and (c) of this section.

(b) In cases where the transmitter is operated by remote control, the documents referred to in paragraph (a) of this section shall be posted in the manner described at the control point of the transmitter.

(c) In cases where the transmitter is operated unattended, the name of the licensee and the call sign of the unattended station shall be displayed at the transmitter site on the structure supporting the transmitting antenna, so as to be visible to a person standing on the ground at the transmitter site. The display shall be prepared so as to withstand normal weathering for a reasonable period of time and shall be maintained in a legible condition at all times by the licensee. The station license and other documents referred to in paragraph (a) of this section shall be kept at the nearest attended station or, in cases where the licensee of the unattended station does not operate attended stations, at the point of destination of the signals relayed by the unattended station.

(d) The original of each station operator license shall be posted at the place where the operator is on duty: *Provided, however,* That: if the original license of a station operator is posted at another radio transmitting station in accordance with the rules governing the class of station and is there available for inspection by a representative of the Commission, a verification card (FCC Form 758–F) is acceptable in lieu of the posting of such license: *Provided further, however,* That if the operator on duty holds an operator permit of the card form (as distinguished from the diploma form), he shall not post that permit but shall keep it in his personal possession.

§ 74.1073 Operator requirements.

(a) One or more radio operators holding valid radiotelephone first- or second-class operator licenses shall be on duty at the place where the transmitting apparatus of any community antenna relay station is located, in plain view of and in actual charge of its operation: *Provided, however,* That if a station is operated by remote control as provided in § 74.1035, such operator or operators must be on duty at the remote control position in lieu of the transmitting location, and the control and monitoring equipment shall be readily accessible and clearly visible to the operator at that position: *And provided further,* That if a station is operated unattended as provided in § 74.1037, such operator shall be on duty at the receiving end of the circuit and shall be responsible for making the required observations to insure that any condition of improper operation is promptly corrected.

(b) Any transmitter tests, adjustments, or repairs during or coincident with the installation, servicing, operation, or maintenance of a community antenna relay station which may affect the proper operation of such station shall be made by or under the immediate supervision and responsibility of a person holding a valid first- or second-class radiotelephone operator license, who shall be fully responsible for proper functioning of the station equipment.

(c) The licensed operator on duty and in charge of a community antenna relay station may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator license which he holds and the rules governing such stations. However, such duties shall in no way impair or impede the required supervision of the community antenna relay station.

§ 74.1075 Marking and lighting of antenna structures.

The marking and lighting of antenna structures authorized by the Commission, where required, will be specified in the authorization issued by the Commission. Part 17 of this chapter sets forth the circumstances under which such marking and lighting will be required and the responsibility of the licensee with regard thereto.

§ 74.1077 Additional orders.

In case the rules of this part do not cover all phases of operation with respect to external effects, the Commission may make supplemental or additional orders in each case as may be deemed necessary.

§ 74.1079 Copies of the rules.

The licensee of a community antenna relay station shall have current copies of Part 74, and in cases where aeronautical hazard marking of antennas is required, Part 17 of this chapter shall be available for use by the operator in charge. Both the licensee and the operator or operators responsible for the proper operation of the station are expected to be familiar with the rules governing community antenna relay stations. Copies of the Commission's rules may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, at nominal cost.

§ 74.1081 Logs.

The licensee of a community antenna relay station shall maintain an operating log showing the following:

(a) The date and time of the beginning and end of each period of operation of each transmitter.

(b) The date and time of any unscheduled interruptions to the transmissions of the station, the duration of such interruptions, and the causes thereof.

(c) A record of repairs, adjustments, tests, maintenance, and equipment changes.

(d) Log entries shall be made in an orderly and legible manner by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty.

(e) Where an antenna structure is required to have aeronautical hazard markings, the information required by § 17.38 of this chapter shall be included.

(f) No log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention required by rule. Any necessary correction may be made only by the person who made the original entry who shall strike out the erroneous portion, initial the correction made, and show the date the correction was made.

(g) Operating logs shall be retained for period of not less than 2 years. The Commission reserves the right to order retention of logs for a longer period of time. In cases where the licensee has notice of any claim or complaint, the log shall be retained until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for filing of suits upon such claims.

§ 74.1083 Retransmissions.

(a) Community antenna relay stations are limited to the relaying of television broadcast and related audio signals, and signals of standard and FM broadcast stations, unless otherwise authorized by the Commission. Relaying includes retransmission of such signals by intermediate relay stations in the system.

(b) Community antenna relay stations may also retransmit the signals of other community antenna relay or common carrier stations operated by different licensees provided that the program material retransmitted meets the requirements of subsection (a) of this section.

[*Subpart J (§§ 74.1001–74.1083) as adopted eff. 11–22–65; III(64)–11*]

SUBPART K—COMMUNITY ANTENNA TELEVISION SYSTEMS

[*Subpart K (§§ 74.1101–74.1109) as adopted eff. 4–18–66; except for § 74.1103 which is eff. 6–17–66 as it pertains to existing operations of nonmicrowave CATV systems and §§ 74.1105, 74.1107, and 74.1109 which are eff. 3–17–66; III(64)–12*]

§ 74.1100 Cross reference.

See § 74.11.

[*§ 74.1100 adopted eff. 2–28–67; III(64)–16*]

§ 74.1101 Definitions.

(a) *Community antenna television system.* The term "community antenna television system" ("CATV system") means any facility which, in whole or in part, receives directly or indirectly over the air and amplifies or otherwise modifies the signals transmitting programs broadcast by one or more television stations and distributes such signals by wire or cable to subscribing members of the public who pay for such service, but such term shall not include (1) any such facility which serves fewer than 50 subscribers, or (2) any such facility which serves only the residents of one or more apartment dwellings under common ownership, control, or management, and commercial establishments located on the premises of such an apartment house.

(b) *Television station; television broadcast station; television translator station.* The terms "television station" and "television broadcast station" mean any television broadcasting station operating on a channel regularly assigned to its community by § 73.606 of this chapter. The term "television translator station" means a television broadcast translator station as defined in § 74.701 of this chapter. A television translator station which is licensed to and rebroadcasts the programing of a television broadcast station within that station's Grade B contour, shall be deemed an extension of the originating station.

(c) *Principal community contour.* The term "principal community contour" means the signal contour which a television station is required to place over its entire principal community by § 73.685(a) of this chapter.

(d) *Grade A and Grade B contours.* The terms "Grade A contour" and "Grade B contour" mean the field intensity contours defined in § 73.683(a) of this chapter.

(e) *Network programing.* The term "network programing" means the programing supplied by a national television network organization.

(f) *Substantially duplicated.* The term "substantially duplicated" means regularly duplicated by the network programing of one or more stations, singly or collectively, in a normal week during the hours of 6 to 11 p.m., local time, for a total of 14 or more hours.

(g) *Priority.* The term "priority" means the priority among stations established in § 74.1103(a).

(h) *Independent station.* The term "independent station" means a television station which is not affiliated with any national television network organization.

(i) *Distant signal.* The term "distant signal" means the signal of a television broadcast station which is extended or received beyond the Grade B contour of that station.

§ 74.1103 Requirement relating to distribution of television signals by community antenna television systems.

No community antenna television system shall supply to its subscribers signals broadcast by one or more television stations, except in accordance with the following conditions:

(a) *Stations required to be carried.* Within the limits of its channel capacity, any such CATV system shall carry the signals of operating or subsequently authorized and operating television broadcast and 100 watts or higher power translator stations in the following order of priority, upon the request of the licensee or permittee of the relevant station:

(1) First, all commercial and noncommercial educational stations within whose principal community contours the system or the community of the system is located, in whole or in part;

(2) Second, all commercial and noncommercial educational stations within whose Grade A contours the system or the community of the system is located, in whole or in part;

(3) Third, all commercial and noncommercial educational stations within whose Grade B contours the system or the community of the system is located, in whole or in part; and

(4) Fourth, all commercial and noncommercial educational translator stations operating in the community of the system, in whole or in part, with 100 watts or higher power.

(b) *Exceptions.* Nothwithstanding the requirements of paragraph (a) of this section,

(1) The system need not carry the signal of any station, if (i) that station's network programing is substantially duplicated by one or more stations of higher priority, and (ii) carrying it would, because of limited channel capacity, prevent the system from carrying the signal of an independent commercial station or a noncommercial educational station.

(2) In cases where (i) there are two or more signals of equal priority which substantially duplicate each other, and (ii) carrying all such signals would, because of limited channel capacity, prevent the system from carrying the signal of an independent commercial station or a noncommercial educational station, the system need not carry all such substantially duplicat-

ing signals, but may select among them to the extent necessary to preserve its ability to carry the signals of independent commercial or noncommercial educational stations.

(3) The system need not carry the signal of any television translator station if: (i) The system is carrying the signal of the originating station, or (ii) the system is within the Grade B or higher priority contour of a station carried on the system whose programing is substantially duplicated by the translator; *Provided, however,* That where the originating station is carried in place of the translator station, the priority for purposes of paragraph (e) of this section shall be that of the translator station unless the priority of the originating station is higher.

(4) In the event that the system operates, or its community is located, within the Grade B or higher priority contours of both a satellite and its parent station, the system need carry only the station with the higher priority, if the satellite station and its parent station are of equal priority, the system may select between them.

(c) *Special requirements in the event of noncarriage.* Where the system does not carry the signals of one or more stations within whose Grade B or higher priority contour it operates, or the signals of one or more 100 watts or higher power translator stations located in its community, the system shall offer and maintain, for each subscriber, an adequate switching device to allow the subscriber to choose between cable and noncable reception, unless the subscriber affirmatively indicates in writing that he does not desire this device.

(d) *Manner of carriage.* Where the signal of any station is required to be carried under this section,

(1) The signal shall be carried without material degradation in quality (within the limitations imposed by the technical state of the art);

(2) The signal shall, upon request of the station licensee or permittee, be carried on the system on the channel on which the station is transmitting (where practicable without material degradation); and

(3) The signal shall, upon the request of the station licensee or permittee, be carried on the system on no more than one channel.

(e) *Stations entitled to program exclusivity.* Any such system which operates, in whole or in part, within the Grade B or higher priority contour of any commercial or noncommercial educational television station or within the community of a fourth priority television translator station, and which carries the signal of such station shall, upon request of the station licensee or permittee, maintain the station's exclusivity as a program outlet against lower priority or more distant duplicating signals, but not against signals of equal priority, in the manner and to the extent specified in paragraphs (f) and (g) of this section.

(f) *Program exclusivity; extent of protection.* Where a station is entitled to program exclusivity, the CATV system shall, upon the request of the station licensee or permittee, refrain from duplicating any program broadcast by such station, on the same day as its broadcast by the station, if the CATV operator has received notification from the requesting station of the date and time of its broadcast of the program and the date and time of any broadcast to be deleted, as soon as possible and in any event no later than 48 hours prior to the broadcast to be deleted. Upon request of the CATV system, such notice shall be given at least 8 days prior to the date of any broadcast to be deleted.

(g) *Exceptions.* Notwithstanding the requirements of paragraph (f) of this section.

(1) The CATV system need not delete reception of a network program if, in so doing, it would leave available for reception by subscribers, at any time, less than the programs of two networks (including those broadcast by any stations whose signals are being carried and whose program exclusivity is being protected pursuant to the requirements of this section);

(2) The system need not delete reception of a network program which is scheduled by the network between the hours of 6 and 11 p.m., eastern time, but is broadcast by the station requesting deletion, in whole or in part, outside of the period which would normally be considered prime time for network programing in the time zone involved;

(3) The system need not delete reception of any program consisting of the broadcast coverage of a speech or other event as to which the time of presentation is of special significance, except where the program is being simultaneously broadcast by a station entitled to program exclusivity; and

(4) The system need not delete reception of any program which would be carried on the system in color but will be broadcast in black and white by the station requesting deletion.

[§ *74.1103(a) and (b)(3) amended, (b)(4) adopted eff. 2-28-67; III(64)-16*]

§ 74.1105 Notification prior to the commencement of new service.

(a) No CATV system shall commence operations in a community or commence supplying to its subscribers the signal of any television broadcast station carried beyond the Grade B contour of the station, unless the system has given prior notice of the proposed new service to the licensee or permittee of any television broadcast station within whose predicted Grade B contour the system operates or will operate, and to the licensee or permittee of any 100 watts or higher power translator station operating in the community of the system, and has furnished a copy of each such notification to the Federal Communications Commission, within

sixty (60) days after obtaining a franchise or entering into a lease or other arrangement to use facilities; in any event, no CATV system shall commence such operations until thirty (30) days after notice has been given. Such notice shall be given by existing systems which propose to add new distant signals at least thirty (30) days prior to commencing service and by systems which propose to extend lines into another community within sixty (60) days after obtaining a franchise or entering into a lease or other arrangement to use facilities or where no new local authorization or contractual arrangement is necessary, at least thirty (30) days prior to commencing service. Where it is proposed to extend the signal of any noncommercial educational television station beyond its Grade B contour into a community with an unoccupied reserved educational television channel assignment under § 73.606 of this chapter, the notice shall also be served upon the superintendents of schools in the community and county in which the system will operate and the local, area, and State educational television agencies, if any.

(b) The notice shall include the name and address of the system, identification of the community to be served, the television signals to be distributed, and the estimated time operations will commence.

(c) Where a petition with respect to the proposed service is filed with the Commission, pursuant to § 74.1109 of this chapter, within thirty (30) days after notice, new service which is challenged in the petition shall not be commenced until after the Commission's ruling on the petition or on the interlocutory question of temporary relief pending further procedures; *Provided, however,* That service shall not be commenced in violation of the terms of any specified temporary relief or of the provisions of § 74.1107 of this chapter. Where no petition pursuant to § 74.1109 has been filed within thirty (30) days after notice, service may be commenced at any time thereafter, subject, however, to the provisions of § 74.1107.

(d) The provisions of this section do not apply to any signals which were being supplied to subscribers in the community of the CATV system on March 17, 1966, unless it is proposed to extend lines into another community.

NOTE 1: As used in § 74.1105, the term "predicted Grade B contour" means the field intensity contour defined in § 73.683(a) of this chapter, the location of which is determined exclusively by means of the calculations prescribed in § 73.684 of this chapter.

NOTE 2: As used in § 74.1105, the term "television broadcast station" includes foreign television broadcast stations.

[*§ 74.1105 amended in III(64)–16; Note 2 adopted eff. 7–14–67; III(64)–18*]

§ 74.1107 Requirement for showing in evidentiary hearing and Commission approval in top 100 television markets; other procedures.

(a) No CATV system operating in a community within the predicted Grade A contour of a television broadcast station in the 100 largest television markets shall extend the signal of a television broadcast station beyond the Grade B contour of that station, except upon a showing approved by the Commission that such extension would be consistent with the public interest, and specifically the establishment and healthy maintenance of television broadcast service in the area. Commission approval of a request to extend a signal in the foregoing circumstances will be granted where the Commission, after consideration of the request and all related materials in a full evidentiary hearing, determines that the requisite showing has been made. The market size shall be determined by the rating of the American Research Bureau, on the basis of the net weekly circulation for the most recent year.

(b) A request under paragraph (a) of this section shall be filed after the CATV system has obtained any necessary franchise for operation or has entered into a lease or other arrangement to use facilities and shall set forth the name of the community involved, the date on which a franchise was obtained, the signal or signals proposed to be extended beyond their Grade B contours, the date on which copies of the notifications required by § 74.1105 of this chapter were filed with the Commission, and the specific reasons why it is urged that such extension is consistent with the public interest. Public notice will be given of the filing of such a request, and interested parties may file a response or statement within thirty (30) days after such public notice. A reply to such a response or statement may be filed within a twenty (20) day period thereafter. The Commission shall designate the request for an evidentiary hearing on issues to be specified, with the burden of proof and the burden of proceeding with the introduction of evidence upon the CATV system

making the request, unless otherwise specified by the Commission as to particular issues.

(c) No CATV system, located so as to fall outside the provisions of paragraph (a) of this section, shall extend the signal of a television broadcast station beyond the Grade B contour of that station, where the Commission, upon its own motion or pursuant to a petition filed under § 74.1109, determines, after appropriate proceedings, that such extension would be inconsistent with the public interest, taking into account particularly the establishment and healthy maintenance of television broadcast service in the area.

(d) The provisions of paragraphs (a) and (b) of this section shall not be applicable to any signals which were being supplied by a CATV system to its subscribers in a community on February 15, 1966, and pursuant to a franchise (where necessary) issued on or before that date: *Provided, however,* That any new franchise or amendment of an existing franchise after February 15, 1966, to operate or extend the operations of the CATV system in the same general area or any extension into another community does come within the provisions of paragraphs (a) and (b) of this section: *And provided further,* That no CATV system located in a community in the 100 largest television markets, which was supplying to its subscribers on February 15, 1966, a signal carried beyond its Grade B contour, shall extend such service to new geographical areas within the same community where the Commission, upon petition filed under § 74.1109 by a television broadcast station or other interested person located in the area and after consideration of the response of the CATV system and appropriate proceedings, determines that the public interest, taking into account the considerations set forth in the Second Report and Order in Docket Nos. 14895, 15233, and 15971, FCC 66-220, paragraphs 113-149, would be served by appropriate conditions limiting the geographical extension of the system to new areas in the community. The Commission may also consider, upon the basis of the pleadings before it, whether temporary relief is called for in the public interest, and, if so, the nature of such relief; no CATV system coming within the foregoing provision shall extend its service to new geographical areas in violation of the terms of the specified temporary relief.

(e) Within 60 days of issuance of a request filed pursuant to paragraph (a) of this section, interested parties seeking simultaneous consideration with such request must file appropriate requests for any other CATV system in the same television market. All requests for CATV systems in a given market timely filed with respect to the first request will be processed and considered simultaneously. Later filed requests for the particular market will be subject to chronological processing and may not be considered in the same proceeding as the earlier requests.

NOTE 1: As used in § 74.1107, the term "television broadcast station" includes foreign television broadcast stations.

[*§ 74.1107 amended in III(64)-16 and III(64)-17; Note 1 adopted eff. 7-14-67; III(64)-18*]

§ 74.1109 Procedures applicable to petitions for waiver of the rules, additional or different requirements and rulings on complaints or disputes.

(a) Upon petition by a CATV system, an applicant, permittee, or licensee of a television broadcast, translator, or microwave relay station, or by any other interested person, the Commission may waive any provision of the rules relating to the distribution of television broadcast signals by CATV systems, impose additional or different requirements, or issue a ruling on a complaint or disputed question.

(b) The petition may be submitted informally, by letter, but shall be accompanied by an affidavit of service on any CATV system, station licensee, permittee, applicant, or other interested person who may be directly affected if the relief requested in the petition should be granted.

(c) (1) The petition shall state the relief requested and may contain alternative requests. It shall state fully and precisely all pertinent facts and considerations relied upon to demonstrate the need for the relief requested and to support a determination that a grant of such relief would serve the public interest. Factual allegations shall be supported by affidavit of a person or persons with actual knowledge of the facts, and exhibits shall be verified by the person who prepares them.

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(2) A petition for a ruling on a complaint or disputed question shall set forth all steps taken by the parties to resolve the problem, except where the only relief sought is a clarification or interpretation of the rules.

(d) Interested persons may submit comments or opposition to the petition within thirty (30) days after it has been filed. Upon good cause shown in the petition, the Commission may, by letter or telegram to known interested persons, specify a shorter time for such submissions. Comments or oppositions shall be served on petitioner and on all persons listed in petitioner's affidavit of service, and shall contain a detailed full showing, supported by affidavit, of any facts or considerations relied upon.

(e) The petitioner may file a reply to the comments or oppositions within twenty (20) days after their submission, which shall be served upon all persons who have filed pleadings and shall also contain a detailed full showing, supported by affidavit, of any additional facts or considerations relied upon. Upon good cause shown, the Commission may specify a shorter time for the filing of reply comments.

(f) The Commission, after consideration of the pleadings, may determine whether the public interest would be served by the grant, in whole or in part, or denial of the request, or may issue a ruling on the complaint or dispute. The Commission may specify other procedures, such as oral argument, evidentiary hearing, or further written submissions directed to particular aspects, as it deems appropriate. In the event that an evidentiary hearing is required, the Commission will determine, on the basis of the pleadings and such other procedures as it may specify, whether temporary relief should be accorded to any party pending the hearing and the nature of any such temporary relief. Where a petition involves new service to subscribers (other than service coming within the provisions of § 74.1107(a) of this chapter), the Commission will expedite its consideration and promptly issue a ruling either on the merits of the petition or on the interlocutory question of temporary relief pending further procedures.

(g) Where a request for temporary relief is contained in a petition with respect to service coming within the provisions of § 74.1107(d) of this chapter, opposition to such request for temporary relief shall be filed within ten (10) days and reply comments within seven (7) days thereafter. The commission will expedite its consideration of the question of temporary relief.

(h) Where a petition for waiver of the provisions of § 74.1103(a) of this chapter is filed within fifteen (15) days after a request for carriage, the system need not carry the signal of the requesting station pending the Commission's ruling on the petition or on the interlocutory question of temporary relief pending further procedures.

[*Subpart K (§§ 74.1101–74.1109) as adopted eff. 4–18–66, except for § 74.1103 which is eff. 6–17–66 as it pertains to existing operations of nonmicrowave CATV systems and §§ 74.1105, 74.1107, and 74.1109 which are eff. 3–17–66; III(64)–12; § 74.1109(h) as adopted eff. 6–17–66; III(64)–13.*]

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