

BROADCAST *Communique*



Harris DX 1000
The World's First Digital Solid State 1MW AM Transmitter





Harris Platinum FM Transmitters aren't falling. But their prices are.

If you haven't priced a Harris Platinum FM Transmitter lately, you're in for a pleasant surprise.

Not only has Harris lowered the price on these ultra-redundant all-solid state transmitters, but now **every** PT-CD FM transmitter includes Harris' DIGIT digital FM exciter as well!

DIGIT, the world's first and only FM exciter capable of accepting a studio digital signal, is available with either a digital or an analog input module.

**Digital Signal Processing*

The digital input incorporates a DSP* stereo generator for unsurpassed stereo performance and separation and a Digital Composite Limiter with "look-ahead" circuitry to predict and eliminate overmodulation peaks before they occur.

Even if you don't have a digital signal to your transmitter, you can get DIGIT's benefits by using the analog input now and upgrading to a digital input when you are ready.

Beyond Harris' Clearly Digital sound, a PT-CD transmitter will

give you hot-pluggable RF modules with an MTBF exceeding 240,000 hours; no IPA module; VSWR foldback, and more.

Let us surprise you. To learn more about Harris PT-CD Transmitters, please contact us:

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Tel 217-222-8200
Fax 217-224-1439

International:
Tel 217-222-8290
Fax 217-224-2764

 **HARRIS
ALLIED**



TAKING The Lead

Clearly Digital

By **RON FRILLMAN**,
Marketing Communications Manager

If seeing is believing, you'll need to see for yourself the 'Clearly Digital' phenomenon in Harris Allied's exhibits at World Media Expo Sept. 6 - 9 in New Orleans (Booth 1109) and IBC Sept 14 - 18 in Amsterdam (Stand 11.144).

In each of our four product lines – Radio RF, Studio, TV RF, and Systems – we will demonstrate our commitment to deliver products based on digital technology and specifically designed for the broadcast industry.

In radio, one might say the beat goes on since Harris Allied began distributing its first digital studio products more than 15 years ago and introduced the world's first digital transmitter (the Harris DX 10, 10 kilowatt AM transmitter) in 1987. Today, digital products are available for every part of the radio air-chain and the

world's first digital Medium Wave one megawatt transmitter (the DX 1000) is going into service.

Radio highlights will include everything you need for an all-digital studio, including the Audio-Metrics DRC1000, the first truly digital on-air audio console designed specifically for radio broadcasters' needs. Just think – an affordable high-performance digital console, available now.

We'll also feature digital RF products, including Harris DIGIT™ Digital FM Exciter. As digital processors and digital STL all took on the AES/EBU digital standard, Harris' DIGIT, the only exciter in the world with an AES/EBU input, has made the complete all-digital chain possible. If hearing is believing, tune in to any of the more than 300 DIGITs that are already on the air to hear digital sound reproduction for yourself.

Just think – a few years ago we were all talking about "digital quality." Many analog products claimed to deliver "CD-type" performance, but there was always some reason to convert to analog before going on the air. Now with the Clearly Digital phenomenon, you can produce, process, mix, and transport your signal in the digital domain. The conversion to RF happens at the output of the DIGIT exciter and then to the airwaves with

sound that is truly "CD" quality.

Interested in DAB? We'll display transmitters that have proven themselves in field tests at both World Media Expo and IBC.

But there's more: Clearly Digital does not stop with audio performance, and Harris engineering teams have used their digital expertise to develop the world's first digital 8-VSB ATV exciter. The prototype exciter, first shown at NAB '95, will be on hand at World Media Expo.

At both World Media Expo and IBC, our systems group will feature digital technology. Among highlights will be a new DVB-compliant version of our digital SNG system, the Harris DSE 1400 Digital Satellite Exciter/DSR 1400 Receiver. The system will now interoperate with a wide variety of integrated-receiver decoders (IRDs), adding flexibility, affordability and additional applications for the product line. Systems also will focus on the U.S.' first all-digital television network – The Golf Channel – which went on-air in January 1995.

SEE YOU IN NEW ORLEANS AND
AMSTERDAM.

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Broadcast Communiqué is a publication of Harris Corporation, Broadcast Division, which includes four key operations:

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Quincy, Illinois 62305-4290 U.S.A.
RF equipment, RF systems, service, training

Harris Allied Richmond
3712 National Road West, P.O. Box 1487
Richmond, Indiana 47375-1487 U.S.A.
Radio studio and satellite equipment, service

Harris Allied Florence
7290 Kentucky Drive
Florence, Kentucky 41042 U.S.A.
Audio, video and satellite systems, service

Harris Allied Cambridge
515 Coldhams Lane, P.O. Box 41
Cherry Hinton, Cambridge CB1 3JU U.K.
RF equipment, radio studio and satellite equipment

Harris Broadcast Division, part of the company's Communications Sector, is a leading supplier of radio and television equipment and custom-integrated systems to broadcasters in more than 150 countries. Harris Corporation, with worldwide sales of more than \$3.5 billion, is focused on four major businesses: electronic systems, semiconductors, communications, and Lanioer Worldwide office equipment.

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EAS Update

Countdown to EAS¹

By **MARTHA B. RAPP**,
Public Relations Manager

Barring an extension by the Federal Communications Commission (FCC), United States radio and television broadcasters will be required to have equipment for the recently-mandated Emergency Alerting System (EAS) in operation by July 1, 1996.

Based on a digital protocol that overcomes susceptibility to human error and other limitations of analog technology, EAS will replace the U.S.' Emergency Broadcast System (EBS). Established in 1963, EBS required broadcasters to make the air-waves immediately available to the President in matters of grave national concern. Technical standards for EBS – an analog transmission system using a two-tone attention signal and requiring broadcasters to install and staff special equipment – were also written in the 1960s, even though the system was not officially implemented until the mid-1970s.

In 1976, EBS was also endorsed as the alerting system for state and local emer-



80% of all alerts with EBS – a system that relies on terrestrial radio and television broadcasting – have been weather-related. EAS, a digital system capable of targeting extremely small groups, could lend itself to far more uses. (Photo courtesy of Leo Ainsworth)

gencies. Since then, it has been used more than 20,000 times in virtually every state and region. Approximately 80% of all uses have been weather-related.

Transitioning to Digital

By the late 1980s, effective and reliable digital technology had evolved, and a host of new signal delivery schemes such as cable, satellite and paging were coming of age. It was clear that EBS needed fixing.

Thus, in 1989, the National Association of Broadcasters petitioned the FCC for a rule-making session to shorten the length of the EBS two-tone signal and to otherwise update the system. After four actions to examine the modernization of EBS, the FCC invited equipment manufacturers to participate in field tests scheduled in Denver and Baltimore during 1993.

During each three-day test, the advantages

Chart I:

EAS TIMETABLE FOR BROADCAST STATIONS (FCC 94-288, Appendix G)

Requirement	11/10/94	7/1/95	7/1/96	7/1/97
Two-tone encoder timing	20-25 seconds	8-25 seconds	8-25 seconds	8-25 seconds
Two-tone decoder timing	Begin changing timing from 8-16 seconds to 3-4 seconds	All decoders at 3-4 seconds	3-4 seconds	Two-tone decoders no longer used
EAS decoder and encoder	Use is optional	Use is optional	Use as required	Use as required

Chart II:

EAS REQUIREMENTS FOR BROADCAST STATIONS (FCC 94-288, Appendix G)

Requirement	AM	FM	FM Class D	TV	LPTV
Two-tone decoder (until 7/1/97)	Y	Y	Y	Y	Y
Two-tone encoder	Y	Y	N	Y	N
EAS decoder (7/1/96)	Y	Y	Y	Y	Y
EAS encoder (7/1/96)	Y	Y	N	Y	N
Audio message (7/1/96)	Y	Y	Y	Y	Y
Video message				Y	Y

of new-generation digital alerting equipment over technically-obsolete analog EBS equipment were clearly demonstrated. FCC Docket 94-288 reported that:

- "(1) monitoring of multiple sources of emergency information was successful in providing reliability and redundancy;
- (2) a small geographic area could be alerted without affecting other areas;
- (3) transmissions could be easily relayed from point-to-point via different transmission means;
- (4) equipment could automatically receive, store, and forward alerts and messages;
- (5) in-band and subcarrier transmissions could coexist;
- (6) satellite and cable technology could interface with the EAS digital transmission scheme; and
- (7) consumer radio receiver equipment could turn itself ON from an OFF position in response to broadcasters' digital signals such as RBDS signals."

Beyond Terrestrial Broadcasting

Based on a digital protocol, EAS is not limited to a particular transmission system like analog broadcasting. In fact, the FCC has recognized that "...no one transmission system could, in isolation, sufficiently achieve our goals for EAS." Instead, the goal has been to adopt an architecture capable of accommodating current and evolving distribution schemes.

Per Docket 94-288: "With such a standard, in-band broadcasting of alerts could be received today over any radio or television. Subcarriers could transmit unobtrusive text data and activate turned-off receivers. Cable could give all subscribers alerts and special cable equipment could provide the deaf, hard-of-hearing, blind, and non-English speaking audiences distinctive video and audio alerts. Satellite terminals could be used for remote field activations and could be used on disaster sites. Pagers could be used to alert persons in offices or who are travelling. In addition, such a standardized digital protocol is flexible enough for expansion and upgrading as new kinds and generations of transmission systems become available in the future."

Return on Investment

Broadcasters will be required to install new EAS equipment that should cost under \$2,500. However, one commenter estimated that the medium annual operating savings per station would be \$5,280. New EAS equipment will not require trained operators; will allow remote activation; will permit automatic logging, and will also provide for automatic audio and voice messag-

ing – all sources of potential savings. And, should plans be adopted to allow the unattended operation of EAS equipment, annual savings could be even higher.

While the FCC has admitted that initial equipment costs may be a concern, it notes that EBS devices installed in the late 1970s are nearing the end of their reliable lifetime and that the cost of new digital equipment will be comparable to replacement costs.

And as with EBS, the FCC will grant waivers to EAS requirements for stations showing sufficient need.

Arguing that initial costs are justified, the FCC has stated: "If improved early warning contributed to only a small reduction in injuries, lives lost, and property damage, the benefits of the new EAS would still far exceed its costs."

¹ Based on FCC 94-288.

Harris Allied and Sage Alerting Announce Marketing Agreement for EAS Equipment

Harris Allied and Sage Alerting Systems, Inc. recently signed a letter of intent for Harris Allied to market and distribute Sage emergency alerting equipment. The Sage equipment has been developed in response to the Emergency Alerting System (EAS) recently mandated by the Federal Communications Commission (FCC).

Sage Alerting, a wholly owned subsidiary of AmeriData Technologies, Inc., designs and manufactures sophisticated wireless alerting systems for government and industry. Sage Alerting already has installed emergency warning systems in Texas, California, New Mexico and for the entire state of New Jersey.

"We're not just a box builder," says Sage Alerting President Gerald M. (Jerry) LeBow. "We're in the business of alerting system development." Indeed, as a technical consultant in the 1980s, he, himself, was involved in the development of a comprehensive, RBDS-based system capable of alerting 30 million people in West Germany within five minutes.

Beyond being in the business of alerting, Sage is in the business of broadcasting, operating radio stations. "As a manufacturer, in order to make EAS equipment that works properly, you need to understand what the equipment needs to do and where it will be installed in the broadcast environment," LeBow says.

From 1990, the company has been very much involved in efforts that have led to a new and potentially effective alerting system in the U.S. Even the FCC reported in 94-288 that EBS was found to be inadequate in the majority of emergencies in which it was deployed. "EBS was broken and it needed to be fixed," LeBow says.

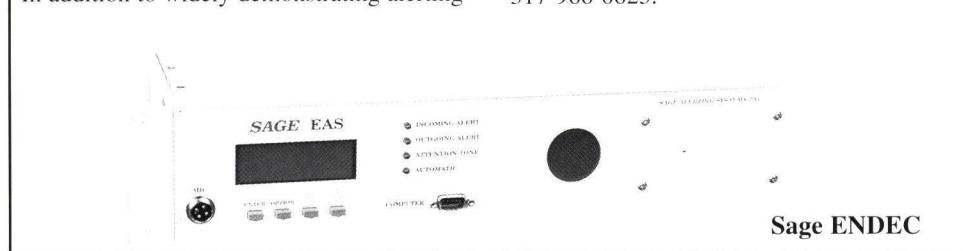
In addition to widely demonstrating alerting

equipment at such industry events as the NAB as early as 1990, Sage was among manufacturers to participate in field tests conducted by the FCC at Denver and Baltimore in 1993. Its equipment exceeded all expectations.

The Sage unit that will be available to broadcasters as the FCC's EAS certification process begins is the ENDEC (for Encoder/Decoder), a microprocessor-based DSP product that meets all 76 of the FCC's EAS requirements. For versatility and flexibility, ENDEC includes six bidirectional RS-232 serial connections, three programmable relays, and a fully menu-driven protocol. Extensive system security prevents unauthorized access. For ease of operation, the unit has only four buttons and a computer interface for remote control. "The guy in Tupelo has to be able to make it work when a tornado hits," LeBow says.

ENDEC can be expanded or integrated into a more comprehensive system when required. With full text capability, ENDEC can generate messages that can be picked up on RBDS receivers, pagers, and even road signs. The universal design will lend itself not only for use by AM, FM, TV and cable operators, but by government and public safety agencies as well. "Broadcasters will need reliable, cost-effective and flexible equipment to meet their new EAS obligations," says Jim Woods, Harris Allied's studio product line director. "We're excited about the opportunity to distribute what we believe is the finest alerting equipment available."

For more information, please contact Harris Allied at 800-622-0022 or by fax: 317-966-0623.



Sage ENDEC

SYSTEMS Today

Adaptive Engineering Gives Harris Allied the Edge

By JIM SPRINGFIELD,
Systems Information Specialist

Designing a mobile news gathering system capable of handling mountainous topography, rough roads, monsoons, tropical heat and humidity, and tough transportation requirements might make other mobile broadcast systems integrators cringe. But when the call for such a system came from the Malaysian Ministry of Information, it was treated as just another challenge for the design and manufacturing teams at Harris Allied's systems operation in Florence, Kentucky.

Recently, Harris Allied delivered three combined ENG/SNG packages valued at just under \$6 million to Radio Television Malaysia (RTM), the official broadcast agency for the Malaysian Ministry of Information.

From the beginning, Malaysia's unique geographic features posed special problems to television communications. Bridging mainland and peninsular Southeast Asia, Malaysia has two parts: Peninsular or West Malaysia occupies most of the southern tip of the Malay Peninsula south of Thailand, and East Malaysia occupies the northern part of the island of Borneo. These two parts are separated by a 400-mile stretch of the South China Sea.

Beyond physical separation, the country's topographical relief ranges from sea level to over 12,000 feet. Because of physical constraints combined with the need for full field-production capabilities, the only option that would allow RTM to provide live programming from anywhere in the country was through the use of mobile and satellite technologies. But the challenge did not end there. The Malaysian Ministry of Transportation's regulation that no vehicle be longer than six meters (20 feet) was one of the most severe design restraints.

Meeting the Challenge

Harris Allied's solution was to separate each field production/ENG system from satellite uplink systems, then house each in its own vehicle, providing three M-1ENG mobile (microwave) ENG systems and three short-body S-21T trailerized C-band mobile SNG systems.



M-1ENGs: More like a mobile news bureau than a simple news gathering unit.



To meet length restrictions, the S-21Ts were built using a short-body design unit.

"These systems were designed and built specifically for RTM's venue of operation," says Jay Adrick, systems product line director. "In fact, they are far more sophisticated than the typical U.S. versions." For example, the M-1ENGs are based on heavy-duty Volkswagen LT45 chassis modified for four-wheel drive. Each one has full production and editing capabilities as well as a complement of three cameras with individual wireless microwave links. The wireless feature on the cameras provides the freedom to move without the restriction of a cable tether. Adrick describes these M-1ENGs as being more like a mobile news bureau than a simple news gathering unit.

The S-21Ts were also custom-designed. To meet the six-meter length restriction, the

S-21Ts were built using a "short-body" design containing uplink electronics, fully-redundant transmission systems, and a folding 4.5-meter C-band antenna mounted on a rugged trailer that can be towed by the SNG vehicle. The S-21Ts also have a unique satellite voice communications system on board, allowing the field crew to communicate with the base simultaneously during the uplink.

At the outset, the biggest problem Harris Allied faced was finding the vehicle chassis needed to build the systems. "Both ENG and SNG vehicles had to be configured for right-hand drive and manufactured by a company that could provide technical support in Malaysia," Matt Keckley, procurement manager, explains. "We were on a very tight time-line, so rapid delivery was essential."

After an intense search, three Nissan UD chassis were ordered for the SNG vehicles from a dealer in Malaysia, and three Volkswagen LT45 chassis for the ENG trucks from England.

The Nissan chassis were shipped directly to Harris' Kentucky manufacturing facility where body construction and integration of the SNG systems began at once. However, before work could begin on the M-1ENGs, the Volkswagen chassis had to undergo extensive modification that included adding air-conditioning, extra insulation, an extra heavy-duty suspension system and drive-train, and conversion to 4-wheel drive.

Covering Malaysia

In Malaysia, the M-1ENGs and S-21Ts travel as a matched pair. One SNG/ENG pair is assigned to each of three major cities – Kuala Lumpur (on the Malaysian Peninsula), Kuching (north central Borneo Island), and Sandakan (northeast Borneo Island). On a typical shoot, the pair will travel to the location of the news story. The S-21T will find a place where it can have an unobstructed view of the communications satellites. While the uplink is being established, the M-1ENG goes to the scene of action where the news and/or production crew prepares the feed for uplinking. When the feed is ready, it is sent via a microwave link to the S-21T for uplinking to a base station at Kuala Lumpur. Once at the base station, the feed is distributed for broadcast throughout Malaysia.

Beyond systems, Harris Allied provided extensive training for crews that will be operating the systems. Training included five weeks of in-house systems operation training at Harris Allied's Kentucky facility and three to four weeks of field training and system commissioning in Malaysia.

While the aim of any manufacturer of custom products is to build products that work perfectly from the start, any engineer will tell you this is simply not the case in the "real" world. Because of the complexity of the systems themselves and the unique operating conditions under which they will work, unforeseen problems are always found. This is why on-site training is so important and considered an integral part of the system.

Darryl Niderbaumer, systems installation supervisor who was part of the training and engineering team, says, "We found a few problems that we had to fix while we were there [in Malaysia] involving rerouting of some wires, increasing the ventilation capacity, and strengthening the suspension systems a little. Basically all we did was fine-tuning to make the systems more user-friendly for the production crews – just the normal things you expect to do during the operational field testing of these kinds of systems."

"We are quite proud of our part in helping developing nations improve their means of communications," Adrick adds, "and we look forward to the new challenges and opportunities that will surely arise from our work with Radio Television Malaysia."

'High-Cam' Option Introduced for Harris Allied ENG Systems

Looking for a new visual perspective for your traffic reports? Tired of having to climb trees just to see over the crowd? Frustrated by not being able to get the shot you want because of the security fence between you and the action?

Harris Allied now has the answer to your problems with its Hi Cam option for its full line of mobile ENG systems.

The Hi Cam feature includes a low-cost, remotely-controlled, single-chip CCD color camera attached to the vehicle's 42', 52' or 58' antenna mast. The camera is housed in a completely weather-proof (NEMA-4 compliant) housing with an automatic PTC heater to prevent lens fogging during inclement weather operations.

The camera is mounted on a pan/tilt head attached to the mast and independent of the antenna's pan/tilt. This allows the camera to be rotated through all three dimensions providing unrestricted viewing (except where the mast itself obscures the view).

The camera itself is a 1/2-inch interline transfer CCD unit that provides good detail even under low-light conditions, with genlock input, both composite and Y/C outputs, and remotely controlled motorized focus and zoom.

According to Harris Allied Mobile Systems Sales Manager Mark Voorhees, "Since we've made the Hi Cam option available, virtually every new ENG customer has opted for it." More information is available by contacting Harris Allied systems at:

606-282-4800 or by fax at 606-283-2818.



Hardigg Cases – The Specification-Standard Worldwide

In 1954, Jim Hardigg started with a simple objective: "To create and maintain a company where people can do a share of the nation's work under good working conditions and receive their fair share of the nation's income." The company's first products? Cushioning devices. But the Dartmouth- and MIT-educated Hardigg didn't stop there. By 1970, he had designed an airtight, watertight, rugged, rotomolded container.

Already known to broadcasters and networks, Hardigg cases became a world commodity during Operation Desert Storm. With sand blowing at 60 miles per hour and temperatures of 110-degrees F, it's a good thing our military had components cradled inside Hardigg's double-entry workstation cases. Other cases deployed during Desert Storm couldn't cut the conditions and didn't come back like the Hardigg cases. Rotationally-molded, Hardigg cases enable the equipment to move forward with the troops and come home with them. Hardigg cases offer maximum shock and vibration protection, and some Hardigg cases have

been engineered to protect equipment to below 20Gs.

Hardigg cases come in more than 250 standard sizes, which is the largest selection in the case industry. Major broadcast companies know that Hardigg is the specification-grade case. Whether you're protecting simple remote gear for the next ballgame or complex broadcast video cams valued in the \$100,000 range, Hardigg cases protect from rain, dust, humidity and rough handling.

We're proud to be fully qualified to provide your Hardigg needs. Whether you need a standard case or a custom design, please call. Telephone: in U.S., 800-622-0022; in Canada, 800-269-6817; elsewhere, 317-935-1704.

PRODUCT
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PRODUCT Showcase



Auditronics 2500 Series Consoles

The only world class, full configured, ready to put on the air console that starts under \$6,000 for 12 channels. Broadcasters no longer have to sacrifice quality and reliability for price.

Auditronics consoles are available in 12, 18 and 24 channels and feature solid state switching, DC control, 20db head-room, A/B external logic, telephone conferencing, actively balanced, conductive plastic faders, and much more.



Audio-Metrics Modular Furniture

Our new furniture line is completely modular. You can mix and match standard components for a perfect custom design for your studio.

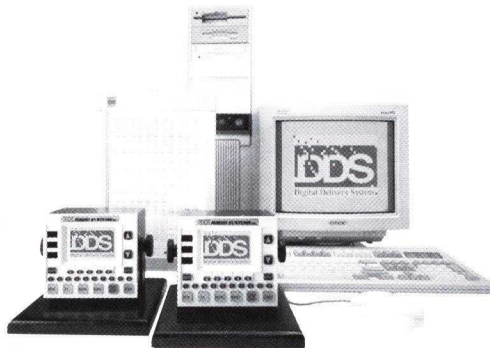
Standard components can be shipped UPS and are available in a variety of colors, both light and dark and are available in stand-up or sit-down heights.

Audio-Metrics modular furniture is sturdy, looks great and can be assembled by one person with basic-hand tools and a drill.

All furniture is guaranteed with in-stock replacement parts and technical assistance. Any custom request will be accepted and quoted.

Audio-Metrics is available now for quick delivery from Harris Allied.

Imagine a digital audio system that's as simple to use as a cart machine but powerful enough to run an entire broadcast facility. That system is DDS by Radio Systems.

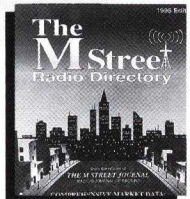


DDS Digital Audio System by Radio Systems

DDS is built on a multi-user, multi-tasking, real time operating system. So, adding users, applications and audio channels is never a problem.

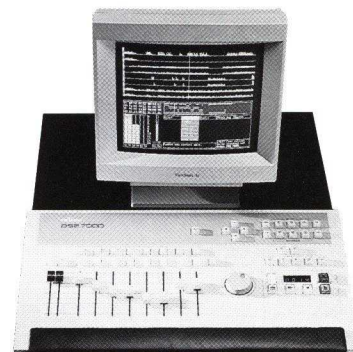
Start with a simple satellite automation system. Then add cart replacement, extra studios or an LMA – all without the need to add CPUs or duplicate expensive hard disk storage. And DDS is made to grow with your operation.

The 1995 M STREET Radio Directory



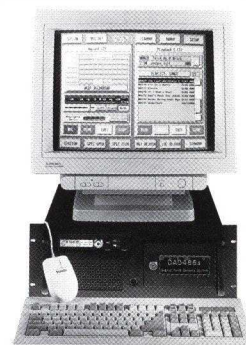
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Considered by many to be the most authoritative source for radio station information. This 8" x 9" soft cover book lists addresses, phone numbers, personnel, formats, facilities, owners, markets and ratings for over 13,000 stations across the U.S. and Canada.



DSE 7000 Digital Workstation by Urban

Users refer to the DSE 7000 as "the best-designed tool for radio production." That's because of its digital electronics, its advanced performance, and its easy learning curve. Only the DSE lets you work in real time, editing and mixing the way you always have. Typically, a full 8 track production can be finished in a third of the time it takes on a traditional analog setup.

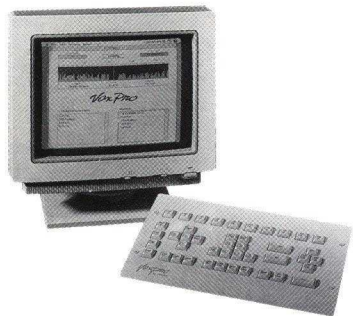


DAD486x Digital Audio Delivery System by ENCO

The DAD is more than a simple cart machine replacement. It can replace most or all of your recording and reproduction equipment. It can also increase the efficiency of information flow, from news copy to air, from scheduling to air, and from traffic to air to billing. No need for cart pulls and racking.

Illustrations, drawings, descriptions, measurements, weights and prices are subject to change without notice. Leasing and financing are available in most states with approved credit plus sales tax. Harris Allied disclaims any implied warranties of merchantability or of fitness for any particular purpose. Since Harris Allied cannot control the manner of use of products after their sale, Harris Allied will not be responsible for any consequential or indirect damages. Since Harris Allied is only acting as a distributor of products manufactured by other companies, Harris Allied expressly limits its liabilities to any warranty extended by the manufacturer. Harris Allied will pass these guarantees through to the customer.

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VoxPro™ Digital Sound Editing System by Audion

VoxPro™ is the first digital sound editing system specifically designed to replace reel-to-reel tape recorders used on the air.

The VoxPro system allows DJs to record and edit phone bits, contests, actualities, sound effects, etc., on the fly with speed and precision – using the simplicity of “cut, copy and paste.”

VoxPro’s most valuable benefit for on-air pros is the ability to record and to improve quality easily without the fear of making mistakes.

Call Later.

Our extended hours make it easier to call on the service, selection and support of Harris Allied, the nation’s largest supplier of broadcast equipment.



Eastern
8:00 am–8:00 pm



Central
7:00 am–7:00 pm



Mountain
6:00 am–6:00 pm



Pacific
5:00 am–5:00 pm



NTI EQ3™ High Definition Audio by Night Technologies

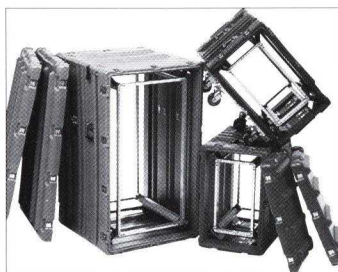
Not just another equalizer. The NTI EQ3 is the world’s first air band equalizer. Using patented audio circuitry, the EQ3 produces sound that is free from hiss, noise, distortion and phase shift. You have to hear it to believe it. And you can when you stop at our WME booth.



TS612 Telephone System by Gentner

Talk radio can be difficult. Your telephone system shouldn’t be. Gentner designed the TS612 to make it easy.

The TS612 is a six-line (expandable to 12) telephone system featuring Direct Connect Technology™ which allows you to hook it into a regular telephone line. It features built-in mix-minus to complement Gentner’s digital audio enhancement. The TS612 was designed specifically for talk shows.



Rackmount Cases by Hardigg

Hardigg cases offer maximum shock and vibration protection. Some Hardigg cases have even been engineered to protect equipment to below 20Gs!

Hardigg cases come in over 250 standard sizes, which is the largest selection in the industry. Major broadcast companies know that Hardigg is the specification-grade case. Protect your simplest gear to your \$100,000 treasures from rain, dust, humidity and rough handling.

The Phantom Hard Disk Digital Automation system ends the confusion of automation by keeping everything organized and under control. Live all day, satellite all day, or both – the Phantom is the one system that truly adapts to your station’s operation.



Phantom Hard Disk Digital Automation by RDS

The Phantom simplifies your daily operations by keeping information such as input changes, voice changes and clock changes in their own individual schedules rather than in the log. Date new schedules to begin weeks, months or even years in advance.

Oktava MK012 & MK219 Microphones



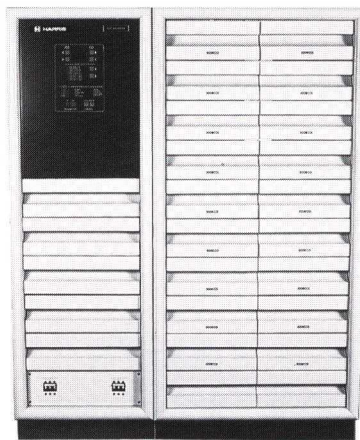
These Russian-manufactured microphones perform beautifully and come with an extremely attractive price tag from Harris Allied.

Zenon Schoepe says, “The MK219’s finish quality is ragged looking but rugged and potentially very long-lived, and doesn’t compromise its performance. Plug it in and, believe me, you’ll forget its looks, because this is a superb vocal mic with natural presence, a wonderful fatness and that bit of magic.”

The MK012 and MK219 cardioid microphones have been put through some critical comparison tests with the industry’s leading mics and have left users pleasantly surprised. We invite you to test one out for yourself.

Beginning August 15, 1995
Harris Platinum Series® TV Transmitters
come with the industry's only

5-YEAR WARRANTY



No other VHF TV transmitter manufacturer has the guts to offer a 5-year warranty, *because no other TV transmitter has guts like the Harris Platinum Series®.*

No wonder we're the world-standard for ultra-reliable, high-performance VHF TV transmitters from 500 W to 60 kW. The evidence from nearly 500 units on-air worldwide is in, and we are only slightly amazed to learn that the quality we designed and built into every Platinum Series transmitter is working even better than we expected. Things like our solid-state modules with 500,000 hours MTBF, and a positive pressure, integrated air system that maintains consistent cooling even if a module is removed, and blocks airborne contaminants. Add built-in transient protection and superbly regulated power supplies, plus all the benefits of our

ISO 9001 Quality System, and you can see why our whopping 5-year warranty is a great deal for you!

Contact Harris for a copy of the warranty terms, and to learn more about empowering your station with Harris Platinum and Platinum HT EL, *the only VHF TV transmitters with a 5-year warranty.*

HARRIS CORPORATION
BROADCAST DIVISION
US and Canada
TEL: +1 217 222-8200
FAX: +1 217 224-1439
Elsewhere
TEL: +1 217-222-8290
FAX: +1 217 224-2764



RADIO Technology

Quest FM Transmitters Offer Inexpensive Back-Up Insurance

By DARYL BUECHTING,
FM Product Line Manager

Wouldn't it be great to have a small, inexpensive yet high performance FM transmitter available for emergency broadcasting? Quest transmitters are so small that they can be kept in a closet or put on a shelf until needed for an emergency situation.

If your station has a backup transmitter, maybe you think that this is sufficient. And, if the only thing that happens is a main transmitter off the air, you probably are covered. But there can be situations where you are unable to use either the main or backup transmitter. Following are cases where a low power solid state backup Quest FM transmitter could make the

difference between being off the air at a critical time or being on the air, able to provide essential programming and community service.

1) *No auxiliary transmitter or questionable reliability of existing backup.* Quest FM transmitters make great auxiliary backups.

2) *No mains power or generator at the transmitter site or damage to the site.* Quest FM could operate from the studio site with an inexpensive auxiliary antenna.

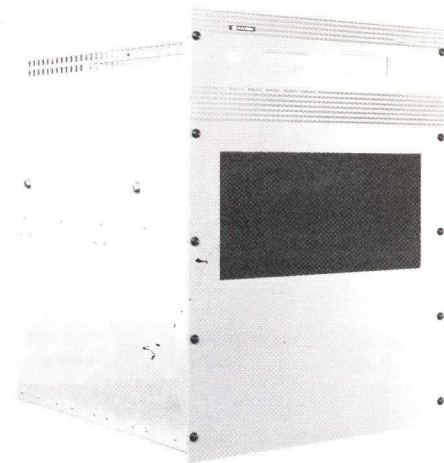
3) *Public service during disasters such as hurricanes, tornadoes, and floods.* Quest transmitters can be supplied to operate on 120/220 VAC or 48VDC batteries like Telco systems.

4) *Group owner with several stations in a region.* Quest FMs are frequency-agile and can be optimized in a matter of minutes on any frequency.

5) *Consulting/Contract Engineers.* Possible to provide FM on air backup services to clients who have transmitter outages.

6) *Quest FM ready to perform no matter what the situation.* Quest transmitters offer on-air solutions and peace of mind with prices starting at U.S. \$5,736.

Harris Quest transmitters provide the highest level of performance, service and value in 100-watt to 1,000-watt solid state FM transmitters at prices that won't stretch



Harris Quest 1, 1000-Watt FM Transmitter

the budget. Quest offers operational simplicity and reliability with self-correcting circuits that eliminate virtually all operator adjustments. Installation is easy and can be configured for plug-and-play operation.


You might want to consider how your station could be protected from off air situations on an every day basis and during community emergencies. A Quest FM transmitter always at your beck and call could provide peace of mind.

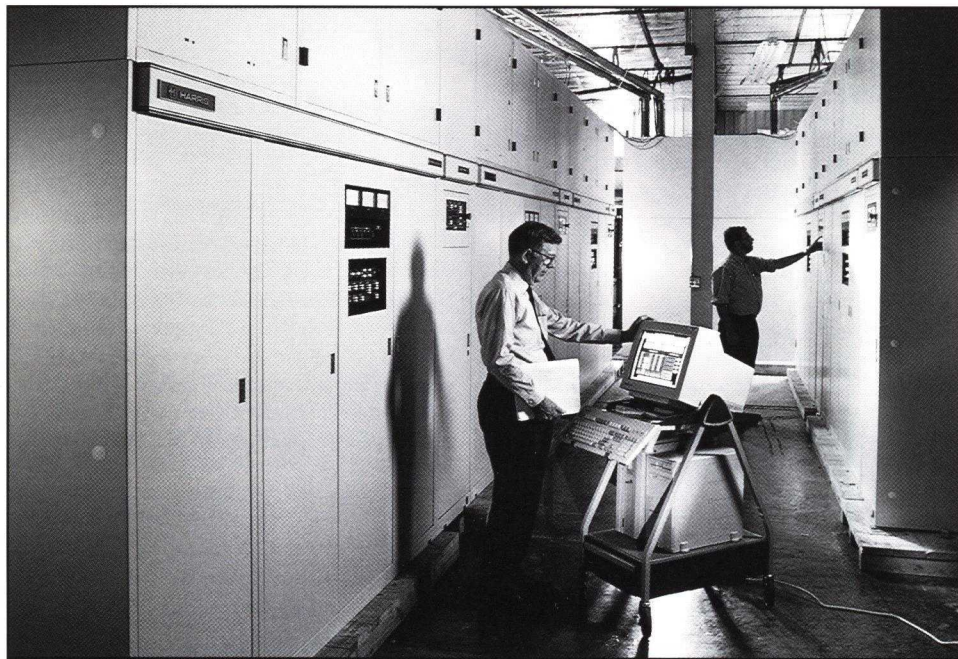
For more information about Quest transmitters or any other Harris broadcast transmitter, please fax your request to 217-222-0581.

Harris Awarded Contract by PRC for DX 600, 600 kW Transmitters

Harris Broadcast Division has received a contract to provide ten 600-kilowatt solid state Medium Wave transmitters for the People's Republic of China (PRC). The contract was awarded by the PRC's Ministry of Radio, Film and Television.

Slated for delivery later this year, the Harris DX 600 transmitters will replace old tube-type transmitters at some sites in China. The contract also includes on-site commissioning and final acceptance for the first two transmitters and factory training at Harris Broadcast Division headquarters in Quincy, Illinois.

During August 1994, a delegation from the Ministry of Film, Radio and Television of the People's Republic of China visited Quincy to observe a Harris DX 600 – the world's first all-solid state 600-kilowatt Medium Wave transmitter – in operation. "The Chinese delegation was very impressed and observed that solid state technology is one of the waves of the future," said Terry Bonkowski, Harris Broadcast sales director for the Asia-Pacific region. 



MAKING HISTORY: At approximately 5 p.m. CDT Monday, June 26, 1995, the world's first one-million watt all-solid state Medium Wave transmitter – the Harris DX 1000 – made power at Harris' high-power AM test facility in Quincy, Illinois. Configured from five 200-kilowatt 'power blocks', the ultra-reliable DX 1000 provides typical AC-to-RF efficiency of 85% (without adaptive carrier control) and near-perfect audio performance. The transmitter is based on patented Digital Amplitude Modulation technology developed by Harris Senior Scientist Hilmer I. Swanson (foreground) and used in more than 500 DX Series 10- through 600-kilowatt transmitters worldwide.



Harris Platinum Series® VHF Transmitter On The Air at WLS-TV, Chicago

By **JERRY POWELL**,
RF Manager,
WLS-TV, Chicago

Even before WLS-TV ordered new transmitters to replace old tube-type Harris BT Series models, we had to resolve certain problems. Our transmitters are located in the Sears Building, and we wanted to stay on the air at full power while the new transmitters were installed. Our Corporation (Cap Cities/ABC) also would have liked us to maintain full-power back-up during installation.

To continue full-power operation with full-power back-up, we considered renting additional space one floor down. This would have meant installing an air system. Finally we decided to work around our tube-type transmitters. During installation, we kept one full-power transmitter as our primary and one-half of the other transmitter as the back-up.

We also decided we would change our air system from totally 100 percent outside air for cooling to a 100 percent air-conditioned environment. WLS-TV's transmitters are at about 1,339 feet, and that's about the level of smoke and pollution from the city we're sitting in the center of. We'd noticed carbon deposits on ceramic insulators – a problem at high voltage levels but not too much of one at 50 Volts, as well as oil and grime. We wanted to get rid of this problem along with humidity.

Transmitter Selection Criteria

As we selected a transmitter, we looked for several things: We wanted a reliable unit from a company we thought was going to stay in business. We also wanted spare parts to be available next door if we could get it. Our corporate leadership made it clear we were on our own in the selection process. We considered the Harris Platinum transmitter and a solid state transmitter from one other company, and visited both factories. We considered whether the

transmitters would fit in the space we wanted to put them; what we would have to do with the duct work for the air systems, and whether we would have enough room for external regulators and that type of thing.

We also looked at the installation requirements for both transmitters; power consumption; serviceability of units, and what major components would remove the transmitter from the air if they went out. We wanted at least the level of redundancy we'd already had with parallel combination of tube-type transmitters, where we could lose one transmitter and keep the other on-air at full power.

After extensive evaluation, we decided on two Harris' HT 40HSP 40 kilowatt transmitters. Even though there's an external combiner and some power reduction, we can lose one power amplifier cabinet and still not lose either aural or visual power output. It was probably not a hitch to buy Harris, because the other stations owned by Cap Cities/ABC – except those that haven't replaced their tube-type transmitters yet – have chosen the Harris Platinum.

Installation

Installation was made more complex because of the change to a closed air handling system. We planned to remove half of the back-up transmitter to provide room for the first solid state transmitter; use the main tube-type transmitter for back up once the first solid state transmitter was in operation, then replace the tube-type transmitter with the second solid state unit.

Our new air system would use two 26-ton air conditioners, but our original outside system had to be operational for the tube-type transmitters. If we had to use the tube-type transmitter after the Platinum was into operation, it would mean shutting the chillers down and starting the original outside system's blowers up. (We had no off air time once we switched the solid state transmitter ON. Once we turned the Platinum transmitter ON, we never needed to go back to the tube-type transmitter.

That's what we wanted, and that's what we ended up with.)

Since we also changed from a water-cooled to an air-cooled load, the additional heat in the room had to be factored in as well.

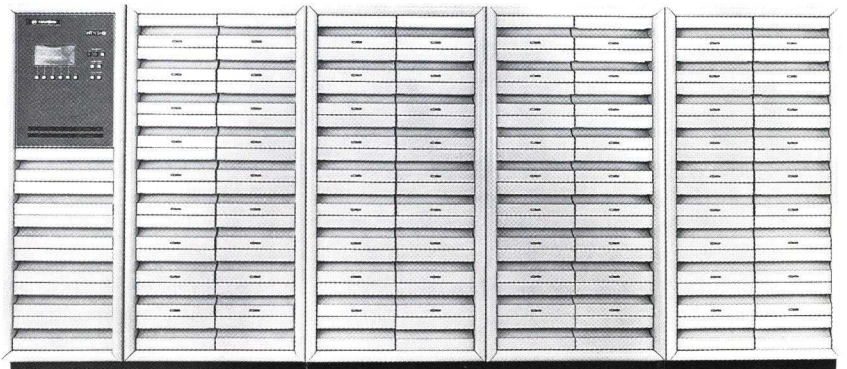
Installation of the Platinum transmitter was fairly easy. The only problem was the levelness of the floor under the existing transmitter. We had to level the floor up for the power supply rollers so they wouldn't catch in ruts on the initial layer of grouting.

We planned to use extender cables so the exciter/driver cabinets could be placed in the control room where most of the monitoring equipment is located, since there's now no tuning – no roll-around carts to tune PA stages. Since this was known in advance, Harris tested our transmitters with the longer drive cables before they left the factory. The only thing we didn't have were pre-cut transmission line sections, which transmitter supervisor Larry Cantwell took care of, and directional coupler cables which had to be made on site.

Our idea was to position the two new solid state transmitters in the same space as one tube-type transmitter had required, leaving the extra space for a high definition transmitter in the future. We purposely placed the two Platinum transmitters close together with two chillers at one end on the room. Initially we will want to keep the costs down for high definition, and this will prevent our having to lease additional space on another floor for the HD transmitter. There's also space in the room for a chiller for HD.

Early Experience

Shortly after we turned on the first Platinum Transmitter last December (1994), we lost a module, then we lost another module from the same cabinet. But we pulled the modules out while we were on the air and put another one in. To date, we've lost only those two modules. At our power level (34.7kW), this hasn't



Harris Platinum Series® VHF TV Transmitter

caused any real reduction in power.

WLS-TV purchased the module repair extender from Harris, but whether it will ever be used remains to be seen. It may prove to be a bad purchase because it's a lot easier to exchange a module at the factory and get on with the business of broadcasting than to sit down and repair an individual module. We keep spare driver and PA modules on hand, and bought the least expensive repair kit Harris sells. Being close to Quincy has allowed us to reduce the number of spares on hand.

Our second Platinum transmitter proofed out in early 1995. Now that we have two systems, we don't really get too excited. There's a feeling of ease that we're on two solid state transmitters. We can take more chances now and let some things go until the next day rather than stay at the site to clean them up. We don't have to worry about a tube failure, the number of hours on a tube, or the fingerstock we saw the last time we pulled the tube out that could have been changed but we decided to let go until the next time. That's a thing of the past. And we can work on one cabinet and stay on the air at about 80 percent of our authorized power or go to full power with the other transmitter.

After installing so many tube amplifiers, it's a let-down not being able to manipulate anything. Once Platinum is on, everything's on the exciter. There's no tuning involved. It's a real let-down after what used to be in years past.

We're still spending the same on gas for the transmitter, but with the air-conditioning system, we'll spend more for power. Still, we're probably going to be ahead with less off-air time. Off-air time can quickly eat up an air-conditioning budget if it's at the right time or during the right show.

Conclusion

I would install a Harris Platinum again. If I were back in the installation of transmitters, I would know that with Platinum, most of the installation is going to be the output plumbing and hard-line fittings, and not physical location and a lot of air-flow problems.

I wouldn't be afraid to put another one in, and I would not have worries about failure rates: We haven't seen any failure rates to make a history of.

I keep thinking about how it was to install old transmitters in the past. This has been a pleasant let-down.

For more information on Harris Platinum Series® VHF TV transmitters, please fax 217-222-0581. 📠

INSIDE Story

'A True Russian Station': RADIO MAXIMUM at 3-1/2

By **MICHAEL HUMPHREY**,
Public Relations Intern

and **MARTHA B. RAPP**,
Public Relations Manager

When RADIO MAXIMUM signed on 103.7FM for a week-long Beatles festival at 7:30 Christmas night in 1991, it was more than Russia's first Russian-American commercial rock 'n roll radio station.

Broadcasting from the Moscow News Building in historic Pushkin Square, RADIO MAXIMUM also represented Harris Corporation's first participation in a joint venture to invest in broadcast properties.

Harris is one of three U.S. members of WHS, Inc., a consortium that also includes Westwood One, Inc., the largest U.S. producer and distributor of radio programming and station management, and StoryFirst, a developer of independent broadcast properties and a leading distributor of Western entertainment properties in the former Soviet Union – to launch the joint venture with Moscow News, Russia's major independent weekly newspaper.

Initially, RADIO MAXIMUM offered some English-language programming to appeal to advertisers who wished to reach Moscow's relatively large and affluent English-speaking population. Additionally, the first broadcasts were only available on the Western FM broadcast band – not the far more dominant Russian FM band. Over the past three-and-a-half years, however, all of that has changed.

"From the beginning, one objective of WHS, Inc. was to help the Russians develop a commercial radio station," says Dean Pomeroy, controller for Harris Broadcast Division and a member of the WHS board of directors. "Just putting an American station over there would not have been successful. We wanted RADIO MAXIMUM to become a truly Russian station."

Today, he adds, RADIO MAXIMUM is a Russian station, broadcasting only in the Russian language and staffed only by Russians. Additionally, the station is now supported solely by the Russian economy. Broadcasting, which appeals to the growing, entrepreneurial 18 - 35 demographic and reaches more than a million listeners each day, is available on both the Western and Russian FM bands.

Although WHS is not releasing specific revenue figures, Pomeroy says that RADIO MAXIMUM is continuing to be profitable, so much so that it is expanding. About a year ago, WHS began simulcasting in St. Petersburg, Russia's second largest city. Currently WHS is also looking at six to eight other cities as possible sites for future expansion.

"Our objective is not a short-term monetary return," Pomeroy says. "When you talk about broadcast properties, you're taking about a long-term venture and expansion versus short-term. Maybe someday we'll wake up with something comparable to a U.S. network with stations in New York, Los Angeles, Atlanta and Las Vegas."

Noting that teaming arrangements between U.S. companies and international partners are a global trend, Pomeroy adds that RADIO MAXIMUM is providing an interesting perspective: "The Russians have reminded us what true entrepreneurs are. They are not afraid to move quickly and to take risks, and they remind us as Americans how deliberate we've become."

Michael Humphrey, an English teacher at Quincy Senior High School and John Wood Community College, was a participant in a Teachers-in-Business program at Harris during the summer.



Inside RADIO MAXIMUM



The new Gary Burbank show syndication studios now equipped with Radio Systems' DDS Digital Delivery System.

The "Broadbank Burbcasting Corp." is now in syndication with 17 stations receiving the Jacor Communications' satellite distributed *Gary Burbank Show* live from its new studios equipped with the DDS Digital Delivery System from Radio Systems and Harris Allied.

The digital system utilizes eight Cart Machine emulators and three Sound Slate 176-key, direct access keypads. Spread across three studios and two floors of the WLW facility in Cincinnati, the system components

allow instant access and transfer of the comedy cuts and liners that keep this fast-paced show exciting and unique.

Chief Engineer, Al Kenyon, chose DDS when he saw the system at a demo at the facilities of Harris Allied, Richmond, Indiana, where it worked "right out of the box." That's the dependability and performance that the show will rely on every day for the



new syndicated program.

Mr. Kenyon was similarly impressed when he saw the system a second time at last year's World Media Expo where Gary Burbank also

saw and approved the system.

Call Harris Allied toll-free for complete details on a DDS Digital Delivery System for your station.

1-800-622-0022 FAX 317-966-0623

