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'Craig & Donna' Debut

New voices replace Perfect Paul on Weather Radio.

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Making DAB Happen

Debate IBOC all you want. Let's talk about implementing it.

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Radio World®

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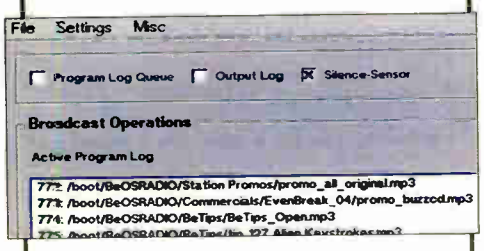
▼ We check out the Mackie HR624 and test-drive an automation program that costs about $150.



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2002 Radio World READERS' CHOICE Sweepstakes

▼ A Virginia reader wins a WorldNet Milano audio codec.

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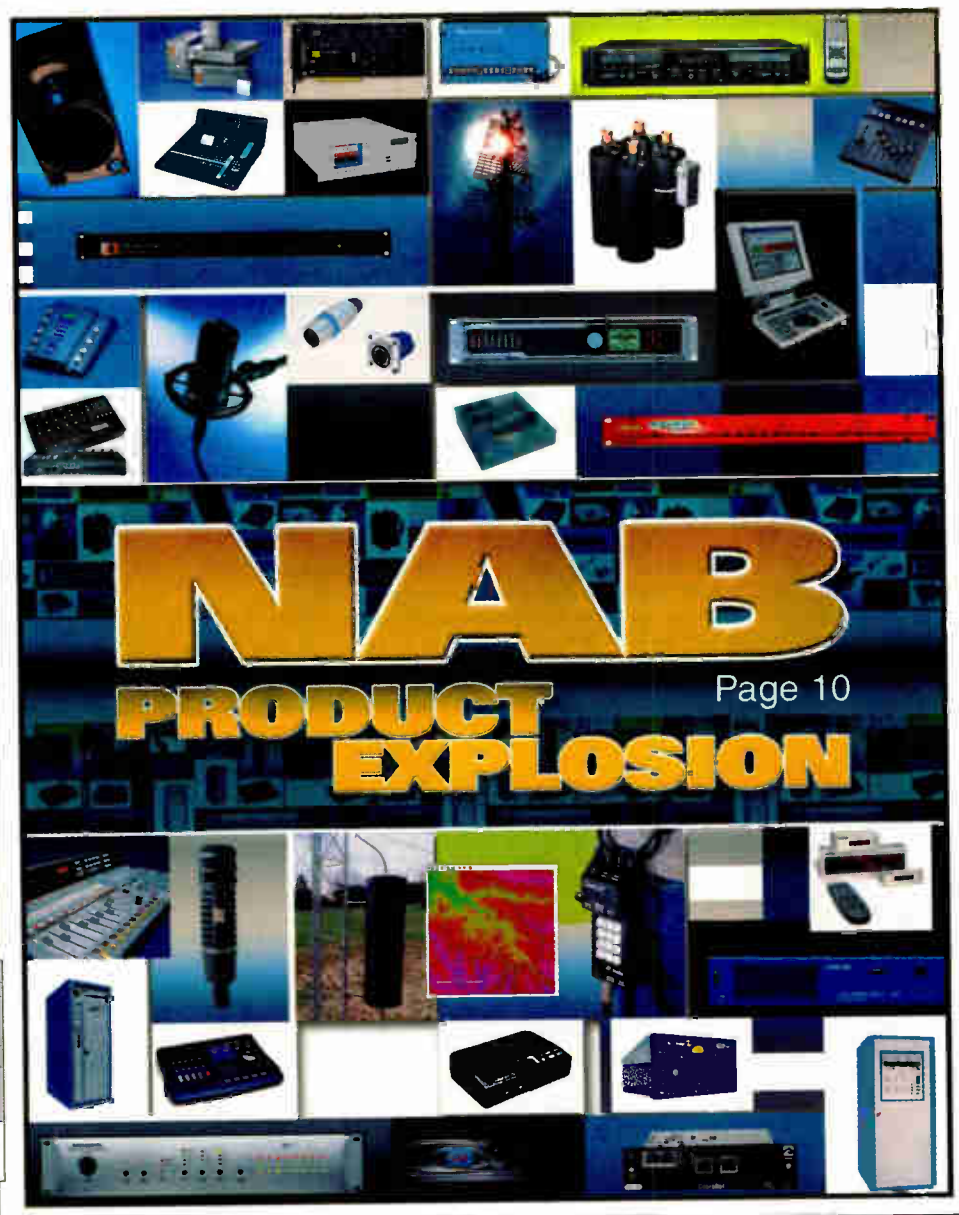

'NPR West' Moves Ahead In California

Network's Culver City Production Facility Slated for Completion In September

by Daniel G.P. Mansergh

CULVER CITY, Calif. National Public Radio's long-planned westward expansion now has a road map. NPR recently closed on its $8 million purchase of land and a two-building facility in Culver City for its West Coast Production Center.

If completed as expected in September, the facility will be NPR's first large-scale production center outside Washington.

After an extensive two-year search, NPR purchased a 25,000-square-foot complex from the Welk Group Inc., which holds the family interests of the late entertainer Lawrence Welk.

The West Coast Production Center project has a budget of $12 million. Foundation contributions have brought in $6 million; the rest will be paid for with tax-exempt bonds and a commercial loan.

Virginia-based T.G.S. Inc. will provide system design services and Studio

See NPR WEST, page 8 ▶

World Radio History

NEWSWATCH

Stations to Upgrade EAS Units

WASHINGTON Broadcasters and local emergency management groups are deciding what new EAS codes to implement and when to upgrade EAS encoders/decoders and train staff about the changes.

New civil emergency, weather and natural disaster event codes recently approved by the FCC were to go into effect in May.

Attendees of the EAS National Advisory Committee meeting in Washington last month discussed the codes.

Clear Channel Radio's Senior Vice President of Projects and Technology Al Kenyon was elected NAC chairman at the meeting. He replaced Richard Rudman, engineering director for Infinity's KFWB(AM) in Los Angeles, who planned to retire June 14.

Several emergency preparedness experts spoke at the event.

"I can't tell you we're not on borrowed time now," said Peter LaPorte, head of the District of Columbia's Emergency Management Department. He said emergency preparedness is essential for any disaster, not just a terrorist attack, referring to Sept. 11.

Rose Parkes, deputy chief information officer for the Federal Emergency Management Agency, offered FEMA's condolences to the families of engineers who died at the World Trade Center.

NAB: Consolidation Is a Good Thing

WASHINGTON The FCC is reviewing public comments submitted for the local radio ownership proceeding.

NAB believes the FCC has no authority to change local radio ownership limits set by Congress in the 1996 Telecommunications Act. In reply comments submitted to the commission, the NAB states the agency also lacks the authority to "refuse to approve radio station transactions permissible under the statutory limits."

A number of commenters believe consolidation has benefited consumers by expanding program diversity and "has not produced significant anti-competitive effects or market-power for radio groups," NAB wrote.

The association said that reducing the limit of stations a group may own would be "imprudent" because that would create an imbalance between groups that consolidated early and those that didn't. The latter then would be unable to compete effectively against the early consolidators, NAB argued.

Replies were made in the ownership proceeding, MM Dockets 01-317 and 00-244.

Sirius Radios In More States

NEW YORK Sirius Satellite Radio added 10 states to its May product rollout — Alabama, Indiana, Kentucky, Michigan, Mississippi, Ohio, Tennessee, Texas, West Virginia and Wisconsin — for a total of 28 states.

Guy Johnson, Sirius executive vice president of sales and marketing, said Sirius product is available in more than

See NEWSWATCH, page 7 ▶

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World Radio History

NEWS ANALYSIS

Radio Takes Liquor Ads Gingerly

by Randy J. Stine

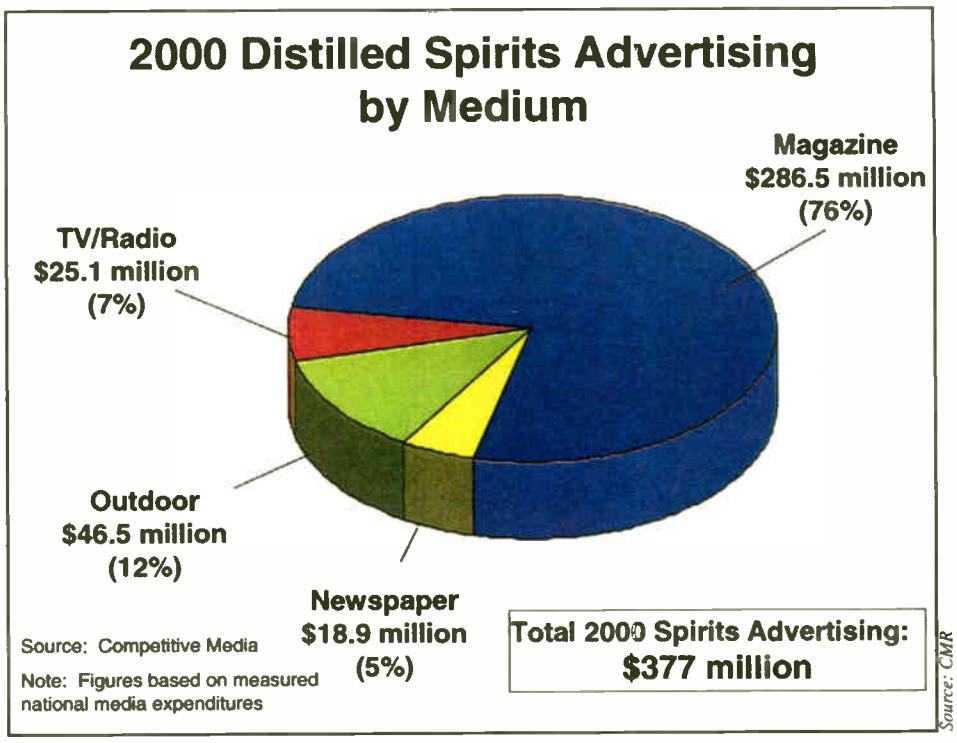
NEW YORK Radio broadcasters express cautious optimism that they can boost revenue by tapping the growing distilled liquor advertising segment, even though critics maintain the advertisements will encourage alcohol abuse.

American distillers slowly have broken through the traditional taboo on broadcast advertising of hard liquor. Since the Distilled Spirits Council of the United States lifted its self-imposed prohibition on broadcast advertising in 1996, the market segment has grown slowly and quietly.

The hard-liquor industry carries a hefty ad budget. Makers of distilled spirits spent a total of $377 million on advertising in 2000, the most recent year for which it has figures. Only $4.1 million went to radio broadcasters that year, according to Competitive Media.

DISCUS says more than 2,000 radio stations have carried hard-liquor advertisements in 250 markets since 1996.

Officials with the trade group say their goal is to convince more broadcasters to carry distilled-spirits advertisements and not run afoul of the FCC and lawmakers on Capitol Hill.



Avoiding flak

One radio executive with a medium-market group said some broadcasters have been slow to embrace hard-liquor ad dollars, in part out of concern of "catching flak" from Washington.

"Everyone seems to be moving very slowly. No one wants to jeopardize what we get from beer and wine already."

Privately, some broadcasters say they worry that policymakers might become upset if liquor ads become too prevalent, leading to a ban of all alcoholic beverage ads, including beer and wine, from the air.

ing on radio. Our concern is the nature of the medium. It does not discriminate against who hears the advertising."

While some of the major broadcast groups have a corporate dictate in place regarding distilled-spirits advertising, others are leaving the decision up to local market managers.

Infinity Broadcasting recently decided it would accept hard-liquor advertising on its stations on a case-by-case basis.

"We will look at each individual situation, things like day parts and formats, and then (Infinity) Standards and Practices will make a decision," said Dana McClintock, Infinity spokesman.

Cumulus Broadcasting Chairman and CEO Lew Dickey said, "We have accepted (hard-liquor ads) in the past. It's been almost negligible. Part of the reason why is that we have placed hefty restrictions on when and where the ads can air."

Cumulus restricts distilled-spirits advertising to certain day parts and formats, Dickey said. He declined to identify which ones.

"This could be a nice source of revenue, but only if it's done in a careful and responsible manner. A lot will depend on the approach and the compromise reached between distillers and broadcasters on restrictions.

"If their ads meet our standards, that's fine. If they do not, then we're not interested in the extra revenue."

Clear Channel Communications is accepting hard-liquor ads, but the company's policy includes restrictions that use listener demographics at its approximately 1,225 radio stations as guidelines, said Pam Taylor, Clear Channel spokeswoman.

"If a certain percent of a demo for one of our stations is under the legal drinking age, we refuse it. Certainly we do not want (advertisers) to target underage people," Taylor said. "We also highly recommend the ads are accompanied with an alcohol awareness message."

Fred Murr, senior vice president of operations for Regent Communications Inc., said the broadcaster has been approached only twice in the past six months to carry hard-liquor ads.

"We have strict criteria in place that the ads can only run on stations with adult demos. We also examine the copy carefully to see what it is we are exposing our listeners to. We certainly would not do any added value promotions with hard-liquor companies," Murr said.

Liquor policies

Emmis Communications does not have a corporate policy on accepting or not accepting hard-liquor advertising, said Kate Healy, Emmis spokeswoman.

"We allow each market manager to use their best judgment."

A Citadel Communications spokesman said the decision to carry hard-liquor ads is left up to individual stations. "It's done market by market."

At least one broadcast group said it would likely never pursue premium-drink ad dollars.

Bruce Reese, president and CEO of Bonneville International Corp., said the radio group does not accept hard-liquor advertising and is unlikely to change that position.

"Our policy has been not to take the ads. Given our ownership group, I would be surprised if we ever would," he said. Bonneville International is headquartered in Salt Lake City, Utah, and is owned by The Church of Jesus Christ of Latter-day Saints.

Distilled-spirits industry executives say that since 1996, they have

See LIQUOR ADS, page 8 ▶

We're shifting more ad dollars to radio right now.

— Gary Galanis, Diageo

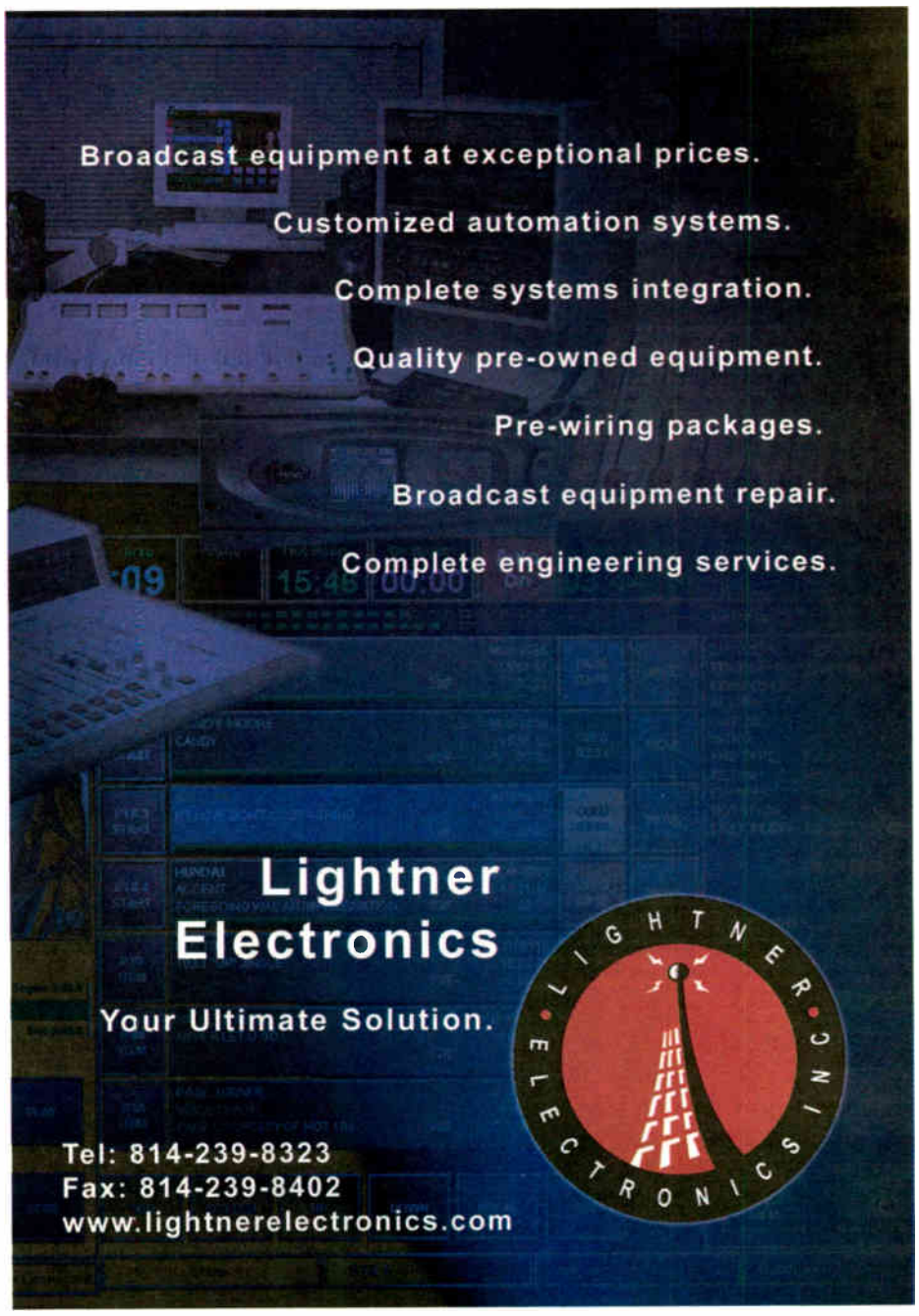
The beer and wine industry spent approximately $34 million on network and national spot radio advertising in 2001, according to Competitive Media. However, because the majority of beer advertising is placed directly with radio stations, the industry's actual spending is substantially higher.

George Hacker, director of the alcohol policies project at the Center for Science in the Public Interest, said broadcasters also fear a backlash from the beer industry.

"Beer executives are worried about the added competition from hard liquor and that the publicity surrounding all of this may drag them into hearings on Capitol Hill," he said.

Hacker said the Washington-based nonprofit advocacy organization is opposed to hard-liquor advertising over the airwaves.

"What we see now is a break in the 70-year absence of hard-liquor advertis-



World Radio History

Who Is This 'Wire' Guy, Anyway?

From the Editor

Paul J. McLane

A recent exchange of opinions about digital radio between online columnist Guy Wire and print columnist Skip Pizzi has renewed speculation as to the identity of our anonymous engineering writer.

Who is Guy Wire?

We introduced his column on our Web site three years back, based on the success of Mario Orazio, a similar writer for our sister publication TV Technology. Guy Wire is a columnist with major-market radio engineering credentials who comments anonymously, and pungently, about trends of the day.

Many people assume he is someone on our masthead. They look down the list of editors and contributors that appears on the last page of each issue and they see John Bisset, Tom Osenkowsky, Harold Hallikainen, Mark Durenberger, Ty Ford — technical experts, and opinionated people all.

They figure it just *has* to be someone whose name already appears in print.

During the recent NAB convention, for example, a long-time industry veteran approached our technical adviser, Tom McGinley, and said flatly, "I recognize your voice. Guy Wire is you."

Another vote could be for T. Carter Ross, an important person at this company but unknown to many readers because he is the editor-in-chief of our international editions. The man knows just about everything there is to know about global radio.

But who said Guy Wire is a man? Maybe it's Margaret Bryant, the ABC Radio Networks engineer who was profiled in Radio World not long ago. Or Leslie Stimson, news editor and Washington bureau chief for Radio World, or our managing editor Sharon Rae Pettigrew, or Marguerite Clark over in Milan.

For that matter, we've featured a lot of big engineering names as writers or story subjects: Al Kenyon. Tony Masiello. Milford Smith. Andy Butler. Bill Sepmeier. Terry Baun. Clay Freinwald. Jeff Johnson.

Some of these names pop up an awful lot in online discussions, and these folks seem to have a lot to say.

What about all the knowledgeable engineers out there who work for manufacturers? Geoff Mendenhall? Mike Dorrough? Ted Nahil? Art Constantine?

But Guy Wire also seems to have a unique sense of humor. Readers know that Al Peterson is among the most talented writers in our pages. And he's married to Michele Kramer Peterson, editor of our Studio Sessions section. Maybe one or both of them are Guy Wire.

Hey, wouldn't it be gutsy of us to publish a column secretly written by the editor of a competing radio trade publication?

Or maybe Skip Pizzi is Guy Wire, conducting an online pro-and-con debate with himself. Or perhaps Guy Wire is Glynn Walden!

One member of the Ibiquity Digital staff who has known me for years called me up recently and said, "You wrote that piece about IBOC, didn't you? *You're* Guy Wire. But you can't tell me, or you'd have to shoot me."

Hmmm. Would I even dare to mention the identity of the real Guy Wire in a column like this?

You can read Guy's opinions each month at *www.rwonline.com*. We also encourage reply e-mails to his/her opinions for publication on our Web site.

★ ★ ★

Radio World first told you about the Cart Chunk concept when its developers wrote about it in these pages several years ago.

Now the Audio Engineering Society Standards Committee has released draft Standard AES46-xxxx, which "specifies methods for handling radio traffic control data through the use of a radio traffic audio delivery extension to the Broadcast WAV file format." The idea is to help production and audio management systems communicate more effectively.

AES wants your comments on this draft. Visit *www.aes.org/standards* and click on "Drafts out for public comment." The deadline is this week, June 7. If you have difficulties, write to Mark Yonge at *standards@aes.org*.

I commend AES for its effort, and salute all who seek to develop better standards in our industry. Goodness knows we need 'em.

One member of the Ibiquity staff called me up and said, 'You're Guy Wire. But you can't tell me, or you'd have to shoot me.'

2002 Radio World Readers' Choice Sweepstakes

I pause and marvel at the great prizes our advertisers have given away in our Reader's Choice Sweepstakes this year.

If you haven't signed up yet, you still have six months of prize opportunities; go to *www.rwonline.com*. It only takes a moment and costs you nothing.

This month's winner is Michael Hays of Twangcast.com Net Radio in Orange, Va.

He wins the APT WorldNet Milano, a full duplex, multichannel ISDN audio codec with a retail value of $6,250. It incorporates Standard and Enhanced apt-X, with negligible coding delay and no perceivable audio degradation. WorldNet Milano provides high-quality audio for post-production facilities; studio-to-transmitter and studio-to-studio links; and outside broadcast applications.

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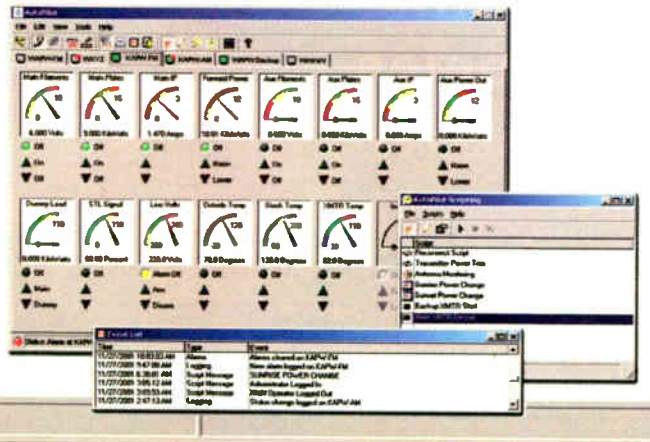

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Paul Reynolds, Chief Engineer
Cox Radio.

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Jeff Kuhne, Engineer, WRPI-FM

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World Radio History

SPECIAL REPORT

Globally, Digital's Success Is Spotty

by Scott Fybush

Outside this country, the Eureka-147 standard for digital audio broadcasting is in various stages of development, ranging from countries that have functioning systems in several cities, such as the United Kingdom and Canada, to countries that are expanding their offerings, as is France.

Some countries still are testing the technology, such as Australia and Korea.

Still other countries are watching IBOC development in the United States, hoping to implement this standard overseas.

At NAB2002, the president of the company promoting in-band, on-channel DAB said the Eureka standard is an "abject failure." Ibiquity Digital President/CEO Robert Struble said only 50,000 Eureka-147 receivers are in use worldwide.

400-plus

More than 230 million *potential* listeners around the world now can receive more than 400 DAB services, according to the World DAB Forum, a non-government consortium of companies that supports the implementation of the Eureka-147 standard for DAB.

Digital Radio Mondiale, a consortium of major international broadcasters and equipment manufacturers, is proceeding with its system for digital broadcasting on the long-, medium- and shortwave bands.

DRM and most of the other companies mentioned in this article presented updates of their systems to attendees of NAB2002 at a panel session dedicated to DAB worldwide.

During NAB2002, DRM demonstrated the system with test broadcasts from Radio Nederlands' site on Bonaire in the Caribbean, WEWN shortwave in Alabama and Radio Canada International in Sackville, New Brunswick. It was the latest in a series of tests that have included both medium-wave and shortwave broadcasters in Europe.

Most of the medium-wave testing has taken place in Germany, where DRM used a three-transmitter network around Berlin and several smaller transmitters elsewhere in the country. In one test, said Peter Jackson of DRM partner Merlin Communications, the system produced usable DAB coverage in a 75-mile radius around the transmitter — running at just 1 kilowatt.

Of shortwave tests, Jackson said, in a 3,100-mile test from Sackville to Germany, "we had one dropout of 40 milliseconds duration in a 56-minute transmission."

The tests have opened up potential uses for some neglected bands as well. One series of experiments in Britain is using the 26 MHz shortwave band for short-distance, low-power DAB transmissions. Jackson says several countries are considering using the band to relieve crowded local FM dials.

DRM has focused on offering a path to DAB that will be low-cost for both broadcasters and listeners, Jackson said. Most broadcasters have been able to use their existing transmitters for DAB with only minor modifications, he said, while receivers will soon be available at costs far lower than competing DAB platforms.

Full-time digital

One DRM partner, Germany's Fraunhofer Institute, intends to make software available to allow amateur radio operators and DXers to listen to DRM broadcasts with their receivers and PCs.

Within a few years, Jackson hopes, shortwave broadcasters will begin replacing some of their analog signals with DRM digital on a full-time basis, opening up opportunities. The BBC is developing a receiver that can listen to four DRM channels at once, constantly selecting the best available signal.

On the other end of the transmission chain, Jackson said, work is underway to allow DRM transmitters to be controlled remotely by receivers stationed in target areas. The goal is to adjust dynamically among DRM's various transmission modes to optimize reception quality.

Japan is preparing to offer satellite-based DAB to listeners.

On the other side of the globe, Japan is preparing to join the United States in offering satellite-based DAB to listeners.

Its system, "Digital System E," will use the 2630-2655 MHz band. Like the XM Satellite Radio and Sirius Satellite Radio systems here it will transmit to small omni-directional antennas, using terrestrial fill-in transmitters to augment the satellite signal.

But instead of being aimed predominantly at listeners in cars, the Japanese system will target tiny handheld receivers, to be offered both as cards for personal digital assistants and as stand-alone units.

In addition to audio, Japanese DAB listeners will get streaming video at low bit rates as part of the service. Initial prototypes call for a screen with 320x240

See GLOBAL DAB, page 7 ▶

Photo by Leslie Stimson

DRM's Peter Jackson

MARKET PLACE

Audioarts Debuts Digital Router

Digital routing fans have a new choice on the market from the Audioarts division of Wheatstone Corp.

Its new Digital Audio Router is a rackable 16-by-16 AES switcher with X-Y control, sample rate converters and a monitor speaker. Retail price is $5,495.

It interfaces with Wheatstone alphanumeric console display strips as well as other control heads and the company's X-Point PC software.

For information contact the company in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

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Every clock/timer has a rear panel parallel remote connector which provides momentary contact switch control of start / stop / reset / and mode functions.

AVAILABLE GPS
The compact GPS antenna mounts anywhere with a sky view. Use standard CAT-5 cable to easily connect the serial time-code output to the GPS receiver and all clocks in your system are instantly and permanently synchronized to GPS time.

ANALOG CLOCK SUPPORT
All CT-6 master units also drive multiple analog impulse 12" clock displays. This is an excellent way to inexpensively add analog wall clocks to your CT-6 system.

World Radio History

NOAA Debuts New Synthesized Voices

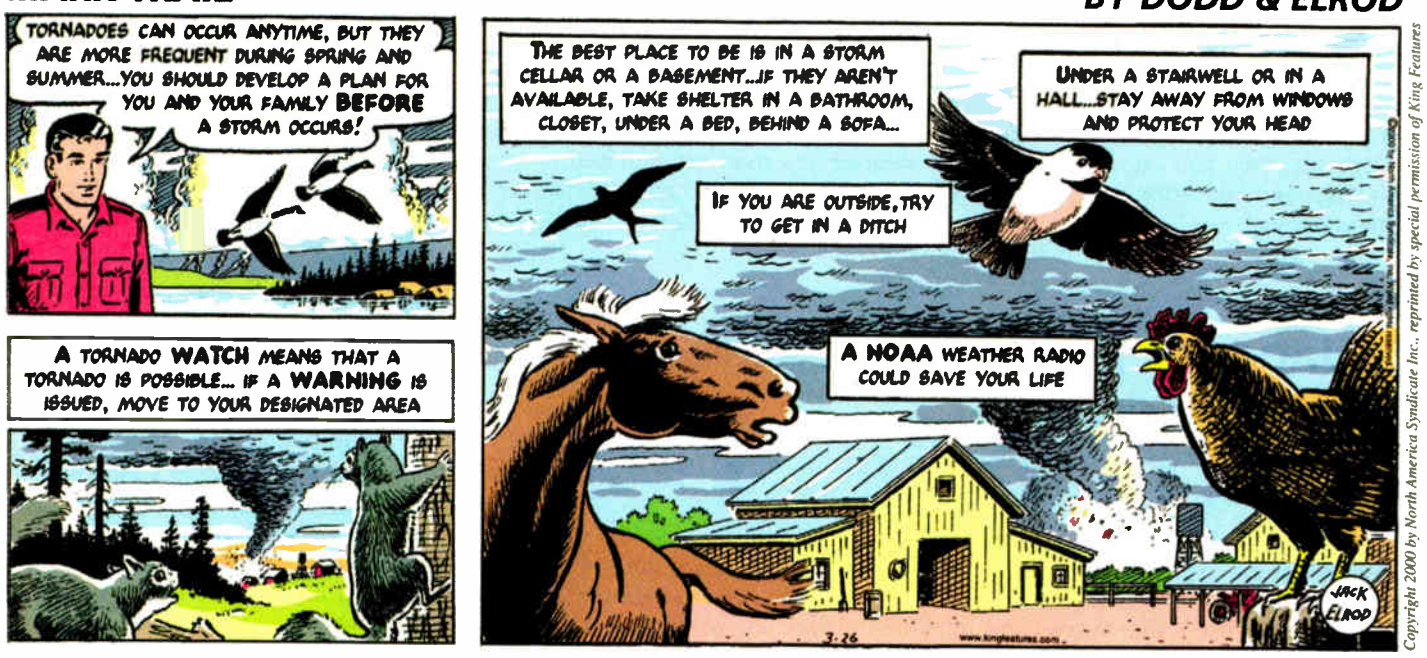
by Randy J. Stine

WASHINGTON Barring any last-minute computer glitches, most of the nation's 121 National Oceanic and Atmospheric Administration's Weather Radio stations were expected to Debut a new voice-synthesis system to help deliver weather forecasts and warnings in early June.

National Weather Service officials said two new voices — one female, one male — are replacing the computer-generated voice nicknamed Perfect Paul.

Named Craig and Donna, the new voices will allow weather offices to adjust pronunciation and inflection to reflect local characteristics of certain geographic regions of the country.

The launch of the new system comes after months of focus-group testing and surveys last year to determine a replacement for Perfect Paul, said Joanne Swanson, NWS meteorologist and voice-evaluation leader.



This Mark Trail comic from 2000 features the NOAA Weather Radio.

Human intonation

The new text-to-speech software, developed by Siemens Information and Communication Network and SpeechWorks International, combines concatenated prerecorded phonetic sounds with the intonation of a human voice.

"The new voices are human voices, which have been cut at the syllable level and re-assembled with intonation and grammar. What we have is a big improvement over the Paul-voiced system, and a system that's more easily understood," Swanson said.

Broadcasters have complained since Perfect Paul was launched in 1997 that the robotic-sounding Paul was hard to understand. Swanson said some broadcasters even refused to carry warnings until the information could be read by an on-air person.

More than 19,000 surveys were relayed to NOAA during the search for Paul's successor last year. Swanson said the final versions of Craig and Donna are better than what survey respondents heard last year.

"Like with any computer software today, things are always being improved upon. We believe we are as close to a natural language-sounding program as we can be right now."

NOAA and NWS played samples of the latest versions of Craig and Donna at their booth at NAB2002 in Las Vegas in April. Swanson said the voices received "mostly positive reviews" from broadcasters and Emergency Alert System managers.

Paul's replacement

Richard Rudman, former chair of the EAS National Advisory Committee and current chair of the Los Angles County local emergency committee, said the latest version of the new software is better than what was auditioned online and evaluated by the focus groups last year.

"Still, my personal opinion is that the overall acceptance of the new male and female voices will depend on how much time and effort local weather offices invest in fine-tuning the sound," he said.

Swanson said weather offices were told to have at least part of the new system online by the first of June with full implementation expected by the end of the month.

"We are urging them to take full advantage of the new system. That means customizing it to their region, including programming in local geographical terms and idioms."

The voice makeover is the first for NOAA Weather Radio since Paul's debut as part of the Console Replacement Program, which permits meteorologists to type messages and have them automatically "voiced" by computer. The computer system aids in the "timeliness and effectiveness" of warnings, Swanson said.

NEWSWATCH

Indecency Tops Gripes

WASHINGTON Complaints about allegedly indecent radio or television programs continue to be the most common broadcast-related gripe the FCC hears from the public.

For telephone matters, both wired and cell, billing and rate complaints top the list.

For the first quarter of this year, the FCC received 242 indecency or obscenity complaints out of 270 broadcast-related gripes. The majority, 161, was logged in March, compared to 36 in February and 45 in January.

The figures are part of the quarterly report of the commission's Consumer and Governmental Affairs Bureau.

NFCB Hires LPFM Director

SAN FRANCISCO LPFM radio stations have a new source of help. Kai Aiyetoro is the new low-power FM director for the National Federation of Community Broadcasters.

Aiyetoro will work with community groups that receive authorizations as a contact point for information and services needed to build and run a low-power local station. She will develop a low-power manual, coordinate group buying and offer consulting.

Aiyetoro has worked as a radio general manager, program director and development director. Previously, she was director of finance at National AIDS Education & Services for Minorities Inc. in Atlanta.

World Radio History

Global DAB

▶ Continued from page 5

resolution, with slightly larger screens to be offered for in-car installations. The Japanese system also will be bi-directional, said developer Shuji Hirakawa of Toshiba, using mobile-phone technology to provide a return channel for interactive features such as traffic reports.

"One challenge now," Hirakawa said, "is how to operate complicated multimedia and data broadcasting without requiring complex manipulation by drivers."

The Japanese system will join a more conventional terrestrial DAB system and an experimental system using a portion of Japan's digital TV spectrum. It is expected to enter commercial service in the spring of 2004. Tests from terrestrial transmitters are planned next year, with the Mobile Broadcasting Corporation's MB-SAT satellite due for launch in October 2003.

Launch target date

A satellite radio system not discussed in the session is Global Radio, a satellite radio system in development for Europe. Based in Luxembourg, the company is raising financing and targets a 2005 launch for its subscription service.

WorldSpace, the company offering subscription satellite digital radio to the third world on portable receivers, has launched two satellites, aimed at serving audiences in Africa, Asia, the Middle East and Western Europe. A third satellite, to serve Latin America and the Caribbean, will follow, although there is no specific launch date for this satellite.

Another terrestrial DAB system is being tested on the Isle of Man, in the Irish Sea between England and Ireland. The island is the test site for a cooperative network that employs both Eureka-147 DAB and third-generation, or 3G, wireless data transmission.

A private operator that took over much of the BBC's transmission network called Crown Castle, together with Manx Telecom, wireless operator MMO2 and British broadcaster Virgin Radio all operate the Isle of Man system.

At the heart of the DAB portion of the system is a transmitter carrying seven digital audio services supplied by Virgin. But in addition to sitting back and listening, users of the test system can interact with their radios.

A jukebox feature allows listeners to choose their own playlists, with music fed back to the system from Virgin in London. The system also incorporates data services such as tourist information, offering advertisers new opportunities to target listeners — perhaps better described as wireless users — through ads on the screens of the receivers.

The receivers are on the market on the Isle of Man. The units are half the size of a typical cell phone, and feature color screens.

The Isle of Man system joins a series of Eureka-147 multiplexes in Britain that has been providing Eureka-147 service to much of the nation's population for more than a year.

◆ NEWSWATCH ◆

▶ Continued from page 2

half of the country. He said radios would begin to appear in volume in retail locations in the Southeast later in May.

Earlier in May, Sirius began service to Arkansas, Louisiana, Minnesota, Missouri, Nevada, Oklahoma and Utah.

Service already was available in Arizona, Colorado, Idaho, Iowa, Kansas, Montana, Nebraska, New Mexico, North Dakota, South Dakota and Wyoming in addition to Houston and Jackson, Miss., two of the original launch markets.

Sirius plans to have its product available nationwide by July 1.

KCLF(AM) Fined For EAS Violations

The FCC fined New World Broadcasting Co. Inc., licensee of KCLF(AM) in New Roads, La., a reduced penalty of $2,000 for not installing an Emergency Alert System and its failure to monitor and control the station's transmission system. The original fine was $11,000.

In September, a field agent said the station transmitter had been left on 24 hours a day in violation of KCLF(AM)'s authorization.

New World did not dispute the violations, but said the defective EAS equipment would be repaired or replaced, and that a remote-control unit would be installed to monitor and control the transmission system. New World also verified that, at the time of the inspection, the EAS system was not functioning, the transmitter was unattended and operating without a remote control or monitoring system.

New World said an $11,000 fine would pose a financial hardship and asked that it be cancelled. The licensee also said the rule governing unattended transmitters is unclear about whether remote-control equipment is required or that New World violated the rule.

"Whether New World is required to have remote control equipment is irrelevant," the FCC stated in its order. "On the day of the inspection, no method was being employed to maintain control over the transmitter at the operating position and the transmitter was operating 24 hours per day, in violation of the terms of the station license."

After reviewing the station's tax returns for the past three years, the commission agreed the fine was too high and cut the penalty to $2,000.

World Radio History

NPR West

▶ Continued from page 1

Bauton of Los Angeles will design the architectural and acoustical renovations of the building.

Soft real estate

NPR Senior Engineer Jan Andrews presented plans for the facility at the 2002 Public Radio Engineering Conference in Las Vegas in April.

Recent softening of the area real estate market made purchasing this particular property an attractive option, said Andrews.

The building most recently housed an Internet video production and teleconferencing company, so many support systems and technical improvements are already in place. "The first time I walked into the building, I knew I wanted it, since somebody else had done all the hard work," said NPR Director of Facilities Maury Schlesinger.

The first time I walked into the building, I knew I wanted it.

— Maury Schlesinger

Two multiperson studios with adjacent control rooms, two smaller two-person studios, and three "chat rooms" that can easily be converted into editing rooms had been constructed by the prior tenant.

Existing technical infrastructure includes a 100 kVA UPS system, robust HVAC, an existing and expandable rack room and rooftop satellite dishes. The infrastructure will make the task of converting the building into a radio production facility much easier than starting from scratch, Schlesinger said.

The architectural plan calls for some acoustical improvements of the existing rooms, such as raised floating floors in the two larger studios and isolation cuts in the slab around the smaller rooms, but the overall layout of the building will not need substantial changes.

The "icing on the cake," as Jan Andrews characterizes it, is a 40-by-40-foot TV studio with associated control room that someday could be used for a large recording studio or video production, and an adjacent 15,000-square foot building with a sitting tenant that NPR also acquired as a part of the deal.

Photo: Maury Schlesinger

Construction for NPR's West Coast production studios had not begun in early May, when the network had just closed on the purchase. This is the rear view of the building.

This ensures that the facility will have sufficient space for future expansion.

As digital as possible

Andrews said the philosophy of the technical design for the new production center is "as digital and as versatile as possible. Most interconnection in the plant will be data, not audio."

To facilitate this, the audio infrastructure will be based on a Klotz Vadis II audio network, with a variety of control surfaces tailored to the needs of each control room.

Production will be done using a combination of Dalet editing workstations and high-end DAWs, as at NPR's Washington headquarters. Approximately 55 Dalet workstations will be installed, along with five local fiber channel-networked servers.

DS3-level connectivity to Washington will provide near-real-time networking of the Dalet system and other computer applications as well as allowing the interconnection of the telephone system and real-time digital audio transfers.

NPR recently purchased 25 Neumann U 87 Ai/Set Z large-diaphragm condenser microphones for the Los Angeles facility. Most of the microphones are destined for spoken-word applications.

The new facility is a key part of the West Coast Initiative, an effort to strengthen NPR's core news programming and to counter a perceived East Coast and Eurocentric bias through greater coverage of the western United States and the Pacific Rim.

NPR decided to establish the new production center in Southern California to take advantage of the extensive media resources available there.

Ken Stern, NPR's executive vice president, views the West Coast Production Center as an important resource to achieve NPR's "long-standing goal to cover more of the country." Once the facility is complete, he said an aggressive staffing effort is the next priority.

Los Angeles-based staff from the existing NPR bureau and "The Tavis Smiley Show," which airs on about 21 NPR affiliates and on Sirius Satellite Radio, will be first to move in. They will be followed by staff for a planned midday newsmagazine show and additional cultural reporters and producers.

The staff will be a mix of new and existing NPR employees relocating from other locations, according to Stern. Plans call for a staff of about 50, with possible expansion to 90 staffers in the future.

Innovative solutions...

Your new digital transmitting equipment sounds great! There's no arguing about that. But your jocks can't stand the delay they hear in the monitor when they go live. And let's face it, you're getting pretty tired of hearing the complaints. The CAS-1 Con/Air Switcher can solve both of these problems.

Got digital gear? You need a Con/Air Switcher

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Liquor Ads

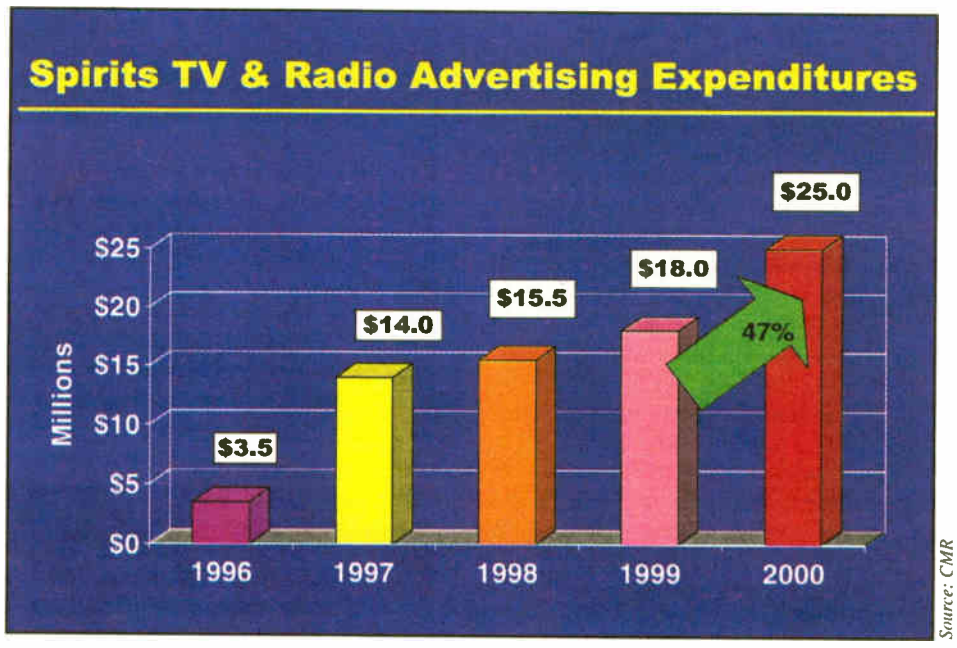
▶ Continued from page 3

demonstrated that they are responsible marketers. They say NBC-TV's decision not to carry ads for Diageo's Smirnoff vodka after originally agreeing to do so last fall was a setback.

NBC reneged after Mothers Against Drunk Driving sent a letter to the network in March calling for tougher guidelines for advertising of alcoholic beverages.

Captain Morgan

Gary Galanis, director of communications for Diageo, a distilled-spirits producer whose products include Jose Cuervo, Johnnie Walker and Bailey's Irish Cream, said, "We understand the reluctance of some broadcasters to carry the ads. We have battled this since 1996. We want to reassure them we emphasize social responsibility with all of our commercials.



Source: CMR

"We see lots of opportunity for radio. We're shifting more ad dollars to radio right now. Some of our premium drinks can be better displayed on radio than in print. In fact, we plan to launch a major radio campaign for Captain Morgan spiced rum later this summer," Galanis said.

The campaign will feature dedicated social responsibility radio commercials, Galanis said.

Distilled-spirits producer Allied Domecq Spirits USA is using radio more often as a marketing tool, said Jack Shea, vice president of corporate communications. The company's brands include Kahlua, Beefeater, Canadian Club and Stolichnaya vodka.

"We have found that radio is less expensive and a more accessible medium than television. We have noticed a steady increase in the number of radio stations willing to accept our advertising."

Shea said the distilled-spirits industry's self-imposed ban on broadcast advertising served to perpetuate the false notion that liquor is more harmful than beer and wine.

"From a policy standpoint, there is no scientific reason why distilled spirits should be treated any differently than beer and wine."

World Radio History

CLEARLY NOT FOR EVERYONE

Your Grandmother is certainly a very nice lady, but a Porsche is probably not her ride.

It's the same with processing: Some people should stick with the conservative stuff. Give them something too fast and they just won't know what to do with it. Frankly, the new Omnia-6 is probably not for them. It's just too potent, too flexible.

On the other hand, maybe you are the sort who can run a fast machine. Who loves the thrill of smooth power. Who revels in the admiration of others.

Omnia-6 - if you can handle it.

6 fm

Omnia
A Telos Company

www.omniaaudio.com

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Europe: +49.81.61.42.467

Omnia is used in 4 of 5 leading stations in New York, 2 of the 3 top stations in Los Angeles and 5 of 6 of the most listened to stations in the US. It's on the leading stations in Paris, all of the BBC's local FM stations in the UK, and the number one stations in Canada, Ireland, Germany, Finland, Australia, India, China, Denmark, and Sweden.

World Radio History

Here is a sampling of new products for radio shown at the NAB2002 convention this spring. Information was provided by exhibitors. Radio World "Cool Stuff" Award winners appeared last issue.

If your company introduced a product that we missed, send e-mail to radioworld@imaspub.com *so we can tell our readers in a future issue.*

Contributors include Paul McLane, Sharon Rae Pettigrew, Michele Kramer Peterson, Michael Hedrick, Tom Osenkowsky, Michael LeClair, Scott Fybush and Alan R. Peterson.

Wheatstone Debuts Two Digital Consoles

The D-4000 is a Wheatstone digital console at a lower price point than its predecessors.

It is based on the architecture of the D-5000 and is modular, with a new look including stainless-steel meter bridge and wrist rest, new work surface graphics and composite fused finish end caps. Features include four stereo mix busses, hot swapping, six VU meters, any mix of D and A inputs, AES and balanced analog outputs and up to four mix-minus outputs.

Wheatstone D-8000 Console

Wheatstone's D-8000 is considered the flagship of the D-Series line, and responds to the need of radio stations for for more and better mix-minus capabilities. The Bus-Minus feature is available on all input modules, providing a mix-minus output with talkback interrupt on every input module so equipped. All input modules can accept analog and digital signals of both A and B inputs; all input modules provide both mic and line logic.

The company also entered an exclusive purchasing agreement with Liberty Corp./Cosmos Broadcasting to supply audio consoles for its 15-station television group; and it announced a deal under which systems house RDA Systems will base its design and installation services around the Wheatstone lineup.

Contact the company in North Carolina at (252) 638-7000 or www.wheatstone.com.

Omnia Line Grows

The Omnia-4.5 digital audio processor is available in AM and FM versions, and designed for less affluent markets than the higher-end Omnia-6.

The new model implements DSP technology for loud, clean sound. Features include 96-kHz processing with 24-bit dynamic range, which Omnia says is the highest sampling rate in any broadcast processor; five-band limiter and two-band AGC; algorithms for AM or FM; and plug-in software architecture for software updates.

The Omnia 4.5

Omnia-4.5fm has a U.S. retail price of $7,580; Omnia-4.5am lists at $6,980.

The company also unveiled a line of audio processors for audio mastering studios. Omnia-6cd is in use at New York's Sterling Sound and Planet To Planet studios.

Also new is Omnia A/X, a processor for the Internet with Omnia processing and Telos Systems streaming technology. It runs on Windows-based PCs, working with Windows Media, Real and MP3 encoders to bring processed audio to streaming applications.

Sister company Telos Systems earned a Radio World "Cool Stuff" Award for its new Zephyr Xport portable codec (See RW, May 22).

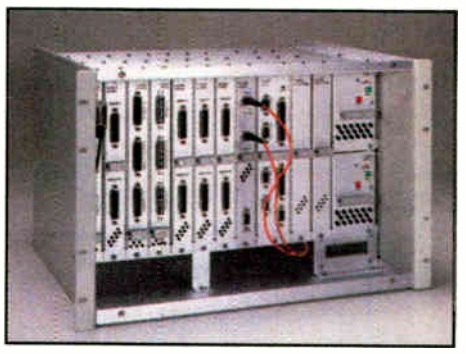
Contact the company in Ohio at (216) 241-7225 or visit www.omniaaudio.com *or* www.telos-systems.com.

Logitek Updates Numix, Audio Engine

Logitek Electronic Systems redesigned its Numix digital console, a control surface for its Audio Engine mixer/router.

A new Selector Wedge handles control, talkback and source selection; it has a large LCD panel with color graphics, better intercom functions and programmable buttons. It allows greater interaction with hard-disk systems. Supervisor and Command Builder software allows the building of custom scripts for various functions.

A redesigned Fader Wedge now has a color panel and better button placement; each fader has a dedicated talkback switch.



Audio Engine by Logitek

The company upgraded its Audio Engine, with more I/O capability; a network card that provides dual 1 GB Ethernet connections between Engines via fiber; and a multi-DSP card with EQ and limiting functions.

Logitek also earned a Radio World "Cool Stuff" Award for its Remora Digital Console, a small modular control surface for the Engine.

Contact the company in Texas at (713) 664-4470 or visit www.logitekaudio.com.

APT Expands Offerings

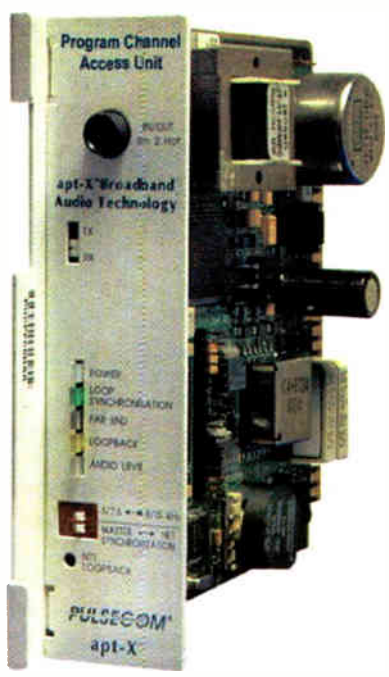
Codec company APT exhibited its E1/T1 Multi-Channel Broadcast Solution, touted as a cost-effective, low-delay alternative for audio transport. It is based around APT's WorldNet codec family and promises end-to-end delay of 5 ms.

It features full-duplex, bi-directional performance; analog and AES/EBU I/O; 32, 44.1 and 48 kHz; ISDN backup; and RS232 and remote control I/O.

The company is involved in a joint venture with U.S. telecom company Pulsecom to develop broadband audio products. They unveiled the APT/Pulsecom Program Channel Access Unit, or PCAU, using apt-X compression in an encoder/decoder card to pass a 15-kHz signal over a standard 128 kbps ISDN link.

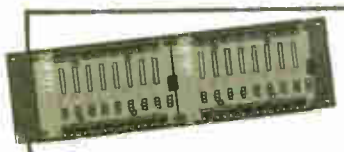
Other new products include the WorldNet Rio and Milano codecs. The company also promoted a recent licensing deal with Harris Corp. for its Intraplex line.

Contact the company in Northern Ireland at +44-28-9037-1110 or visit www.aptx.com.

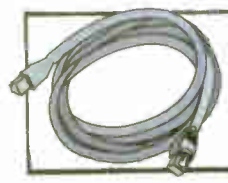


The APT/Pulsecom Program Channel Access Unit

World Radio History



StudioHub+ Hubs
The heart of StudioHub is passive and active RJ-45 "blocks" with 110 pass-through connectors.



CAT5 Cabling
All StudioHub+ cabling is shielded and CAT-5 certified.

Powered Peripherals
This headphone amp is StudioHub+ "DC link" or wallwart powered. Choose from dozens of other optional components.

Save time and money on your next studio project with the StudioHub+ integrated wiring solution. Contact Radio Systems for more information on the StudioHub system of pre-made cables, adapters, and active peripherals that let you "plug-and-play" all your studio analog, digital and data connections.

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World Radio History

Aphex Turns to MkIII

Aphex Systems is out with the MkIII version of its Model 2020 Broadcast Audio Processor.

It is a self-contained dynamics processor for FM, TV, cable, satellite and Webcasting. It features a split-band optical pre-emphasis limiter, an overshoot-compensated, low-distortion low-pass filter and new processing algorithms.

The company says the design of the filter is extremely effective in eliminating overshoots and artifacts, allowing the processing to be run more aggressively with a cleaner sound. An upgrade path from the MkII is available. See the User Report on page 61 of this issue.

Also on display were the newest Aural Exciter, the Model 204; the Model 207 Two-Channel Tube Mic/Instrument Preamp; and the Model 212 A/D-D/A Converter.

Contact the company in California at (818) 767-2929 or visit www.aphex.com.

Harris Launches Extreme Digital IBOC Line

Harris Corp. demonstrated a line of equipment to support the expected transition of U.S. radio to in-band, on-channel digital.

The products include Dexstar AM and FM IBOC exciters, as well as a Z-IBOC line of FM transmitters for which common amplification FM/IBOC systems and separate amplification/IBOC-only transmitters are available.

Among the members of the Harris IBOC team are Gary Liebisch, Geoff Mendenhall and Dave Agnew.

Also new is a plug-in IBOC module for the Intraplex STL Plus digital link. It enables the digital transport of up to 22.5 kHz uncompressed linear stereo program audio at sampling rates of 32, 44.1 and 48 ksps.

The company said its DX and 3DX transmitters for AM can pass the IBOC signal with little or no modification. Planned for the fall Radio Show is the first in a line of lower-power IBOC AM products, a 5 kW transmitter.

Radio World recognized the company with a "Cool Stuff" Award for Technical Advancement of IBOC DAB.

Contact the company in Ohio at (513) 459-3400 or visit www.harris.com.

Burli Highlights News Software

Burli Software showcased the latest version of its news production and editing offerings, which allows broadcast journalists to access all of their newswire services, audio, faxes, e-mail and scripts from their desktops.

With the Virtual Newsroom component, reporters outside the station can connect to their newsrooms through any Web browser. Also, the Virtual Newsroom package can connect Burli workstations across town or across the world with drag-and-drop file sharing.

Contact the company in British Columbia, Canada, at (604) 684-3140 or visit www.burli.com.

Dorrough Goes Remote

Dorrough Electronics told attendees about its RW-100, a remote control capable of being hooked to up to four remote meters.

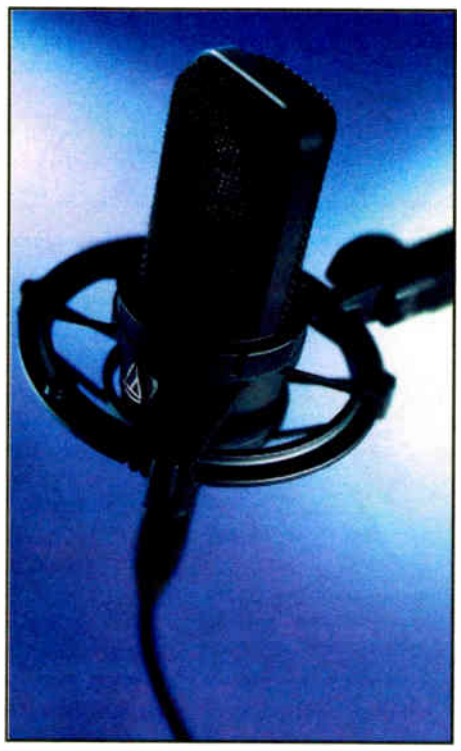
The RW-100 supports both analog and digital versions of the Dorrough 280 and 380-D meters. Phase display and phase alert are among available on the remote.

The booth also featured a general-purpose audio test generator, functioning in both the analog and digital displays.

Contact the company in California at (818) 998-2824 or visit www.dorrough.com.

Audio-Technica Releases New Mics

The latest addition to the Audio-Technica 40 Series microphones is the AT4040 Cardiod Condenser Studio Microphone. Extended, smooth-frequency response makes it suitable for a variety of voices. It uses a large-diaphragm capacitor element that contributes to low noise and a wide dynamic range.



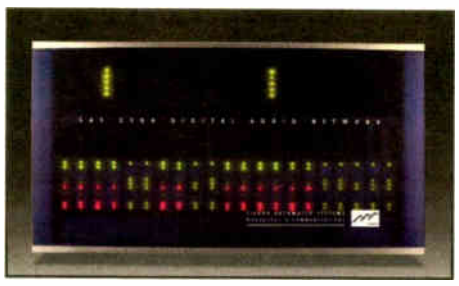
The mic uses transducer technology, surface-mount electronics and transformerless circuitry. It comes with a protective case, dust screen and shock mounting.

The company has expanded its 30 Series with the addition of the ATH-M30 headphones. Closed-back design, light weight and full-ear padding reduce listening fatigue and ambient noise.

Contact Audio-Technica in Ohio at (330) 686-2600 or visit www.audio-technica.com.

SAS Ships 32 KD

Sierra Audio Systems showed its 32KD Digital Audio Network, a modular, distributed core audio routing system. It can handle mixing, IFB, sound processing, mix-minus and other audio operations. The product is now shipping to customers.



Within a 6RU frame, the 32KD supports 512 I/O channels in addition to network interfaces, control, processing and power. Multiple units can be linked to provide an unlimited number of channels.

The 32KD supports SAS' standard RS-485 control interface, but also can be controlled through RS-232, RS-422, LAN and Ethernet-TCP/IP connections. The system can be configured locally or through a network using SAS' Windows router control software.

The new RIOLink provides remote I/O connectivity and earned a Radio World "Cool Stuff" Award.

Contact the company in California at (818) 840-6749 or visit www.sasaudio.com.

Flexible Consoles From Klotz

Klotz showed the D.C. II production audio console, a mid-priced model designed for live broadcasting and production applications. The console allows any input connected to a facility's Vadis 880 digital audio platform to be routed to any fader without the use of an external router. The console can be reconfigured, as well as returning to stored configurations, at the push of a button.

The supplier announced the sale of 11 of the consoles and 23 Vadis 880 platforms to Greater Media, which will use them for a new group facility in Detroit.

Klotz also showed the D/ESAM 8000 audio control surface, which provides additional functionality for up to 32-track audio recording.

Contact the company in Georgia at (678) 966-9900 or visit www.klotzdigital.com.

Crown Debuts Management System

Crown Broadcast's new FMX FM transmitters allow engineers to monitor and adjust performance without a site visit.

FMX offers digital monitoring and control plus a remote management option. With the Digital Management System, management is performed with one control knob and an easy-to-read display. Operators use menus to make readings or adjustments with password protection.

The Remote Management System allows an engineer to keep track of the transmitter's performance and make parameter changes via phone. The RMS can call the engineer if a significant fault occurs. FMX and RMS can be added to older Crown transmitters as upgrade kits.

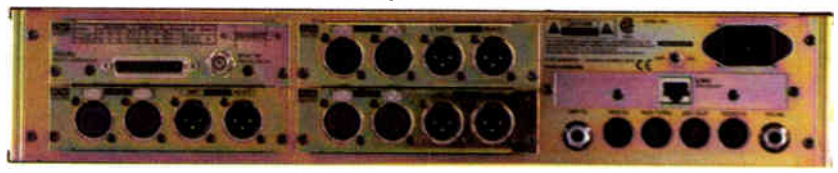
The new RF Sentinel is an auto-backup FM transmitter system that earned Radio World's "Cool Stuff" Award. The Sentinel uses a Redundant Transmitter Controller to sense faults based on preset parameters and switch to the backup when necessary.

The most cost-effective version uses a Crown FM 500 as the exciter for an FM 2000 primary. In the event of a fault, the FM 500

TC Electronic Debuts Processor

The DB-8 is a TV transmission processor that the company says may appeal to radio broadcasters.

It features loudness leveling tools, tight limiting and five-band processing, selectable from one to five bands. The rear connector panel is shown here.



Various formats can be used simultaneously; for example, it is possible to feed an analog stereo signal, a 5.1 digital signal and a mono Webcast from the same unit.

The processor consists of four "engines" that can be routed to the I/O or be cascaded. Engines and internal routing use synchronous 48-kHz sampling and 48-bit processing.

Contact the company in California at (805) 373-1828 or visit www.tcelectronic.com.

BE Offers IBOC-Ready Exciters

Broadcast Electronics calls its FXi 60 direct-to-channel digital FM exciter the first of its kind.

The FXi 60 and its high-powered version, the FXi 250, eliminate analog up-conversion and the accompanying noise. They can accept any inputs and accommodate IBOC installations with a plug-in IBOC interface board.

Two internal SCA generators and an RDS coder are part of the system. They work with the FSi 10 IBOC signal generator to allow operation in IBOC and IBOC + FM modes. The FSi 10 time-aligns FM and IBOC signals for blending and receives audio in the AES format.

The ASi 10 AM IBOC signal generator is available. It provides phase and magnitude directly to a BE solid-state transmitter. It can generate IBOC and AM simultaneously and time-aligns AM and IBOC signals for blending. The ASi 10 receives audio via AES.

Broadcast Electronics is an Ibiquity Digital Corp. licensee and received a Radio World "Cool Stuff" Award for Technical Advancement of IBOC at the NAB show.

Contact BE in Illinois at (217) 224-9600 or visit www.bdcast.com.

World Radio History

Rave Reviews!

"Excellent Product" — Doug Walker, Clear Channel, Cincinnati

"Telos has taken two great products [the Zephyr and the Zephyr Express] and made them better. They listened to the customer." — Raul Velez KNBR, KFOG, Susquehanna Broadcasting of San Francisco

"Telos asked us what we wanted and they put it in there... you can't ask for anything more than that." — Paul Burt, Clear Channel, New Orleans

"It's even easier to use than the original Zephyr." — Michael Black, WEOS, Geneva, New York (NPR affiliate station)

"The most popular ISDN digital transceiver in the country has a fresh new look... Zephyr Xstream, a slick, updated version of [the] familiar Zephyr." — Steve Kirsch, Silver Lake Audio, New York

Telos

www.zephyr.com

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World Radio History

takes over as the primary output. The Sentinel System can incorporate two low-power transmitters, one low- and one medium-power, or two medium-power transmitters. It also manages the antenna feeds between primary and secondary equipment. Earlier models can be incorporated into an RF Sentinel System.

Contact Crown in Indiana at (877) 262-8900 or visit www.crownbroadcast.com.

Dielectric Touts Antennas, Filters

Dielectric promoted several offerings at the show.

The FMVee is an arrow-head dipole line of antennas suited for high-power FM stations that need the advantages of top mounting and combined station operation. Its 20-MHz bandwidth can achieve uniform azimuth pattern circularity for multistation operations. This is achieved through the use of broadband radiating elements in conjunction with high-power element hybrids. The design of the antenna provides precise control of the elevation pattern.

Dielectric FMVee

The Opto-SXFM can combine the outputs of two transmitters with 35-kW power levels to reach a total output of 70 kW. It allows switching between transmitters under power, eliminating the need to power down for switching. It does so using a non-contacting coaxial phase shifter design and provides three operating modes. Extra switch contacts at each position can be used for transmitter readback. The unit is IBOC-ready

The company's line of high-power band-pass and band-stop filters can be customized. The newest versions are 40 percent smaller than previous filters and have low insertion loss. Units with >30-dB suppression at 800 kHz are available. The filters also isolate transmitters of collocated stations and can be used to combine multiple frequencies in a common antenna.

Contact Dielectric in Maine at (866) DIELECTRIC or visit www.dielectric.com.

Musicam USA Releases POTS Codec

Musicam USA brought out its new, low-cost Liberty POTS codec, touted as compact and portable and using an advanced encoding algorithms.

Liberty delivers 15 kHz of bidirectional audio over a normal telephone line with connection rates at or above 24 kbps. Audio end-to-end delay is under 100ms.

If line rates drop below 24 kbps, the codec will reduce high-frequency audio response to maintain audio performance. If line quality changes, the Liberty renegotiates in less than one second. It contains a jack for use with a cell phone.

Other features include dual mixing inputs, independent level controls for monitoring, programmable keys for accessing oft-used phone numbers and menu functions and a free Windows remote control program. Liberty supports bidirectional ancillary data for separate computer data transmission and remote control contact actuation and mixing levels.

Contact Musicam USA in New Jersey at (732) 739-5600 or visit www.musicamusa.com.

QEI Shows Multipower Transmitters

QEI was in Las Vegas with its solid-state Quantum M-Series of 1.2- to 9.6-kilowatt FM transmitters. They use modular power amplifiers in power levels of 1.2 kW to 6 kW at 600-W increments and between 6 and 9.6 kW in 1,200-watt increments.

CAD/CAM techniques and computer-assisted manufacturing were used to produce an internal modular system that is easy to maintain and allows the transmitter to be upgraded to a higher power level in the field. Solid-state design reduced operating expenses because it eliminates tube replacement.

QEI's M-Series Transmitter

The power amplifier modules comprise four FETs combined for 600 watts of output power. A self-aligning connector feeds each module to the high-power, solid-state combiner. This provides reliable, low-loss matching and isolation of the power amplifiers.

QEI manufactures the Quantum E-Series of low-power FM transmitters, in 150-, 300-, 600- and 1,000-watt versions. The units are rack-mounted and carry the same specs as the company's higher-power transmitters. They are suitable for LPFM, studio backup or other applications where low power levels are required.

Contact QEI in New Jersey at (800) 334-9154 or visit www.qei-broadcast.com.

Updated Xtrack Supports Cart Chunk

Digigram released the updated version of Xtrack, its comprehensive suite of audio production tools, at NAB.

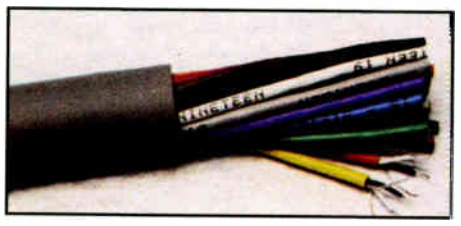
Xtrack 4.3 supports project exchange using the AES31-3 EDL standard to ease collaborative audio production work. AES31-3 provides a standard format for interchanging audio files and editing data and is compatible with multiple computer and proprietary hardware platforms.

The Xtrack upgrade also supports Cart Chunk to facilitate interchange among various broadcast systems. Based on the BWF file format, Cart Chunk is a nonproprietary standard that permits additional metadata to be attached as an integral part of a WAVE file.

Contact the company in Virginia at (703) 875-9100 or visit www.digigram.com.

Dual-Pair Convenience From Gepco

Gepco displayed its D5525EZ cable, a dual version of its thin-profile 5526 series of 110-ohm digital cables. The dual-pair construction provides a convenient way to interconnect the input and output of an AES3 digital audio device over one cable.



Coextruded zip-type construction allows for easy breakout, connector termination and installation. The thin profile achieves smaller bundle diameters in systems with large signal density. To further ease termination, D5526EZ cable has a bonded foil shield with drain wire for quick shield termination.

A nonconductive polypropylene rod stabilizes and maintains impedance as the cable is flexed.

Contact the company in Illinois at (847) 795-9555 or visit www.gepco.com.

RCS Expands Selector Products

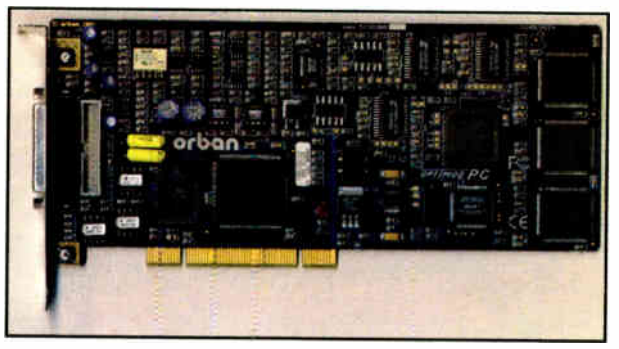
RCS' new products include Selector XV, a Windows database for music scheduling. The company says this upgrade is a response to user input; it is faster and uses drag-and-drop functions.

Selector XV works in tandem with Selector Enterprise, which creates common numbering systems for songs in the Selector database. It is able to organize by regions, ratings and other criteria and can run comparisons between stations in a group.

The Selector Smart Ripper earned Radio World's "Cool Stuff" Award. It takes CD audio, rips it, analyzes it, then "Selectorizes" it. The software can read an

Orban Turns to the PC

In addition to its playful "swag" —with electronic dice, in the Vegas spirit — Orban introduced the Optimod-PC, a PCI sound card with onboard digital signal processing. The company says the DSP provides a loud, consistent sound by performing AGC, EQ, multiband gain control and peak-level control.



The Optimod-PC makes audio signals suitable for digital audio broadcasting, Internet Web- and Netcasting and recording applications.

The card's multiband processing levels and re-equalizes audio input to "major-market" standards, providing polished, produced sound.

Orban also showed version 2.0 software for Optimod-FM 8400, which reduces delay to 20 ms, making off-air talent cueing practical during outside broadcast. An IBOC/Webcasting output option for the 8400 was introduced.

Contact the company in California at (510) 351-3500 or visit www.orban.com.

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audio file and determine the song's tempo, energy, texture, beats per minute, what key the song begins and ends in and whether the ending is fade or cold.

Songs can be imported from other sources and analyzed and added into Smart Ripper. Songs can be exported into multiple Selector databases with one click.

Contact RCS in New York at (914) 428-4600 or visit www.rcsworks.com.

Radia Line Expansion Displayed by Sadie

Sadie exhibited the RADiA Platinum, an addition to its line of professional digital audio workstations. The Platinum is a four-in, four-out turnkey system and includes a Sadie rack-mount workstation.

The system comes with the Studio Audio 19-inch rack mount case, external SCSI interface, Radia PCI processing card, balanced breakout cable assembly and removable 9-GB SCSI audio drive. A 17-inch display and Master Control Panel are included.

The panel includes transport controls, scrub wheel, edit, locate and function keys, motorized faders and time displays.

Other announcements at NAB included the launch of a Rocket Power application with the help of Rocket Network Inc., a production network for audio professionals. Rocket Power was demonstrated for the first time at the NAB show.

Contact the company in Tennessee at (615) 327-1140 or visit www.sadie.com.

Mackie Debuts Broadcast Pro Line

Mackie introduced its Broadcast Professional line of equipment with the Soundscape 32 processor/hard disk recorder and the Soundscape I/O 896 eight-channel audio interface.

One Soundscape 32 provides 32 tracks of 24-bit recording up to 96 kHz sample rates, digital and analog audio I/O, real-time mixing, DSP-based effects and fade processing, low jitter clock timing and synchronization. The unit has two internal IDE hard drives and two pullout drive bays for drives of up to 137 GB each, for more than half a terabyte (TB) of storage capacity.

The Soundscape I/O 896

An expanded Soundscape system can have four units with 128 simultaneous audio tracks played from more than 2 TB of hard drive storage and 112 inputs and 128 outputs.

The I/O 896, developed by Mackie Designs and Apogee, includes eight channels each of AES/EBU digital I/O, analog I/O and ADAT Optical.

The unit supports MADI and optional FireWire I/O. It can support sample rates up to 96 kHz, regardless of format.

Contact the company in Washington state at (800) 258-6883 or visit www.mackie.com.

Tieline Introduces POTS Codecs

Two new POTS codecs were introduced by Tieline Technology at NAB: the Patriot and the iMix.

The Patriot is an economical codec designed for the simple remote broadcast requiring just one or two inputs. It provides an on-screen visual display of telephone connection quality and can be remotely controlled from another Tieline at the other end of the link. An RS-232 port is standard for the use of auxiliary data. It earned a Radio World "Cool Stuff" Award.

The iMix is for more complicated remotes, such as sports broadcasting, and features five switchable mic/line inputs. The mixer section offers intercom buttons on each input channel, allowing off-air communications between headsets, and separate send level adjustments for program feed and local public address system. An optional ISDN interface is available with G.722 encoding, as well as a USB port for connection to a laptop computer. The iMix can be controlled remotely from the far end of the remote link.

Tieline iMix

The Tieline Toolbox Software kit, a PC software package capable of operating a codec from a PC via a serial connection, is provided free with the purchase of either the Patriot or the iMix codecs.

Contact the company in Indiana at (888) 211-6989 or visit www.tieline.com.

Denon Shows Memory Card Audio-Video Player

The DN-V1500 Network Audio-Video Player from Denon features record and playback of linear PCM or MPEG Layer II encoded files using removable memory cards.

Denon's DN-C550R is a dual-disc CD recorder.

The PCMCIA slot for memory can also accept removable hard drives.

The Network Video Audio Player provides a 10/100 Mbps Ethernet port to allow prerecorded material to be uploaded via a network connection. It also supports the creation of play lists to automatically sequence the playback of individual audio and/or video files.

Denon displayed the DN-C550R, a combination CD player and CD-R and CD-RW

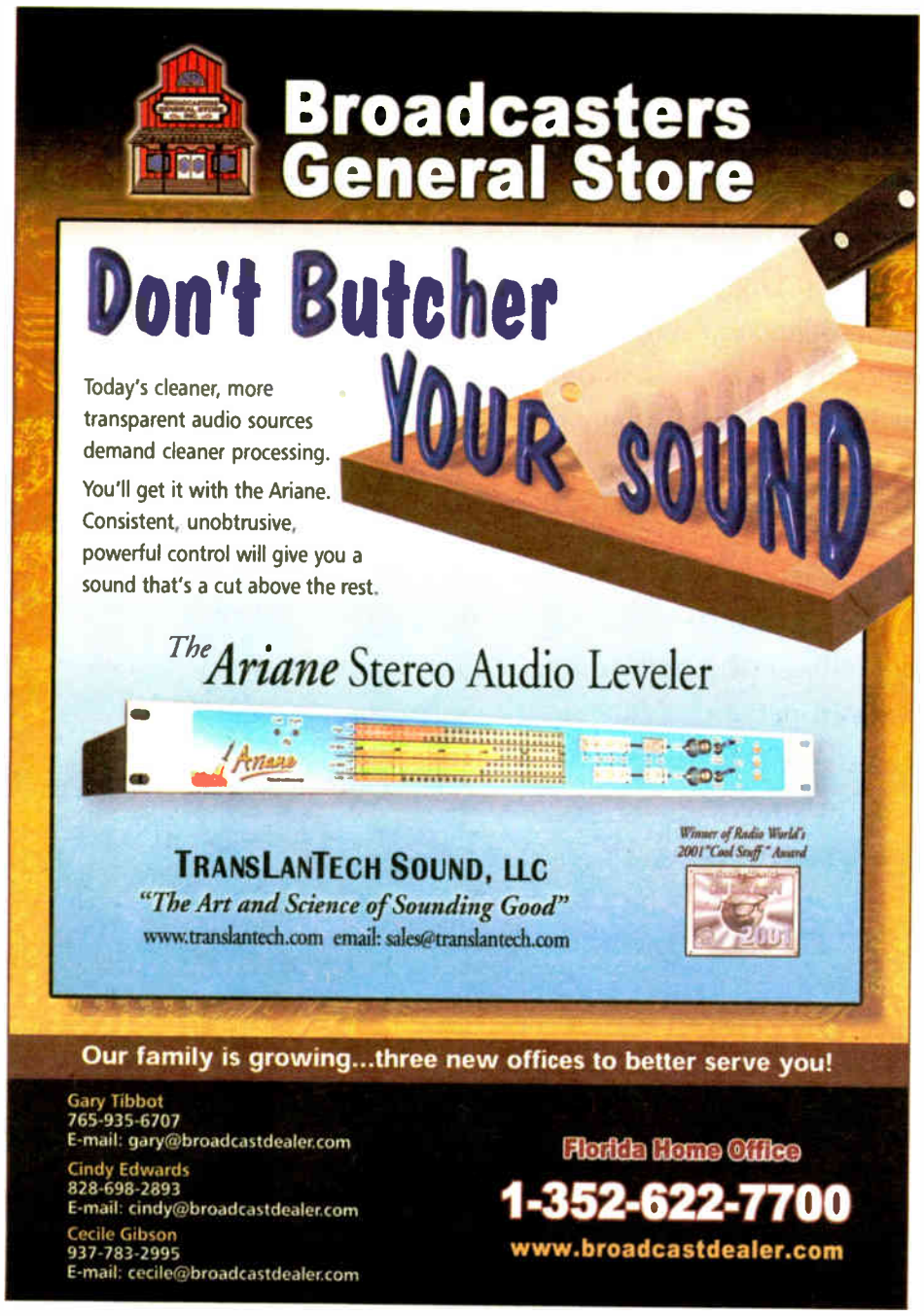
Comrex Lineup Grows

Comrex had two notable products on display at NAB this year, the BlueBox and Matrix codecs. And if anyone won the NAB Fashion Show, it would have to be Comrex, with its Hawaiian shirts patterned with Comrex gear images.

BlueBox offers 15 kHz, high-quality duplex audio over a standard phone line and provides up to 10 kHz on HSCSD GSM wireless service. A cellular interface is available. The BlueBox earned a Radio World "Cool Stuff" Award.

The Matrix codec lets the user broadcast on PSTN, ISDN or wireless service. It delivers 15 kHz on one standard dial line or sends up to 10 kHz on HSCSD GSM wireless service. Options for the Matrix include G.722 and Layer III ISDN operation (with an optional module), battery power and a cellular interface. Two mic inputs — once switchable to line level — one headphone output and one line level output are included.

Contact the company in Massachusetts at (800) 237-1776 or visit www.comrex.com.



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recorder with balanced XLR inputs plus coaxial S/PDIF with defeatable SCMS. A second drive allows for professional dubbing of CDs.

Contact the company in New Jersey at (973) 396-0810 or visit www.denon.com.

Waves Platinum Bundle Grows

The Platinum bundle contains 25 Waves audio processing tools. In addition to the processors that make up the company's Gold bundle, it includes three new processors from the Masters bundle and three processors from the Renaissance Collection 2 bundle.

Waves' goal was to create a comprehensive, quality set of audio processors to provide the audio professional with everything needed in a single, cost-effective package.

Price: TDM version: $4,200; Native version: $2,100.

Contact the company in Tennessee at (865) 546-6115 or visit www.waves.com.

New AM Products Debut From Audemat

New from Audemat is the Goldeneagle AM. Capable of monitoring the quality and continuity of up to 40 AM stations, it can be installed at a transmitter site or in the reception area. It can detect when a measured station is outside its normal tolerances for signal strength or modulation and send an alarm via e-mail or trigger an external contact.

Readings for stations and recorded audio files can be retrieved via browser from the embedded Web server.

Also new is AM Fieldstar, a portable, automatic, mobile field-strength meter featuring a calibrated directional antenna for measurements in the AM band. It earned a Radio World "Cool Stuff" Award.

With an integrated GPS receiver, the AM Fieldstar can be set up on a car and configured to monitor AM field strengths to test signal coverage area or conduct proof of performance measurements. The rotor-mounted antenna is able to track the geographic location of the transmitter and adjust automatically while moving.

Using a laptop PC and MAP POINT software, measured points can be plotted automatically on a map via the standard USB port. The AM Fieldstar also continuously can record audio programming synchronized to the field strength measurements.

Contact the company at (866) AUDEMAT or visit www.audemat.com.

Inovonics Exhibits Modulation Analyzer

The Model 531 Modulation Analyzer has a new design and incorporates new capabilities, such as digitally synthesized tuning, digital alarm presets and built-in subcarrier measurement.

Closeup of the Inovonics 531.

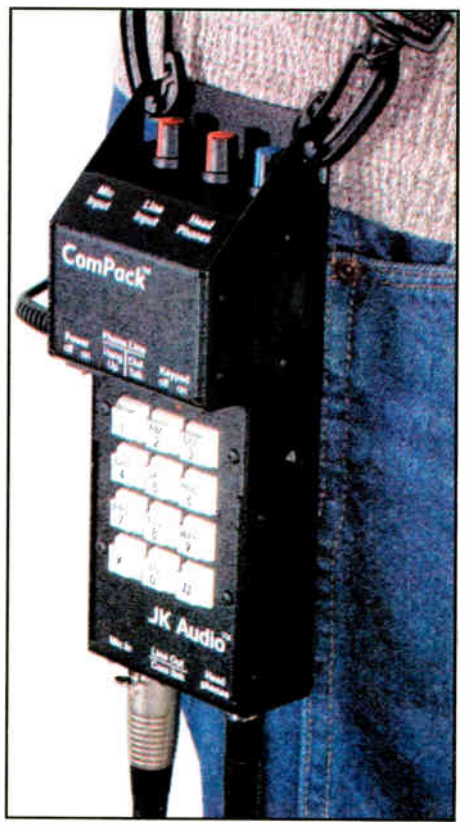
The Model 531 gives a readout of the incidental AM component of the off-air signal. A front-panel headphone jack monitors the noise to help correlate the reading with program material.

Carrier modulation is shown in steps of 1 percent, from 50 to 120 percent, with the highest peak value held above the dynamic total modulation display. The Model 531 also has front-panel multipath and signal strength indicators.

For information contact the company in California at (831) 458-0552 or visit www.inovon.com.

JK Audio Rolls Out Telco Interfaces

The ComPack, a universal telephone interface, was shown for the first time by JK Audio. It allows any telephone system to be used with beltpack intercoms to create communications links over wide areas.



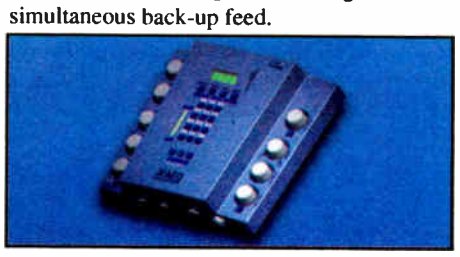
Also new from JK Audio is the Dapter Two, which will connect the output of a remote mixer to a cell phone via its headset jack for remote broadcasting.

And JK Audio introduced the Cell Tap, a cell phone/recorder interface. It allows reporters to gather sound bites over a cell phone for remote interviews.

Contact the company in Illinois at (800) 552-8346 or visit www.jkaudio.com.

Portable Codec/Mixer by AEQ Debuts

The Swing, a portable mixer with an integrated ISDN codec, was on display at AEQ. The Swing features a digital telephone hybrid capable of connecting to an analog line for a simultaneous back-up feed.



With a built-in limiter, the Swing also has two microphone inputs, a mic/line switchable input and an auxiliary channel. Its battery permits operation in the absence of AC power.

The Swing codec is a member of the E@sy family of products, which allow remote control capability, including channel on/off or level. The E@sy family is designed as a system of products that communicate on a common control bus.

Contact the company in Florida at (954) 581-7999 or visit www.aeqbroadcast.com.

ATI Shows Off Two New NanoAmps

The AMM200 Analog Meter Monitor from ATI is a stereo line amplifier and monitor, providing balanced XLR line inputs, amplified outputs, stereo headphone drivers and a stereo LED meter.

The meter ballistics can be switched to monitor either input or output level with a choice of peak or average response.

The DM200 Digital Monitor accepts loop-thru AES/EBU digital audio via 110-ohm XLR or 75-ohm video connections. A 24-bit, 96-kHz D/A converter feeds stereo headphone drivers, balanced audio outputs and a stereo LED meter.

A Data Valid LED indicates lack of data or transmission errors on the digital line.

For more information call the company in Pennsylvania at (800) 959-0307 or visit www.atiguys.com.

Broadcast Richardson Promotes BCC

Broadcast Richardson showed a number of products that it distributes, including the digital automation and editing software of Broadcast Control & Communication.

BCC Edit Pro allows simultaneous, real-time editing and playing of all audio format and samples. It allows you to save to any format. A version with open database connectivity is available, allowing the user to connect to databases such as MS Access.

BCC's BMS 2002 station automation packages allow customers to choose a standard system or have one customized from a series of on-air, production and news modules. It can control mixers, routers, CD players and codecs, and is independent of audio card brand.

Marantz CDR300

It allows for real-time editing, playback and recording of audio formats, bits and sample-rate simultaneously. A new version handles any audio file and audio format possible on the Microsoft Windows platform and address that to a specific output of a sound card. This allows the user to designate the playout of a sound to a certain output regardless of the file and audio format.

Customized Web-radio solutions are available, including the use of BCC's Radio Illustrator.

Also new and on display was the Marantz CDR300, a portable CD recorder with stereo XLR and 1/4-inch mic/line inputs, stereo RCA in/out, digital S/PDIF in/out, three-band EQ, phantom power, automatic level control and limiting.

And the company promoted the PC version of the VoxPro recorder/workstation; it allows multiple users to edit audio files on a Novell, NT or peer-to-peer network. An audio file recorded on a workstation is available instantly for editing or playback on any other. Typical recording storage is 15 hours of stereo material on a 10-GB hard drive.

Contact Broadcast Richardson in Illinois at (800) 348-5580 or visit www.broadcast-richardson.com.

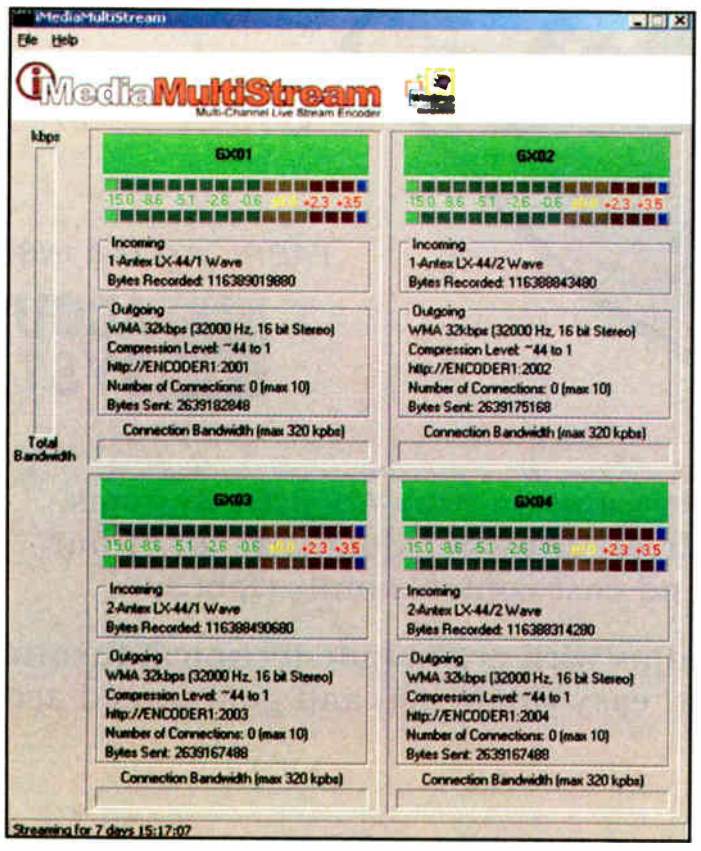
ERI Gears Up for IBOC

Electronics Research Inc. introduced the IBOX medium- and high-power IBOC hybrid combiner. These models are specified to operate over the U.S. FM band with a VSWR less than 1.1:1.

The medium-power IBOX can handle

OMT Releases iMedia Multi Stream

iMedia Multi Stream allows four audio inputs to be converted to up to 16 live Internet streams on one computer. It simultaneously supports Windows Media and Real Media formats at a variety of compression and streaming rates.



As an example, a group of four radio stations in one studio facility could stream up to four differently formatted feeds for each station. The iMedia Multi Stream can generate the necessary range of feeds without the need for multiple servers, from low bit-rate streams intended for modem users to high-speed connections for broadband.

Contact OMT Technologies in Manitoba, Canada, at (888) 665-0501 or visit www.omt.net.

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ERI 960-Mask IBOC Filter With IBOX Combiner

30 kW of power; its high-power counterpart can handle 50 kW. Nominal analog-to-digital output coupling is -10 dB while the analog-to-digital port isolation is specified at greater than 40 dB.

ERI also manufactures the Mask 960 Series of IBOC filters.

Also new is the System Antenna Monitor for master antenna systems. Depending on the user-selected configuration, S.A.M. can monitor critical parameters such as true RMS forward and reverse power, line pressure from 0-30 psi, IR temperature ice detection and moisture.

Contact the company in Indiana at (812) 925-6000 or visit www.eriinc.com.

Countdown at Radio Systems

Radio Systems introduced new features to its CT-6 clock line: down timing, infrared remote control and SMPTE.

CT-2000 Clocks With Up/Down Timer, SMPTE Time Code and IR Remote

CT-6 clocks can run on their own internal crystal oscillators, accept a master-generated serial time signal or accept a top-of-hour closure. They can be configured in master/slave modes with a desktop or large display model serving as the crystal or GPS master.

Up to 50 digital and five analog clocks may be driven by the master units.

Contact the company in New Jersey at (856) 467-8000 or visit www.radiosystems.com.

Altronic Delivers 10 kW Load

Altronic augmented its line of dummy loads with the 6410 10-kilowatt air-cooled model.

The 6410 employs two fans and measures 16 inches wide, 20 inches tall and 24 inches long. AC power requirement is 120 VAC, with 230 VAC optional, at 50/60 Hz.

Altronic makes low-, medium- and high-power water and air cooled dummy loads for up to 1,500 kW. It also has lightning arrestors, calorimetry components and non-inductive resistors.

Contact the company in Arkansas at (800) 482-5623 or visit www.altronic.com.

Mager Makes 'Sound' Choice

Mager Systems Inc. debuted Sound Choice furniture, a modular design with solid-surface countertops, wiring raceways and 1-1/2-inch, 19-ply plywood cabinet construction.

Also new is a computer hard-drive pullout that sits in a carriage that completely pulls out of the cabinet or can sit under a top, and rotates 180 degrees to give total access to computer wiring.

A unique addition can be incorporated into Mager furniture: EAO touch switches. They have no moving mechanical components and are buffered by the solid-surface countertops. Switch choices range from simple touch-sensitive, open-collector-output devices to a configurable keyboard. The implementation of these switches earned a Radio World "Cool Stuff" Award.

Solid surfaces are part of the Mager approach.

One appeal of touch-sensitive switches and keyboards, beyond the unusual aesthetic integration possibilities, is protection from static discharges; there is no direct contact with a metal surface. Switches are protected from spills and aggressive hands.

Contact the company in Arizona at (623) 780-0045 or visit www.magersystems.com.

OMB Introduces New Solid-State FM

OMB added three products to its line of solid-state FM transmitters and amplifiers.

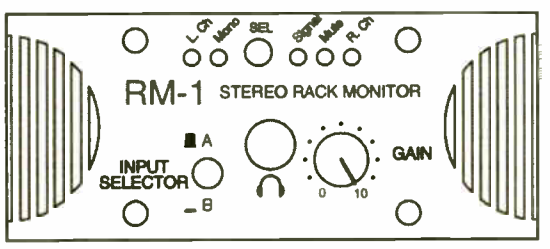
The AM1000S is a 1,000-watt FM power amplifier. Requiring 10 watts of RF input, the AM1000S occupies four rack unit spaces.

The EM 2000S is a 2 kW solid-state FM transmitter with output power adjustable from 500 to 2,000 watts. The EM 10000 S is a 10-kW solid-state FM transmitter occupying 45 rack units with five combined AM 2000S power amplifiers. A single AM 2000S is the power amplifier employed in the EM 2000S.

Insert Tab A

How to Monitor in a Tight Situation

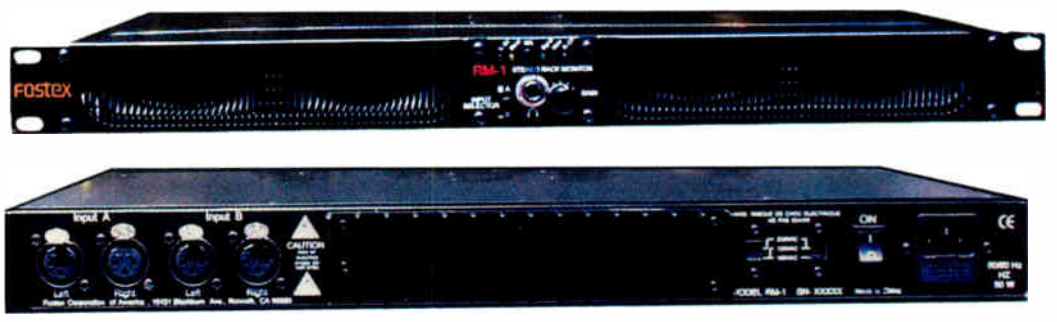
The new RM-1 is the ideal solution for monitoring needs in tight industrial environments. It's the perfect speaker for machine rooms, VTR monitoring, surveillance, mobile and stationary control rooms, theme park applications or any other situation where monitoring is needed and space is tight.



Features include:

- Dual Stereo Inputs with independent volume controls.
- Switchable Matrix (L/R/Mono/Stereo) with high intensity multi colored LED's which tally the mode selected.
- Signal Presence/Amplitude Indicator.
- Balanced and Unbalanced I/Os.
- Universal Stereo Headphone jack with ample volume for noisy machine room environments.
- Fully shielded to prevent interference with video monitors or VTR tape machines.

The RM-1 employs a unique new driver technology that results in outstanding frequency response, considering the limited space enclosure. This revolutionary transducer was developed by Foster Electric, the parent company of Fostex America.



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Models feature 70-percent efficiency and employ forced air cooling.

Contact the company in Florida at (305) 477-0973 or visit www.omb.com.

Nautel Is Ready for AM IBOC

Nautel Ltd. introduced the AM IBOC- and DRM-ready NDd and XLd series of solid-state AM transmitters.

Nautel's IBOC Exciter

Also new is the NE IBOC exciter, which can be retrofitted in the field by a station engineer with the installation of an upgrade kit for ND and XL series AM transmitters. The company was recognized with a Radio World "Cool Stuff" Award for Technical Advancement of IBOC DAB.

On the FM side, the new NE-30 analog FM exciter serves as the backbone of the Nautel FM3.5, FM5 and FM8 transmitters.

Also new in FM is a single-phase version of the Q20, a 20-kW solid-state FM transmitter.

Contact the company in Maine at (207) 947-8200 or visit www.nautel.com.

VoxPro PC 3.1 Ships

Audion Laboratories is shipping VoxPro PC 3.1.

Registered PC 3.0, 3.05 and 3.06 users receive free upgrades. The company provides software upgrades for one year following any VoxPro PC software purchase.

New features in VoxPro PC 3.1 include the ability to link multiple VoxPro PC workstations through an NT, Novell or peer-to-peer station network via VoxPro PC Network software.

New features include exporting multiple files in WAV, Windows Media and AIFF; importing WAV, Windows Media and AIFF files; sorting recordings in folders by name, length and last modified date; copying and moving multiple recordings from folder to folder or user to user; deleting multiple recordings for easy file cleanup; and improved administrative functions.

Contact the company in Washington state at (206) 842-5202 or visit www.audionlabs.com.

Kintronic Labs Mates PCS/Broadband Wireless to AM

Kintronic Laboratories offers two isocouplers that allow PCS and wireless Internet antennas to be mounted on "hot" AM towers.

The FMC1.9G-PCS covers the range of 1.85 to 2.05 GHz; its counterpart, the FMC2.4G-SS, covers 2.4 to 2.5 GHz. Custom isocouplers for other wireless telecom bands are available. Six of these isocouplers, a common configuration in a PCS installation, can be mounted on a single, custom fabricate plate.

The company says they use a unique microwave coupling technique. According to President Tom King, a 3D electromagnetic model was developed at Los Alamos National Laboratory to define the initial engineering design, which was refined through R&D to optimize bandwidth and insertion loss features.

Kintronic Labs also has been selected by Comet North America to be its exclusive after-market North American distributor of vacuum fixed and variable RF transmitting capacitors, used in ATUs phasing, filtering and diplexing assemblies.

Contact the company in Tennessee at (423) 878-3141 or visit www.kintronic.com.

Videoquip Releases Audio Offerings

Videoquip Research Ltd. showed off the ADM-1 AES/EBU digital mixer. The unit reduces the level of the Normal signal when mixed with the Audio Over signal.

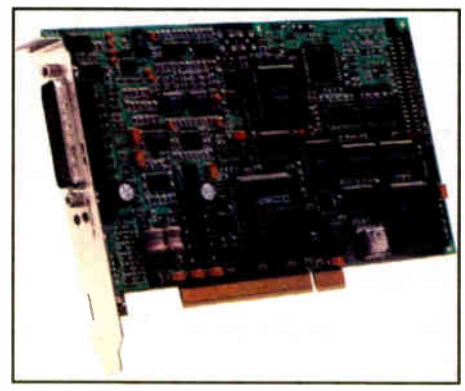
Videoquip also touted the UVM-6 universal AC line voltage monitor. The unit works as an interface that allows a host computer to measure and monitor six different AC line voltage sources.

Front and Rear Views of the ADM-1 AES/EBU Digital Mixer

Contact the company in Ontario at (888) 293-1071 or visit www.videoquip.com.

AudioScience: 'Built for Broadcast' Theme

It's an effort the company calls "Built for Broadcast." AudioScience developed and licensed technologies aimed at the broadcasting market.



MRX allows digital mixing of multiple streams of audio with differing formats and sample rates. SoundGuard uses multilayer transient voltage suppressors to attenuate high-voltage surges.

AudioScience also showed off the ASI6114 and ASI4342 Digital Audio Adapter cards. The ASI6114 provides four stereo outputs, one stereo input, one record stream and four play streams. The card features both analog and digital interfaces and offers multiple compression format choices. The ASI4342 digital audio adapter provides native MP3 playback for PC-based broadcast audio.

Contact the company in Delaware at (302) 324-5333 or visit www.audioscience.com.

Antex Shows LX-24M, Media Director

Antex Electronics highlighted the Model LX-24MBD digital audio adapter at NAB2002. The updated card now features stereo digital I/O and the addition of an ADPCM codec to the existing PCM and MPEG Layers 1 & 2 codec for the benefit of Legacy customers.

The Antex Model LX-24M Digital Audio Adapter

Antex also showed off the latest Media Director Intelligent Digital Appliances. The devices are network, Internet and satellite appliances designed to manage the delivery, storage and playback of audio and video content for broadcast networks.

Contact the company in California at (800) 338-4231 or (310) 532-3092 or visit www.antex.com.

CartWorks/dbm Systems New Offerings

Cartworks/dbm Systems showed off its new Audio Surge transient voltage protectors. Audio Surge devices protect high-end, professional, broadcast and consumer audio gear from damaging lightning or power surges.

The company also featured its line of CartWorks digital audio solutions for live-assist, satellite automation and music on hard drive. Enhanced Internet features including Web site content generation and remote voice tracking were demonstrated. CartWorks supports all major digital audio formats and the Cart Chunk standard.

The company also touted the Pocket Radio Station, which won a Radio World "Cool Stuff" Award. The Pocket PC device allows the user to check and edit traffic and music schedules, run a remote broadcast with no studio personnel or remotely perform most broadcast tasks from virtually anywhere.

Contact the company in Mississippi at (800) 795-7234 or (601) 856-9080 or visit www.cartworks.com.

Prophet Rolls Out Radio Products

Prophet Systems Innovations hit the show floor this year with the Remote Buddy.

The audio/video player stores and plays back files and is touted as the ultimate creative signage tool and a way to brand your station, increase sales and enhance promotional events.

PSi also released the NexGen Digital NS. The digital automation system is available for as low as $9,999. The On-Air NS system will handle overnights, satellite programming and live assist for a single station, with the option to add a Digital Reel-to-Reel or VoiceTRAC option, or a second broadcast station.

A new initiative called eProphet serves broadcasters and pilots with products on the

Belar Examines AM Spectrum

Belar was at NAB exhibiting "The AM Wizard," model AMMA-2, a digital AM modulation monitor.

Developed for the Voice of America, it will monitor conventional and new carrier-controlled MDCL modulation techniques. It is IBOC-compatible and uses FIR digital filters with stop-band attenuations of 60 dB at 5 kHz or 8 kHz.

The AMMA-2 uses digital signal processing, resulting in THD and IM distortion levels below 0.1 percent at up to 99 percent modulation. The AMMA-2 features an operating frequency range of 250 kHz to 30 MHz with a 1 volt RMS sensitivity. It replaces the AMMA-1.

Also new are features added to the CSA-1 2 MHz FFT Spectrum Analyzer. The CSA-1 has nine user-definable "masks" that include AM NRSC as well as an FM mask. Using an external IF down-converter such as the Belar DC-4 or FMMA-1 option 02 650 kHz IF output, the CSA-1 can perform FM spectrum measurements.

It has selectable bandwidth resolutions of 250 and 500 Hz. For audio use, it accepts AES/EBU and analog inputs, single- or dual-channel displays, with resolutions down to 1 Hz.

Contact the company in Pennsylvania at (610) 687-5550 or visit www.belar.com.

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Denon Canada, Inc., 5 - 505 Apple Creek Blvd. Markham, Ontario L3R 1B5 (905) 475-4085

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company's Web site.

Contact the company in Nebraska at (877) 774-1010 or visit www.prophetsys.com.

Tube Rebuilder Econco Goes for New

The owners of Econco, realizing that years of tube rebuilding gave them the expertise to build new stock, introduced a line of newly manufactured RF tubes.

The ENT (for Econco New Tubes) product line is available now and includes high-power RF tubes such as the 3CX3000A7, the MR1040 and 3CX15000A3, manufactured in the company's Woodland, Calif., facility.

The company has developed its own original models: the 3CX10,000E7 and 3CX15,000E7. Still to come are several 4CX models.

Contact the company in California at (530) 662-7553 or visit www.econco.com.

New Features Enhance Netia Automation

The Windows NT-based Radio-Assist 7 digital automation system from Netia now includes Air-Push, which supplies playout devices with metadata relevant to items currently airing or being Webcast.

Air-Push provides text, DAB information or an HTML page to a Web server or places it on the network.

Radio-Assist 7 also includes Web Dispatcher, which performs conversion of audio clips to be automatically converted to Real G2 audio or MPEG4 format and published on the station Web site.

These features are augmented by a full multitrack recording and editing environment, a "snippet" editor designed for editing interviews and news actualities, and full automation or live-assist operation.

Netia launched a new version of Music-All, for music scheduling, and promoted DBShare automation for managing database access.

The company said it is fitting out Sporting News Radio in that network's facilities in Chicago.

Contact the company in New Jersey at (973) 575-9909 or visit www.netia.net.

Superior Now Distributing Cyberex

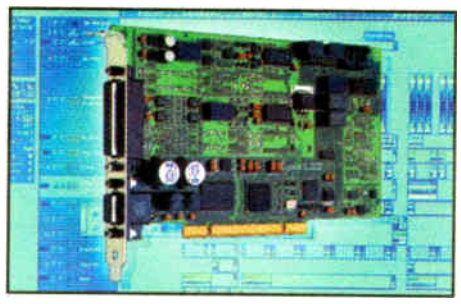
Assuring safe and efficient electrical transfer in the event of power disruption is the job of the Cyberex Digital Static Transfer Switch, available from Superior Electric.

The high-speed system assures instantaneous power transfer in the event of severe power fluctuations — under- or over-voltages, deviation from 60 Hz frequency and phase errors — and does so without any danger to upstream equipment or technicians vulnerable to injury from live wires.

Contact Cyberex in Ohio at (440) 995-3200 or at www.cyberex.com, *or Superior Electric at (860) 585-4500 or* www.superiorelectric.com.

HHB Has PortaDrive, Lynx

HHB Communications said a new eight-track location sound recorder will ship later this year. The PortaDrive combines 24-bit/96-kHz multichannel recording with mixing facilities in a portable package that records audio onto a removable 2.5-inch hard drive in BWF and SDII formats.



Lynx L22 192 kHz PCI Digital Audio Card

Also on display was the CDR830 BurnIT Plus, a pro CD recorder. It adds features to the existing BurnIT including balanced XLR analog I/O with line/mic input gain switching, balanced XLR digital I/O, word clock input and parallel remote input.

Lynx Studio Technology, distributed in the United States by HHB Communications, has introduced the Lynx L22 192 kHz PCI Digital Audio Card, a professional audio interface supporting two channels of 24-bit, 200-kHz A/D and D/A conversion, AES/EBU and SPDIF I/O, and 16 additional channels of digital audio via optional LStream modules.

And HHB said Kamesan, a maker of audio products for film and broadcast, appointed it as the exclusive U.S. distributor.

Contact the company in California at (310) 319-1111 or visit www.hhbusa.com.

Broadcasters General Store Displays Ariane

Broadcasters General Store featured Ariane from Translantech at NAB2002.

Ariane is an audio leveling device for wide-ranging or unpredictable program levels. Smooth feed RMS multi-band level control in a stereo matrix environment makes the Ariane stereo audio leveler suitable for on-air pre-processing production dubbing of unattended feeds.

The product earned a Radio World "Cool Stuff" Award at last year's convention.

Contact Broadcasters General Store in Florida at (352) 622-7700 or visit www.broadcastdealer.com.

G-R EAS-1 Unit Enhanced

Gorman-Redlich has enhanced its EAS-1 Emergency Alert encoder-decoder with features for radio and television users.

The EAS-1 is available with an optional telephone interface to insert emergency messages from a remote location using a DTMF telephone keypad.

It also is available with a video character generator to create a "lower-third crawl" for TV systems. The unit includes two minutes of 5-kHz audio storage for message forwarding, programmable relays for automation interfacing and a 20-button keypad for easy operation.

The EAS-1 lists for $1,750.

Contact the company in Ohio at (740) 593-3150 or visit www.gorman-redlich.com.

Moseley 'Axxcelerates'

The Axxcelera subsidiary of Moseley introduced the AB-Extender, a digital fixed broadband wireless alternative to T1 lines and HDSL, offering long-range operation in an inconspicuous package.

The AB-Extender is a self-contained device shaped like a square paddle. It uses Time Division Duplexing (TDD), allowing upstream and downstream traffic on a single RF channel. It operates in the unlicensed 5.3 and 5.8 GHz bands, claims up to seven miles of operating range, and takes a direct digital connection via 10baseT and a typical RJ45 jack.

This joins the Moseley product lineup, which includes the Starlink Composite digital STL, now ready to handle an IBOC transport channel and MPEG Layer III ancillary audio channels. Product literature claims system gain of better than 20 dB over equivalent analog STLs.

Contact Axxcelera and Moseley in California at (805) 968-9621 or visit www.axxcelera.com *or* www.moseleysb.com.

Encoda: 1 Million Invoices Processed

Encoda Systems said its electronic invoicing (EI) system, Spotdata, has processed 1.2 million invoices representing a total dollar value of more than $7.7 billion.

Spotdata Electronic Invoicing is for the delivery of invoices from television stations, radio stations and cable networks to advertising agencies, and has been implemented by many stations and agencies. The system allows advertising agencies, media buyers and in-house agencies to download invoices electronically from broadcasters as well as cable operators, eliminating the need for paper invoices and dramatically speeding the reconciliation and payment processes.

The number of licensed users on Spotdata in North America exceeds 950 stations and networks, as well as 220 advertising agencies and media buying companies.

The company also promoted Paradigm 5.0, a Windows-based integrated solution built on a relational database for sales, traffic, program management and scheduling, material management, billing, revenue reporting and yield management, and digital transmission management.

For information contact the company in Colorado at (303) 237-4000 or visit www.encodasystems.com.

Octiv Touts Online Processing

Audio enhancement company Octiv is offering two new software products: OctifierSolo and OctifierPro, applications designed for on-demand processing of digital music libraries for Internet distribution, incorporating its OctiMax multiband audio dynamics processing technology.

The applications help maximize the aural impact of digital music while minimizing sonic differences that occur among cuts, genres and file formats.

The company says its Octifier line is designed to deliver a more consistent and pleasing listening experience from disparate

ENCO Offers Upgraded Products

ENCO Systems continues to enhance the core DADpro32 digital audio delivery and storage system.

The system now includes native support for IBOC datacasting, updated user interface tools and improved communication abilities with AP's ENPS and Avid's iNEWS.

Qed Phone Editor

ENCO also showed off the Qed phone editor, which runs on a Pentium III CPU with Windows 2000 and uses a Digigram DSP board. Qed now supports using the Mac-based VoxPro control surface as well as its own jog/shuttle controller.

Contact the company in Michigan at (800) 362-6797 or (248) 827-4440 or visit www.enco.com.

Eventide Shows DSP4000B+

Eventide introduced its latest application-specific effects processor for broadcast.

The DSP4000B+ has specialized algorithms from sound designer Jay Rose and is based on the new DSP7000 signal processing platform.

The unit offers dozens of audio environments, sound effects and audio backgrounds. It is compatible with Eventide's new remote EVE/NET control. It is user-programmable and web-updateable with Eventide's free VSIG Windows application.

Contact the company in New Jersey at (210) 641-1200 or visit www.eventide.com.

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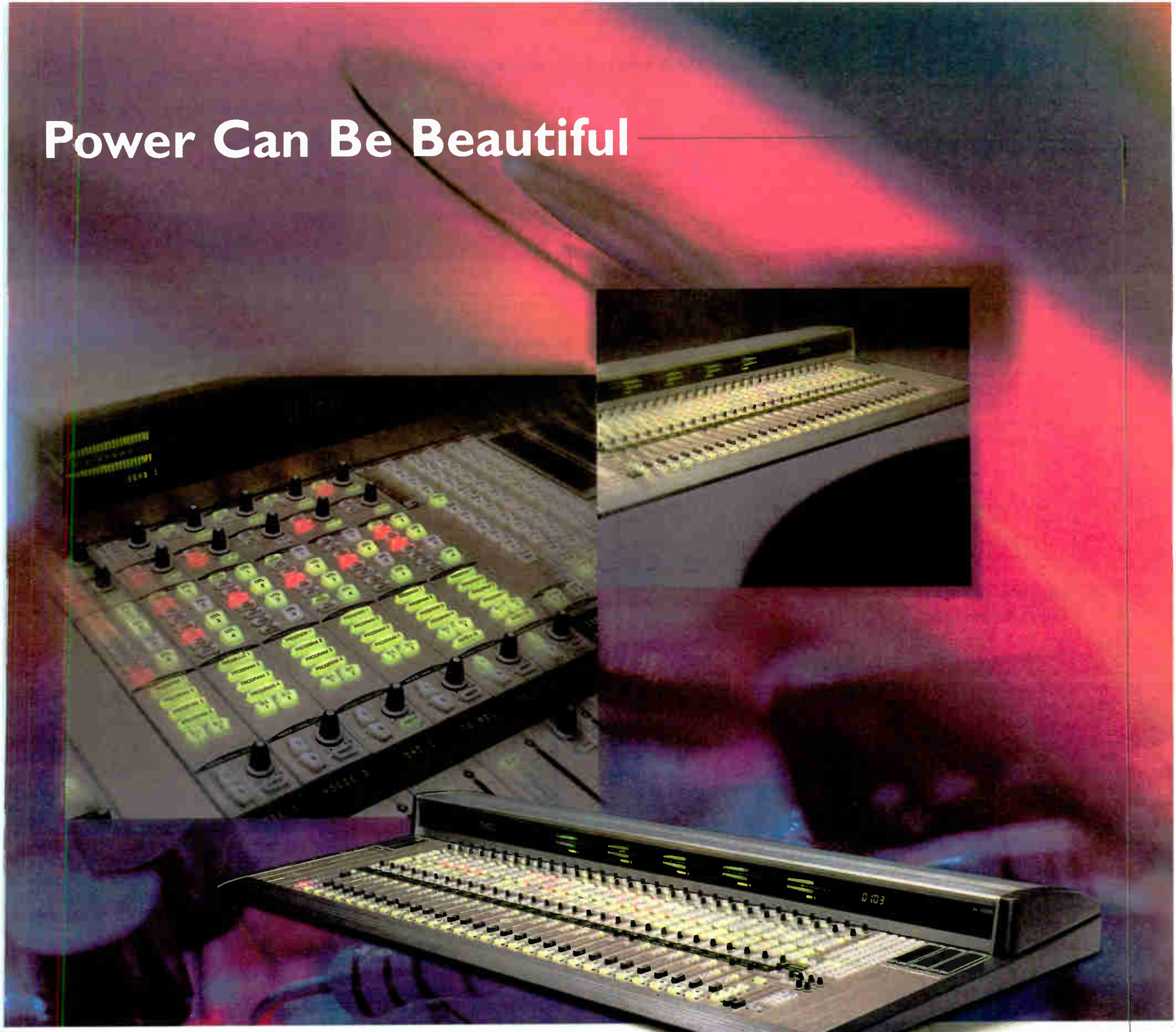
Power Can Be Beautiful



Sure, it's the best looking broadcast console you've ever seen. But, beneath the sleek, elegant exterior beats the heart of a true warrior! Harris' BMX*digital* by Pacific has everything you need to win the digital revolution. Whether it's the number of output buses, mix-minuses, off-line mixes, stereo sends, direct IFB's, monitor inputs and outputs, inter-communication paths or logic interface, BMX*digital* offers more.

Incredible Flexibility including all input modules accommodate analog and digital signals without reconfiguring, swapping, or even removal from the mainframe.

Amazing Adaptability with easy storage, recall and reconfiguration of set-ups for various day parts, and built in connectivity to routing switchers, digital storage systems and other networked sources.

Low Cost of Ownership by design, Harris' BMX*digital's* true cost of installation, operation and maintenance is markedly lower than other consoles.

Legendary BMX Reliability is what you expect in a Harris console by Pacific. The table pounding of your resident shock jock won't faze this beauty.

Harris' BMX*digital* by Pacific. Beauty that's a lot more than skin deep.

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source material, through the use of multiband dynamics processing, custom transcoding and sample rate conversion.

OctifierSolo is shipping for $599; OctifierPro costs $1,499. A 30-day trial version is available.

Contact the company in California at (510) 280-5000 or visit www.octiv.com.

Henry Has Patchbox

The Henry Patchbox is a stereo output multiplier that distributes the analog stereo output of an audio mixer to the inputs of peripheral equipment.

It can be used to feed a mixer's output to sound gear such as DAT recorders, sound cards, CD recorders and tape decks.

This is a "passive DA" that creates 11 stereo outputs from a single stereo input. Five outputs are balanced, six are unbalanced. Professional and consumer gear can be used. All outputs can be used simultaneously without interaction or signal degradation.

The company says it needs no power, and adds no noise or distortion to the audio signal. Price: $195.

Contact the company in California at (626) 355-3656 or visit www.henryeng.com.

Sennheiser Has New Boomsets

Sennheiser introduced the HMD 280 and the HMD 281 boomsets. They feature a light, ergonomic 102dB SPL headphone monitoring system, which attenuates ambient noise by 32dB via a closed-back, circumaural design.

The models both have a super-cardioid microphone mounted on a flexible, acoustically isolated boom. The earpiece attenuation, low structure-related noise and high mic directivity, make these suitable noisy production environments.

The HMD 280 has two earpieces; the HMD 281 has one. The stereo HMD 280 will find use with rental companies, ENG personnel, live presenters, reporters and intercom operators. A single cable carries monitoring and talkback signals. Users can mount the boom from either earpiece; the unit collapses for transport.

The dedicated, single-earpiece HMD 281 will find use in talkback applications with TV and film camera operators. Users can wear the earpiece on either side.

The HMD 280 lists at $249.95 and the HMD 281 at $219.95.

Contact the company in Connecticut at (860) 434-9190 or visit www.sennheiserusa.com.

Symetrix Shows Delay

Symetrix showed the 6100 Broadcast Audio Delay at NAB2002.

The delay is the first product in the AirTools family. It is a 24-bit digital delay unit that gradually and unobtrusively delays the program until up to 20 seconds of full-bandwidth stereo audio is stored in memory.

Users prevent offensive material from broadcasting by dumping the buffer, effectively removing said material.

After the dump button has been pressed, the 6100 automatically begins to time-expand the program audio until the full delay is attained.

The 6100 also features automation interface for network broadcasts.

Contact the company in Washington state at (425) 787-3222 or visit www.symetrixaudio.com.

10 Years of Silicon

Silicon Valley Power Amplifiers marked its 10th anniversary by showing the 10/1250 FM broadcast amplifier.

In an 82-pound unit that occupies seven rack spaces, the 10/1250 amplifies a 10-watt exciter input to provide 1.25 kilowatt output power.

The 10/1250 employs solid-state construction in a modular design; the broadband design requires no tuning. It is part of a line that ranges in output power from 150 to 3,500 watts.

Contact the company in California at (408) 986-9700 or visit www.svpa.com.

AETA Is E-Z

AETA Audio used the convention to promote its Scoop E-Z portable audio codec.

It handles POTS and ISDN service and Inmarsat satellite terminals; an upgrade is available for GSM/wireless.

Features include a two-channel mixer, selectable compressor and limiter, XLR mic/line connectors and two headphone jacks.

Also on display were the MIX2000 portable audio mixer, PSP3 portable stereo preamp, HiFiScoop 3 codec line and Scoop Reporter II codec.

Contact the company in New Jersey at (973) 659-0555 or visit www.aetausa.com.

Energy-Onix Serves Up AM, FM

Energy-Onix promoted its medium-wave AM Pulsar 1000 and 5000 transmitters. The 1 kW version has three 400-watt, hot-pluggable drawers; the 5 kW model has three 2 kW drawers. Both are capable of 145 percent modulation.

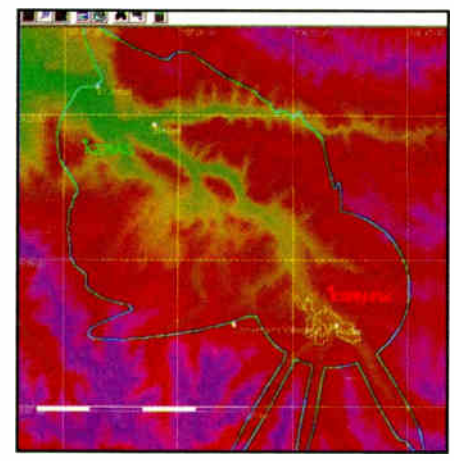
Also on display was the company's FM line, which includes a solid-state 5 kW transmitter, a single-tube 25 kW and a 10 kW model.

The company also offers microwave STL gear, the RPU "Roadcaster" system and the Internet STL Tele-Link, available in two-, four- and eight-channel versions.

Contact the company in New York at (518) 758-1690 or visit www.energy-onix.com.

rfSoftware Detects and Investigates

rfSoftware Inc. came to NAB with its latest products, rfDetective-FM and rfInvestigator-FM.



The former is an engineering tool that performs FM 73.207 spacing studies. Features include automatic scanning for open channels, simple and advanced FCC searches, display of AM station locations, and the ability to download a database from the FCC.

rfInvestigator-FM encompasses the same features, plus 73.215 spacing and 73.333 contour studies, 30-second terrain databases (3-second data available), 30-second population database, antenna pattern design tool and terrain profile and path loss analysis.

Contact the company in Florida at (352) 336-7223 or visit www.rfsoftware.com.

Dorrough Goes Remote

Dorrough Electronics told attendees about its RW-100, a remote control capable of being hooked to up to four remote meters.

The RW-100 supports both analog and digital versions of the Dorrough 280 and 380-D meters. Phase display and phase alert are among available on the remote.

The booth also featured a general-purpose audio test generator, functioning in both the analog and digital displays.

Contact the company in California at (818) 998-2824 or visit www.dorrough.com.

Switchers and R/C From Broadcast Tools

Broadcast Tools exhibited its SRC-32 serial remote control, equipped with 32 opto-isolated and CMOS/TTL compatible inputs, 24 open-collector outputs and eight relay outputs. The SRC-32 can be controlled locally through an RS-232 serial port or through an optional Ethernet interface.

The company also showed its ACS 8.2 and SS 16.4 switchers. The ACS 8.2 has eight stereo inputs, two stereo and two monaural outputs; the SS 16.4 can accommodate 16 stereo inputs, four stereo and four mono outputs. The latter earned a Radio World "Cool Stuff" Award. Both can be cascaded to provide additional outputs/inputs.

Contact the company in Washington state at (360) 854-9559 or visit the company Web site at www.broadcasttools.com.

Sonifex Offers Headphone Distribution, Mic Amp

The Sonifex Redbox line of analog and digital audio interfaces now includes the RB-HD1 Single Stereo Headphone Amplifier and the RB-DHD6 Digital Six-Way Headphone Distribution Amplifier. Both occupy one rack space.

Also new are a D-to-A converter and a dual digital microphone amp.

Rear View of the Sonifex RB-DMA2 Dual Digital Mic Amp

And the company's Net-Log multichannel network audio logger now is supplied with a 60 GB hard disk. It is designed to be operated and controlled by PCs on a network.

Contact distributor Independent Audio in Maine at (207) 773-2424 or visit www.independentaudio.com.

Neumann Pushes Digital Mics

Neumann is promoting its Solution-D, which it says transfers the dynamic range and fidelity of the best analog studio microphones into the digital domain.

A new A/D conversion process, a special synchronization method and remote control of typical microphone parameters and mixing console functions are given as major advances.

The first Solution-D digital products are the Digital Microphone D-01, the Digital Microphone Interface DMI-2 and software that permits operation and remote control of the microphone.

Contact the company in Connecticut at (860) 434-5220 or visit www.neumannusa.com.

Burk Offers ARC Plus

The ARC Plus from Burk Technology is a line of transmitter remote control systems for full-time, multisite and dial-up remote facilities management.

Each group can include 16 sites with 256 channels per site; the system is designed to accommodate almost unlimited expansion.

Features include large displays for meter readings and graphs and a jog wheel for changing sites or channels. For commands, Smart Switches display user-defined labels for each channel on the buttons. Status is displayed on mappable tri-color LEDs.

The AutoLoad Plus software is used to set up and configure the ARC Plus from a computer. User-accessible labels, limits and configuration information can be entered and uploaded to a connected site. ARC Plus images can be downloaded for backup.

Macros allow the system to take corrective actions without a dedicated computer. Optional Enhanced Speech Interface lets the user monitor and control by telephone. Sixteen sites can be accessed with a phone call.

Contact the company in Massachusetts at (800) 255-8090 or (978) 486-0086 or visit www.burk.com.

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Tascam Debuts Console Controller

The new Tascam US-224 Digital Audio Workstation Controller is a simplified version of the company's US-248 controller. It interfaces with Windows and Mac platforms through a USB port, and is compatible with applications that accept standard MIDI controller messages. It gives users control over multiple software faders via four hardware faders that are selectable in banks with a button push.

Tascam's New US-224 DAW Controller

Version 1.60 software for the company's DM-24 Digital Mixer is available at the company's Web site. Operators can use the upgrade to add 16 channels, and have improved MMC functionality for several DAW applications and routing capabilities.

Tascam introduced its DS-M7.1 Professional Digital Surround Monitor Controller for surround production suites equipped with digital consoles.

For more information contact Tascam in California at (323) 726-0303 or visit www.tascam.com.

Wicks Debuts Software, Upgrades

Control Tower is a new Wicks Broadcast Solutions software system for data warehousing of information from traffic and billing systems on a corporate, radio group level. Salespeople and financial officers have real-time access to group financial information. Data is gathered electronically through multiple traffic systems. It also provides analysis and reporting tools.

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The new Universal Contract Entry software is for sales representatives' use. Salespeople can enter contracts with a "point and click" user interface. It's customizable and integrates with Wicks traffic and billing systems.

DeltaFlex 4 is the new version of DeltaFlex traffic and billing systems for large stations and groups. It has an upgraded GUI, an Exceptions Processing function for maintaining an audit file on every change made to a contract order line and improved inventory, sales and credit management functions.

For more information, contact Wicks Broadcast Solutions at (800) 547-3930 or visit www.wicksbroadcastsolutions.com.

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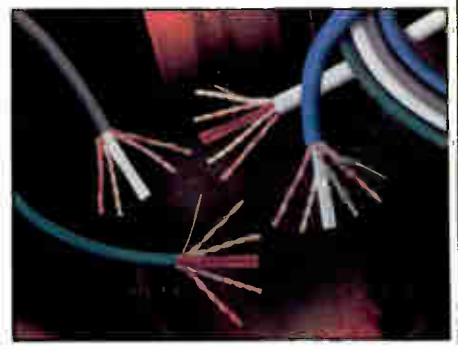
Belden Quad Snake, Water-Block Cables



An attention-grabbing slight-of-hand magician helped Belden introduce several lines of cables in Las Vegas.

The company's 7884A series Flexible Quad Snake Cables connect multiple microphones to patch panels, mixer boards or sound rooms. Belden says its 7884A cables combine noise rejection technology with enhanced flexibility for remote and in-studio applications.

New 50-ohm RF coaxial cables from Belden offer water-block protection in wet environments. A gel-filled interior provides water-block protection.

The cables feature gas-injected foamed high-density polyethylene (HDPPE) insulation and a Belden DuoBond II+ 95 percent tinned copper braid shield with water-blocking gel. The cables are available in standard lengths of 500 and 1,000 feet.

For more information, contact the company in Indiana at (765) 983-5200 or visit www.belden.com.

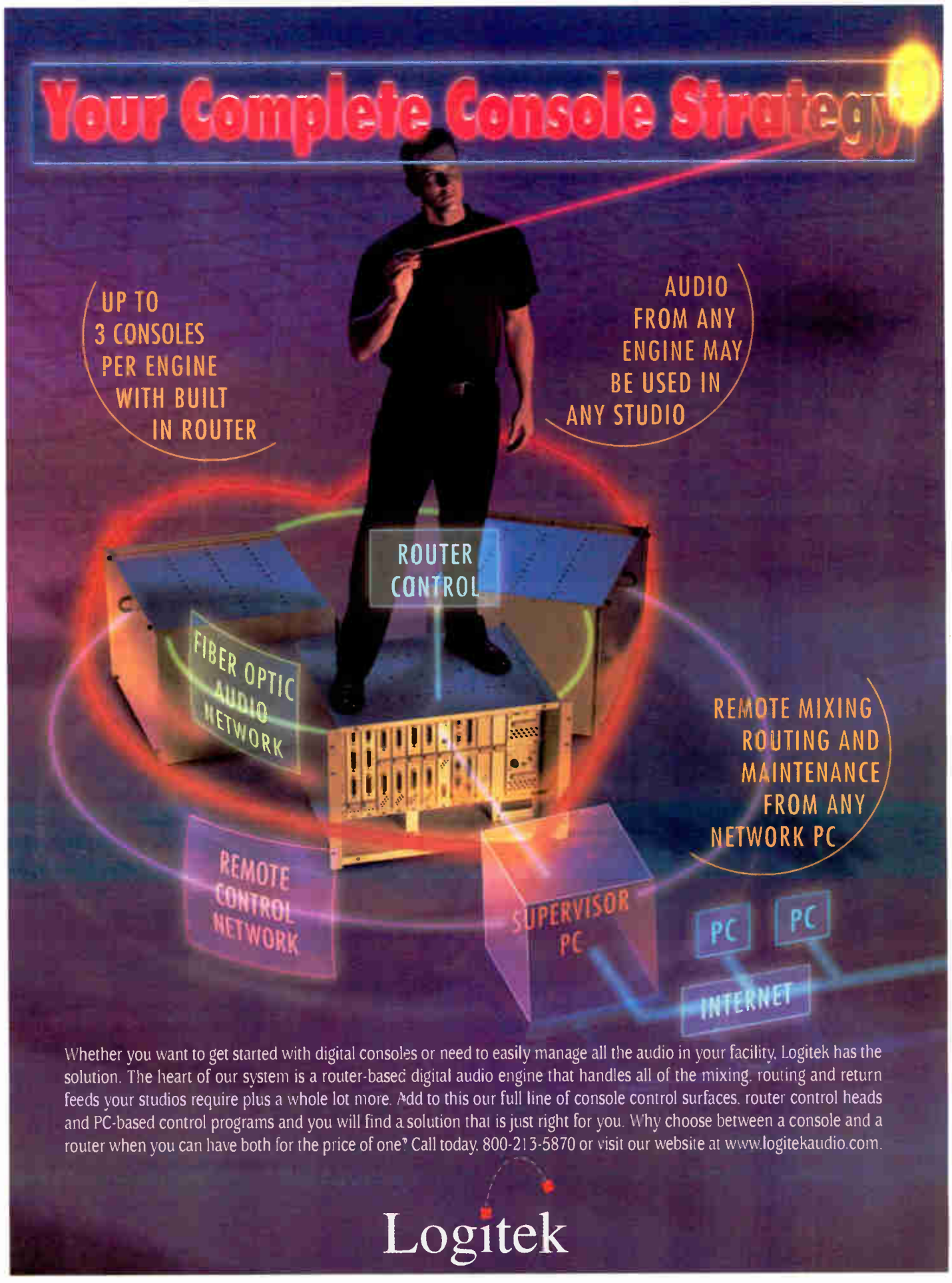
Doyle to Handle Three-Station Move

Doyle Technology Consultants announced that it has been chosen by Fisher Broadcasting to relocate three radio stations — KOMO(AM), KVI(AM) and KPLZ(FM) — to the new Fisher Plaza complex in downtown Seattle.

The move will consolidate Fisher's Seattle broadcast assets into the company's state-of-the-art facilities at Fisher Plaza. The project includes three on-air control rooms, two talk radio studios and four production rooms, including the studios used for "The Michael Medved Show."

The project, which will be completed by September, will be accomplished without any lost airtime.

For more information from Doyle Technology Consultants, call (425) 687-1007 or visit www.doyletech.com.



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Genelec Aims at Broadcast Confidence Monitoring

The compact (9.75 inches high, 6 inches wide and 7.5 inches deep) 2029B Digital Stereo Monitoring System Genelec is a nearfield monitor system for use in critical listening environments such as digital broadcast confidence monitoring and digital audio workstation production and editing.

The 2029B is an XLR, AES/EBU 24-bit/96 kHz version of the Genelec 2029A. It supports the same modes of operation. This faster unit is suitable for direct connection to online and off-line editing systems.

The 2029B system consists of one right master speaker and one left slave speaker. A volume knob on the master speaker controls stereo adjustment.

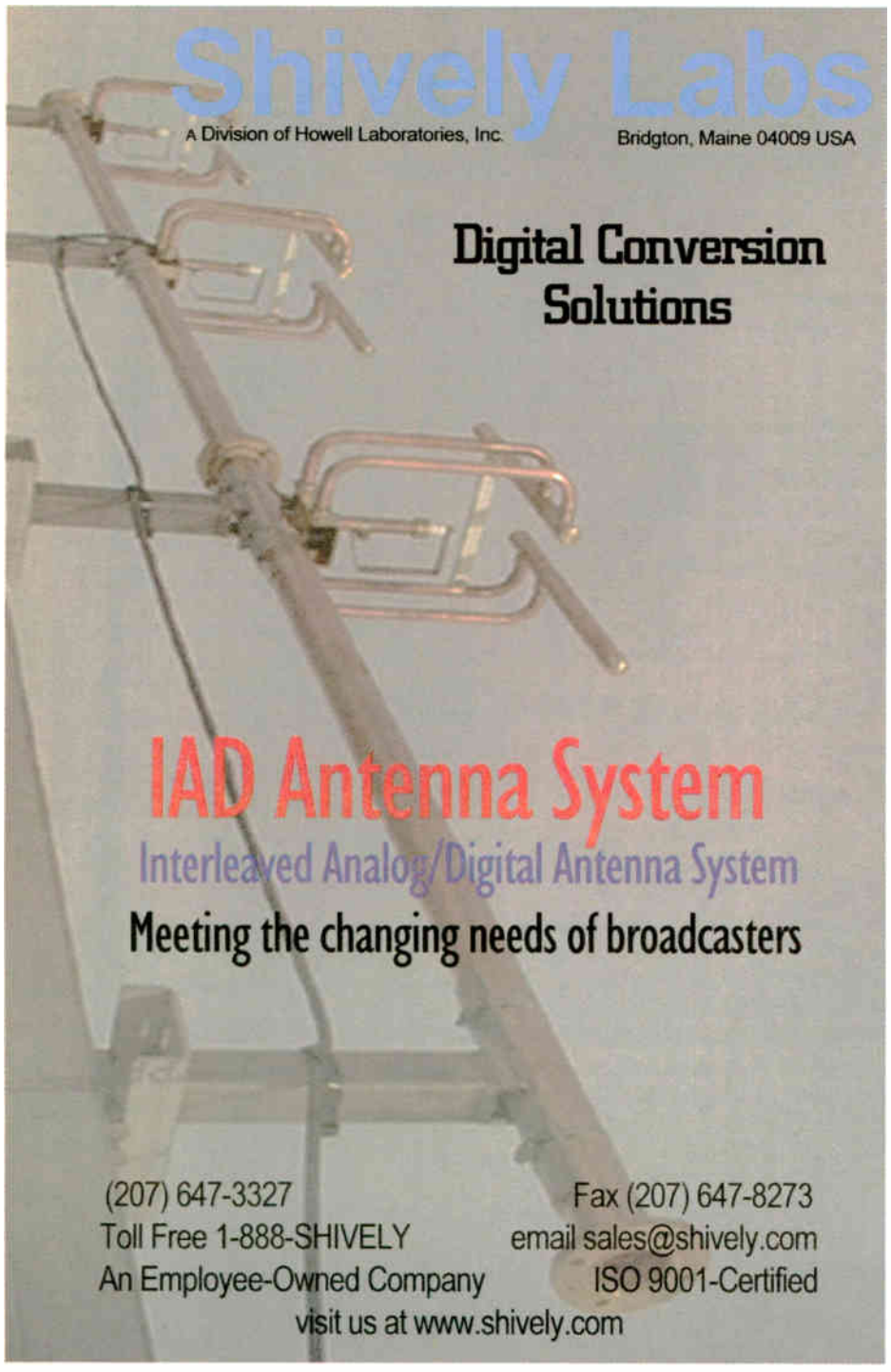
The system accepts either AES digital audio data through an XLR connector mounted into the right master speaker or conventional analog audio inputs. Price: $1,375 for the two-piece system.

For more information, contact the company in Massachusetts at (508) 652-0900 or visit www.genelec.com.

Keystone Pursues Music Management

Keystone Studios showed the Promenade AS music management system, new to the U.S. market. The system includes the Power Library software, which allows broadcasters to manage audio from CDs and other digital sources, as well as the Power Pon (from the Japanese word for "touch") broadcast automation software. Keystone, which opened a U.S. office last year and plans an IPO in Japan this summer, also showed its Power Coder audio editing software.

Contact the company in Texas at (972) 247-0352 or visit www.keystone-studio.com.



SWR Exhibits Illumitron for FM

The SWR Illumitron antenna promises reduced FM sidelobes, less RFR on the ground at the site, reduced RFI to other site users and nearby TV users, fewer multipath and "picket fence" effects and better RF bandwidth.

The company says it is the least expensive method available for improving coverage and signal quality.

Contact the company in Pennsylvania at (800) 762-7743 or visit www.swr-rf.com.

Two Digital Consoles From Yamaha

From its hospitality suite at the Venetian, Yamaha offered demonstrations of two new digital consoles, the DM2000 and the 02R96.

Keeping almost the same footprint of the 02R (it is slightly larger), the 02R96 Digital Mixing Console is a 52-channel unit with five times the processing power of the 02R. The control surface and the user interface are enhanced to allow analog-style hands-on operation; the work surface houses 16 user-defined keys for assignable functions.

Yamaha 02R96 Console

Four I/O slots accept a new range of 24-bit/96 kHz-capable Mini-YGDAI digital and analog I/O cards, available in ADAT, Tascam and AES/EBU formats. The 02R96 supports Apogee's A/D and D/A cards and the Waves Y56K effects plug-in card designed for the Yamaha AW4416 and AW2816 DAWs.

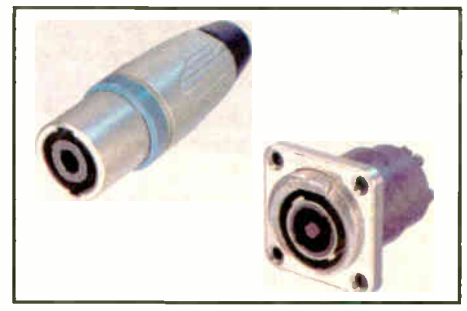
Also shown was the DM2000, a multiplatform mixing system for commercial production that is 24-bit and operates at 96 kHz. The high-performance console offers 96 input channels, gates and compressors on every channel, integrated DAW and Pro Tools control and nine times the processing power of the 02R. In 96k mode there is no loss of any inputs or outputs, a feat made possible by using DSP7 LSIs with 32-bit (accumulative to 58-bit) internal processing.

An expanded control surface allows analog-style hands-on operation and houses 16 keys for assignable functions. Available inputs, outputs, effects and channel inserts can be assigned to any console channel or output via a patching system.

For more information, contact the company in California at (714) 522-9011 or visit www.yamaha.com/proaudio.

Neutrik Launches STX and SPX Speakon Connectors

Neutrik introduced several connectors at the show, including the STX Series of Speakon connectors.



Speakon STX Series

The new four-pole unit with metal housings can handle harsh environments and abuse. A sealing gasket keeps moisture out for weatherproof applications. Four new part numbers include new female chassis and male cable connector.

The SPX Series amplifier/speaker connectors offer increased power handling, connection security and flexibility.

For more information, contact the company in New Jersey at (732) 901-9488 or visit www.neutrikusa.com.

Comlab Updates MAC Line

Comlab Telecommunications Inc. is promoting new features of its MAC systems.

Comlab was the original developer of the Davicom monitoring product line. Last fall, it recovered the intellectual property of the Davicom/IM3 monitoring and broadcast pro ducts.

New features include the IP-compatible version of the Macnet Interface Protocol, as well as an extended vocabulary feature for the MAC system.

The Canadian company said it is committed to the product line and plans new products like a GSM-compatible version of the MAC firmware.

For more information, call the company in Quebec, Canada, at (418) 682-3380 or visit www.comlab.com.

Anniversary Edition of EV Microphone

To commemorate its 75th anniversary, Electro-Voice issued a special edition version of the RE20 microphone. The RE20 75SE was introduced in the Telex/Electro-Voice booth at NAB02.

The limited-edition microphone features a matte-black housing and two embossed 75th anniversary logos mounted between the signature Variable-D slots that extend along the side of the mic housing. Each mic is marked with an engraved serial number tag.

The RE20 is a dynamic cardioid microphone suitable for recording, broadcast and sound reinforcement applications. Its Variable-D design — an Electro-Voice innovation — results in a microphone that is nearly free of any bass-boosting proximity effect. Regardless of the distance between the source and the microphone, the sound is consistent; a critical feature on live broadcast situations where the talent may be moving around while working.

For more information about the special edition microphone, contact Telex in Minnesota at (952) 884-4051 or visit www.telex.com.

World Radio History

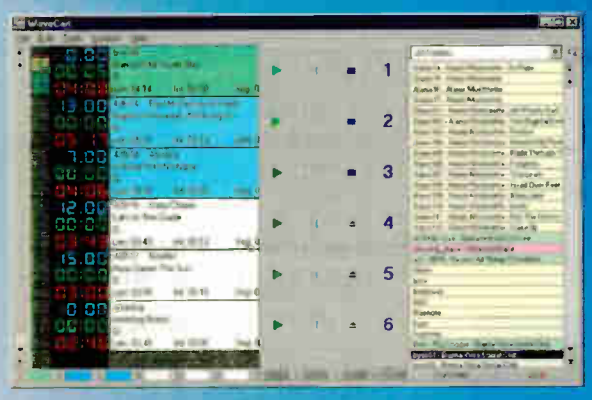
Great Software from BSI

BSI makes Simian digital automation, but did you know that we have a whole family of products for Radio?

TimeShift, WaveCart, Stinger, Speedy, Skimmer and WebConnect can all work together to make your station function professionally and sound amazing. In addition to the software that we make, we offer partner products like AudioScience sound cards, Natural Broadcast Systems traffic and billing software, Syntrillium's new Cool Edit Pro 2.0 and various other hardware accessories.

Any and all of our programs are available on our website for download. So install our software and play with it for as long as you want. Once you've decided that it's the software for your station, give us a call or order online.

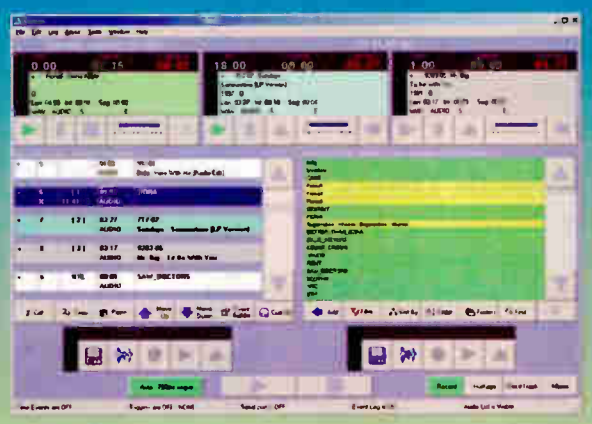
WaveCart
digital cart machine



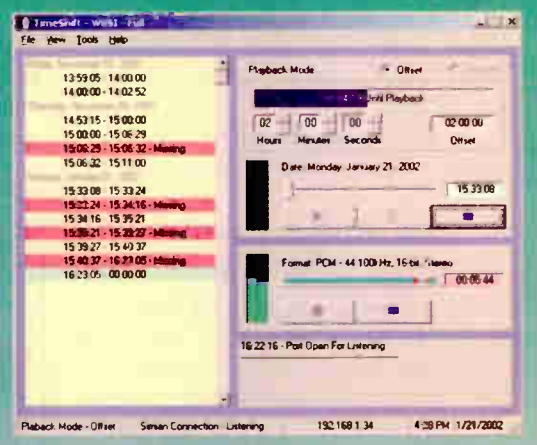
$299

Speedy $199
CD-to-PC recorder

Stinger $199
instant audio player

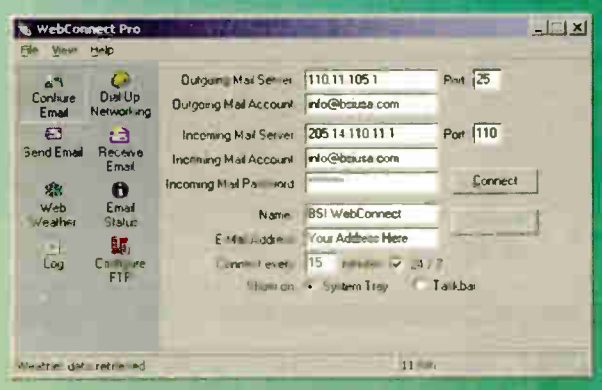


Simian $1499
digital automation

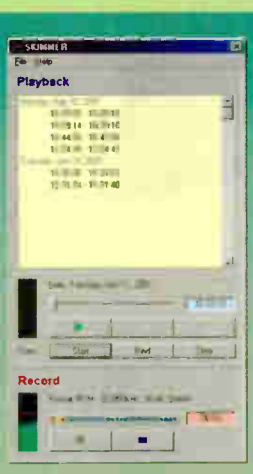


TimeShift $999
continuous record of audio and tones with time-delay or random-access playback.

WebConnect Pro
email remote control



$299



Skimmer
easy audio logging

$299

Over 5000 users have discovered how easy and versatile BSI software really is.

Test and try before you buy.

Broadcast Software International

888-bsiusa1 www.bsiusa.com sales@bsiusa.com

BSI

World Radio History

Dataworld Rolls Out Products, Improvements

Dataworld touted a trio of new developments in Las Vegas.

License Tracker provides e-mail notification of upcoming license expiration dates and renewal application deadlines. AppTracker, specifically for CDBS, notifies the user when his application appears on FCC Public Notice. The service also provides an e-mail notification if the application does *not* appear on Public Notice at the end of a user-specified waiting period.

Dataworld also is offering improvements to its Flag Service for subscribers. The Web-based program reviews FCC Public Notice releases daily and notifies the subscriber of changes in his market area. The service also evaluates each change — even those outside the user's market area — and warns the user of potential allocation conflicts.

Contact the company in Maryland at (800) 368-5754 or visit www.dataworld.com.

Herman Distributes ADC, Switchcraft

In recent business news, Herman Electronics said it will distribute ADC broadcast products, including patch panels, connectors and Uni-Patch customizable patch bays.

Herman also has added Switchcraft to its lineup, agreeing to sell the company's connectors, patch panels, switches, jacks and plugs.

The Miami-based company is celebrating its 40th anniversary this year. Other lines include Middle Atlantic, Belden, Panduit, Shure and Sony.

Contact the company in Florida at (305) 477-0063 or visit www.hermanelectronics.com.

DK-Audio Opens U.S. Office

Danish metering company DK-Audio has opened two new sales offices, one in the United States and the other in Germany.

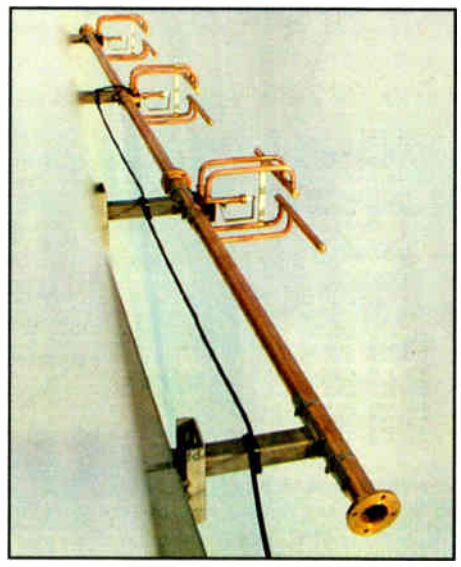
The new U.S. office, DK-Audio America Inc., is headed by Vice President John D. Terrey, formerly sales manager for Videotek and Leader Instruments Corp.

DK-Audio's existing distribution deals with TC-Electronic Inc. (for audio) and Leader Instruments (video) will continue in force, while Terrey will expand distribution of DK-Audio's products portfolio.

Contact the company in Arizona at (800) 421-0888 or www.dk-audio.com.

Shively Has Digital Conversion Antenna

New from Shively Labs is the IAD Antenna System, an interleaved analog-digital antenna that can operate at up to 10 kW of analog power.



No additional tower space or analog power is needed; the antenna duplicates existing azimuth patterns. This is aimed at low- and medium-powered broadcasters planning to convert to in-band, on-channel digital radio.

Contact the company in Maine at (888) SHIVELY or visit www.shively.com.

Middle Atlantic Offers New Products

Middle Atlantic presented the MDV-DL MultiDesk. The modular system is part of the MultiDesk furniture line and features a large work surface and equipment-racking options.

The company also released the first of its 2002 Master Catalogs featuring Middle Atlantic's line of racks, enclosures, studio furniture and accessories.

The MDV-DL Modular Desk

The company is featuring numbered rackrail spaces on all welded floor-standing enclosures to provide for easy equipment alignment.

Contact the company in New Jersey at (973) 839-1011 or visit www.middleatlantic.com.

Mini-Monitors From Furman

Furman Sound introduced its new MS Series Confidence Monitors. The 1RU monitors detect the presence of analog and digital audio and video signals, and are available in models appropriate for television (with a small LCD monitor) as well as for radio.

The new MS monitors join the Furman Sound lineup of power conditioning and electrical distribution products.

Contact the company in California or visit www.furmansound.com.

Studer Brings On-Air 1000

The Studer On-Air 1000 is intended to be an inexpensive solution for smaller and mid-range broadcast studios. It has 10 channel faders, two masters, DSP and a graphical user interface giving access to various levels of

operation. Modes can be set whereby only the key operating elements for routine operation are provided on the surface, convenient for day-to-day tasks.

The monitoring and talkback system allows control of telephone lines from the console. A serial control interface for computer-assisted broadcasting systems can be connected to the Studer DigiMedia radio automation system for unattended, semi-automatic or manual operation. It also allows audio editing, access to audio databases or integration into an audio network.

The On-Air 1000 is derived from the Studer On-Air 2000 electronics and uses most of its sub-assemblies.

Contact the company in California at (818) 841-4699 or visit www.studer.ch.

Backbone Networks Has Entry-Level App For Streaming

Backbone Networks Corp. promoted a streamlined version of its Backbone Radio streaming Internet production and station automation application.

Backbone Radio Basic simplifies the task of organizing and broadcasting audio using Apple QuickTime. It includes the live streaming server and the radio control application, which run on an OS X-based Macintosh.

The company says the system includes the elements to create and operate a live and recorded station, and stream it via one's own DSL or high-speed network. It serves multicast and up to 250 simultaneous unicast streams, and is priced at $795.

Contact the company in Massachusetts at (508) 753-5665 or visit www.backbone.com.

ESE Releases NTP Time Server Line

ESE showed off its line of Network Time Protocol Time Servers. This family of units provides a simple method of putting accurate time information onto a network.

The servers allow the creation of NTP from most any "non-NTP" master clock. They feature a 10BaseT-NTP Data Port (RJ-45), and the server is platform-independent.

ESE features a line of NTP time servers.

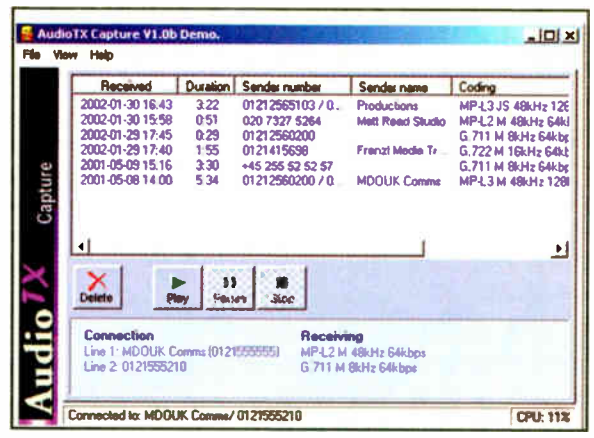
The ES-104 employs an internal GPS Receiver as its time reference, while the ES-289, ES-299 and ES-911/NTP receive time reference from external sources of time code.

ESE also touted its ES-110 GPS-based frequency generator. The unit generates a stable source of 10 MHz and 1 PPS using Global Positioning System satellites as a reference.

Contact the company in California at (310) 322-2136 or visit www.ese-web.com.

AudioTX Captures ISDN Feeds

AudioTX Capture from MDO UK is a time-saving innovation for radio stations or anyone who uses an ISDN codec to send and receive audio.



Typically, when audio is sent to a radio station over ISDN, someone must be present in the studio to take the feed. With AudioTX Capture, the sender dials the ISDN number of the Capture system with an ISDN codec; it answers with a greeting and records the audio digitally.

The audio is stored in an on-screen inbox or can be e-mailed to one or more people immediately, or copied to a location on the network.

The software installs on a Windows PC and answers calls from most ISDN codecs, recording the audio to disk. Audio can be recorded in MP2, MP3 or Broadcast WAV formats for import into audio editors and playout systems; these files can be played back in Capture or using Windows Media Player.

The software installs on a PC, requiring an ISDN card, which costs about $75. The software is priced $1,870.

Contact CCS/Musicam USA, the U.S. distributor, in New Jersey at (732) 739-5600 or visit www.audiotx.com *for a trial version.*

World Radio History

WIRED FOR SOUND

Data Cables, Moving Audio Around

by Steve Lampen

We left the subject of "category" cables in the April 24 issue, talking about return loss.

This is a new specification for twisted pairs. It shows, in dB, the ratio of signal strength received at the destination to the signal that is reflected back to the source. It is the same as VSWR, which shows the direct/reflected energy in transmission lines.

Of course, VSWR is a ratio not in dB, but you can convert from one to the other.

Hold on a minute! Transmission lines are huge, high-power coaxes used to carry power from transmitters to antennas. When you have really bad VSWR, you don't just lose power; your cable blows up, possibly along with your transmitter!

Blown

Many a grizzled engineer has a piece of blown transmission line sitting in his office. This trophy is to prove the life-threatening aspects of his job and to scare off the junior engineers who think they want to work on transmitters before they even know what a grounding rod is.

Not long ago, you could have earned laughs from engineers by saying, 'We're going to run 250 MHz down a twisted pair.'

Perhaps return loss on a twisted-pair data cable is not life-threatening, but it certainly can be network-threatening.

We're talking about twisted pairs running at bandwidths up to 250 MHz, for Category 6 at least, and up to 1 gigabit of data per second. You would certainly want all of those bits to get to the destination device. Good return loss numbers assure that this will happen.

Just think. In recent memory of many readers, you could have earned laughs at any engineering luncheon by saying, "We're going to run 250 MHz down a twisted pair."

And now they're talking about future premise/data cables running 600 MHz per pair, or rumors of 1 GHz per pair.

And, speaking of rumors, there's talk that, with the ratification of Cat-6, the TIA/EIA committee will drop Category 5, just as it did Category 4, from their "recognized" product list.

Will this insanity ever end? I hope not!

One system being proposed is CobraNet. Started by the folks at Peak Audio, this trademarked technology now is an accepted standard for a dozen other manufacturers including Biamp, Clear-com, Creative Audio, Crest Audio, Crown, Digigram, EAW, Peavey, QSC, Rane and Whirlwind. More manufacturers are jumping on the bandwagon all the time.

You will note that many of these manufacturers make power amps. This should give you a clue as to what CobraNet actually does. You can get more details at *www.peakaudio.com*.

It is based on regular Ethernet, designed to run on UTP, unshielded twisted-pair data cable, like Category 5. But the payload is multichannel audio, up to 128 channels.

Aimed mainly at live performance/theatrical venues, CobraNet certainly would make the design and set-up of these installations at lot easier and faster. And all you need do is buy devices with the appropriate input/output, with hubs and routers made by the same people who made them for your 100baseT data network.

There are a couple of problems.

First, category cables are not intended for temporary installations. They are for permanent installs. They are solid conductors and are not particularly rugged.

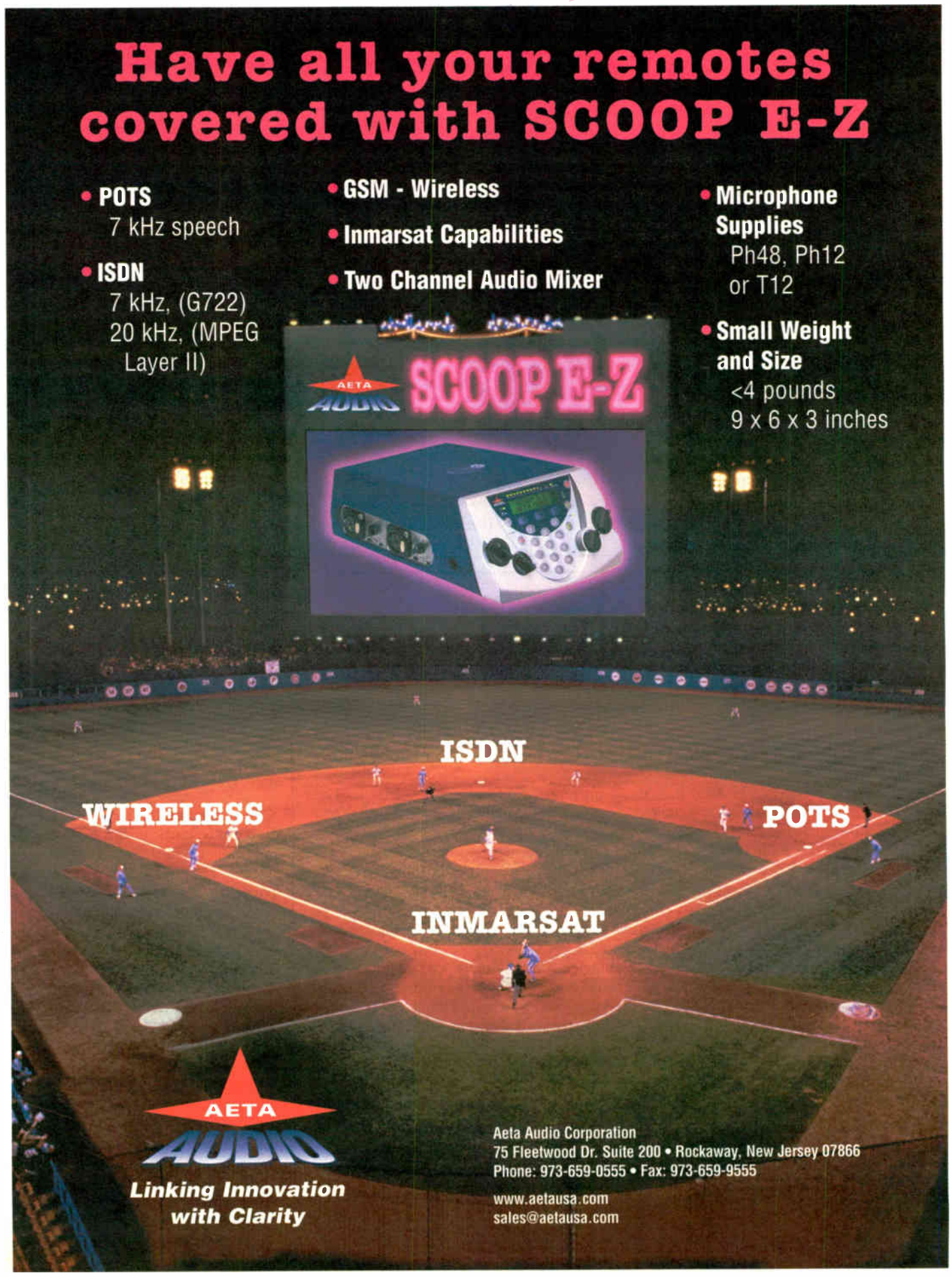
Performance and reliability are not the issue. After all, the data stream at your bank, or the IRS, or any other large corporation, runs on solid-conductor Cat-5 (or 5e, or 6). Are you saying that your audio is more critical than your bank account? Or your IRS account?

No, the first problem is simply ruggedness. Cat-5 is not a "field cable". And, in this application, if a Cat-5 cable is mashed, mangled or cut, you don't just lose a mic line or two, you lose the entire show!

While cables can be installed in protected areas, many theatrical installs require the cable to go through the audience. Just think about multichannel audio snakes that you install now. It is in those locations that you will want to put data cable.

If this is a heavy-metal concert or a grunge band with a mosh pit, you can imagine generic Cat-5 would not be a

See DATA CABLES, page 30 ▶



World Radio History

LPFM and the Voice of Hmong People

by Ken R.

Most LPFM construction permits end up in the hands of churches and schools. But some are granted to small ethnic groups that sought licenses because they have few other opportunities to communicate with their own people.

One such CP for an LP100 station was awarded to The Hmong American Community Inc., a nonprofit organization of transplanted Asians, many of whom now live in California.

The Hmong people, according to the organization, hail from near Laos in the mountains of southeast Asia. They sided with the United States during the Vietnam War. When this country withdrew from that conflict, the Hmong were forced by the Communists into refugee camps in Thailand.

According to the 2000 census, about 170,000 of them resettled in the United States since 1970. Of those, nearly half live in California.

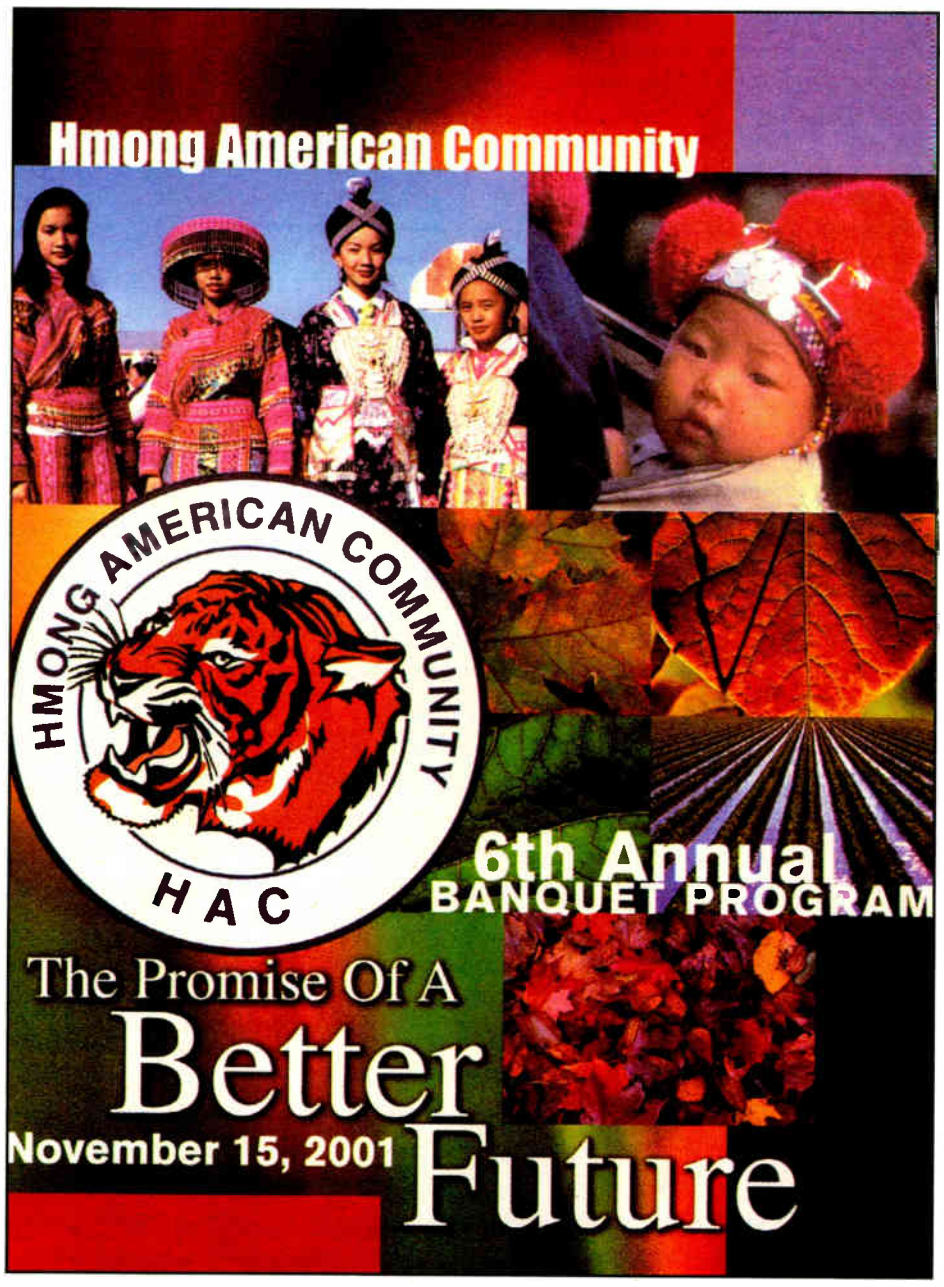
Farming skills

In their native country, most of the people were nomads isolated from the modern world. When they arrived here, many had few survival skills other than farming.

Vee Inthaly, project coordinator for the nonprofit community group and the LPFM station, said she allocated space in their small office for the studio but that no equipment has been purchased.

Huto Morales will serve as executive director for the bilingual radio station in the capacity of consultant.

"We will be starting from scratch and we're trying to get our funding together now," Inthaly said. "We'll be using both paid people and volunteers and we will deliver information for the day to day lives of our people."



The Hmong American Community Inc. produced this brochure for its sixth annual banquet last fall.

The group plans to be on the air by fall.

"As of now, we are still in need of start-up money," said Inthaly. "If we were going to get a new tower and all new equipment, we would need about $225,000. However, as we have only raised about $6,000, so it looks like we will have to share a tower with someone and purchase used equipment to make it work."

The organization faces an FCC-imposed October deadline to get the station built and running before its construction permit runs out.

The plan is to avoid an automated, CD-playing setup. Organizers hope to present a unique voice in the Fresno area.

The organization faces an FCC-imposed October deadline to get the station built and running before its construction permit runs out.

"We will have different programs so people can listen to conversation and music in their own languages and learn about their cultures," Inthaly said. "Sometimes they don't get to do this in their school systems. Our programming will have a primary influence on their health, housing, education and careers."

The LPFM station is part of the Hmong American Community's outreach to the Asians they serve.

"We operate a co-op which was started using a grant from the United States Department of Agriculture," Inthaly said. "It's designed to support the farmers and train them. Many of our people are farmers." The seven staff members of the Hmong American Community also are building low-income housing for their community near Fresno.

"Our goal is to become a multicultural radio station for the 40,000 to 60,000 Asians in the Fresno area," said Inthaly.

The station, which will operate at 104.5 MHz, also will play music that will appeal to the Asian segment of the population. Fresno also is home to about 10,000 Lao, 2,000 Mien, 8,000 Cambodian and 8,000 Vietnamese people.

Data Cables

▶ Continued from page 29

good choice for a standard data cable.

Luckily, there are "ruggedized" versions of Category 5e and Category 6 cables available. Some have double-jackets, called "up-jacketed" designs. Others have interlocking steel armor with a jacket over that. This last data cable truly is "mosh-pit-proof." If you're trying to get those 128 channels to the front-of-house mixer, that's certainly the way to go.

The second problem has been the "mosh-pit-proof" connector to go with it. The standard RJ-45 connectors are not rugged, as any data installer will attest. They're just little plastic connectors.

But Neutrik, the audio connector people from Liechtenstein, recently brought out a ruggedized RJ-45. They put the RJ-45 connector inside a shell, not unlike an XLR. So now you have a "mosh-pit-proof" connector and the "mosh-pit-proof" cable to go with it.

If you have a large multichannel broadcast install, such as a multistudio master control building, perhaps CobraNet is an alternative to consider.

There are other, often proprietary multichannel audio delivery systems available. The Klotz Vadis system is one aimed at broadcasters. This is a fiber optic-based network. All your inputs and outputs go into the Vadis box, which are all linked by single-mode fiber. You can run multiple fibers, in different directions, to reduce the failure potential.

Even Otari, the recorder and console manufacturer, is coming out with a multichannel networked format.

Of course, the AES tried to do something similar with Multichannel Audio Distribution Interface. MADI could send up to 56 channels of digital audio down a single coax. It's still available as an option on some block-long recording consoles, but never made it into the broadcast world, as far as I know.

Next time, we'll look at other data cables vying for acceptance. Among them are USB, and IEEE 1394 Firewire. We'll also wire up some computer monitors for VGA, S-VGA or the emerging X-VGA.

Steve Lampen's latest book, "The Audio-Video Cable Installers Pocket Guide," is published by McGraw-Hill. You can reach him at shlampen@aol.com.

DIGITAL NEWS

Acceptance for Digital Radio Seen

Terrestrial digital radio and its satellite counterparts in the United States and abroad will gain increasing acceptance among consumers within the next five years.

That's according to high-tech market research firm In-Stat/MDR, which reports that, even though the digital radio space is being developed at one of the most economically challenging points in time over the last 50 years, receiver manufacturers are ramping up production to meet growing customer demand for these services.

"Major markets like the U.K., Germany and Canada are starting to show how vital digital is in adding more value to radio service as DAB is inspiring a whole renaissance of new programming choices," said Michelle Abraham, a senior analyst with the firm.

Those countries are using the Eureka-147 DAB standard while the United States is expected to adopt an in-band, on-channel approach.

In the U.S. market, inroads made by satellite and support for IBOC by radio owners suggest that the next few years will witness rapid development of digital radio.

In-Stat/MDR also found that as Ibiquity Digital Corp. technology is added, there will be a divergence between the number of digital receivers sold and the subscriber base of the satellite services. For many consumers, it predicts, the features on free terrestrial DAB channels will be enough, and they'll opt against satellite.

The success of digital radio in the United States will depend to a great extent on automotive manufacturers, the report said, as many consumers' introduction to digital radio will come in an automotive setting.

World Radio History

Workbench

Radio World, June 5, 2002

Past columns are archived at www.rwonline.com/reference-room

It's a Bird, It's a Plane ...

by John Bisset

Pulling cable? Make sure you place two labels on the cable runs, as shown by Brian Edwards, technical director for New World Radio in Fig. 1. If one label gets ripped off or damaged, identification is still easy.

When you're ready to punch down the cables, protect the cable identification label with clear heat shrink, as shown in Fig. 2.

The same kind of cabling identifiers are used in the tower control cabinet for WTEM(AM), a 50-kW Clear Channel station in Washington, D.C. The site was constructed several years ago when Greater Media owned the station. Chief Engineer Merl Rinehart, shown in Fig. 3 on page 32, has plenty of space to make punches, thanks to the well-planned wiring.

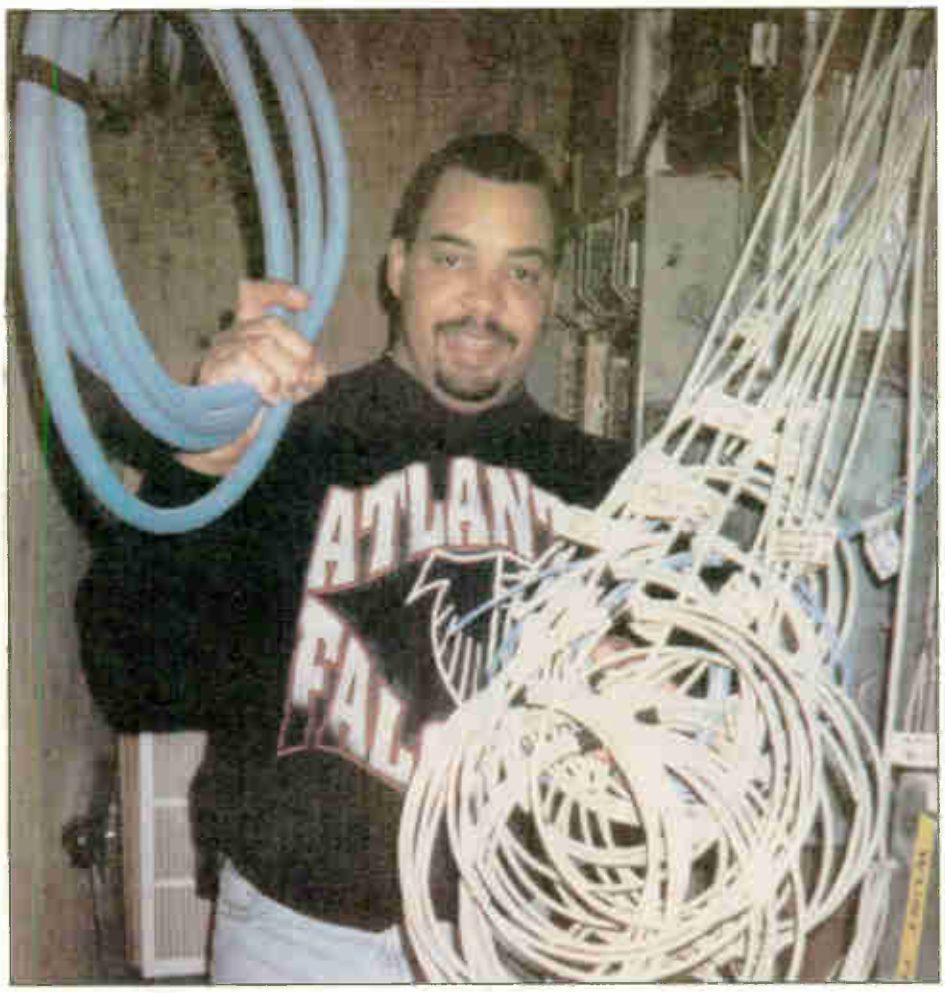


Fig. 1: Brian Edwards holds cables, right, that have two tags each.

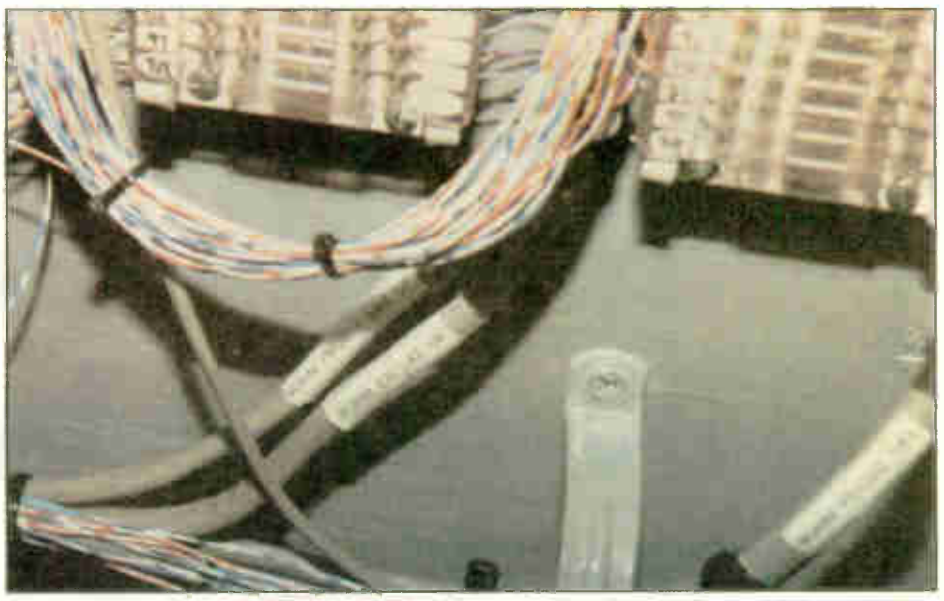


Fig. 2: Protect the cable ID label with clear heat shrink.

These are the kind of sites that make it a pleasure to go to work.

★ ★ ★

I guess it was first noticed during Desert Storm — periodic satellite outages that couldn't be explained.

Jerry Weddle, resident satellite expert at Harris' Broadcast Center, passed on a solution he provided for one of his customers.

The client's engineer had spent a week trying to track down the interference. The client then paid frequency search firm Comsearch to identify the problem.

The interference shows up in analog as two streaks across the satellite video with a period of 10 seconds. It lasts for 20 minutes or so, then goes away for various lengths of time. Sometimes the interference shows up as a blast of oblong white sparkles.

Looking at the output of the Phase Locked Loop Low-Noise Blocks, a serious carrier is noted at 1900 MHz with harmonics going right into 950-1450. It can only be seen with the analyzer in max hold. The carrier is 20 MHz wide.

Comsearch figured out that it was an AWACS plane. It's putting out so much power that it is overloading the front end of the LNBs, especially the 25-degree models.

The problem has been experienced in most major markets and near many other satellite users who work near military air bases. But it can occur anywhere the planes fly.

Jerry's cure for the problem is a Microwave Filter Co. 7892D filter. The filter provides excellent rejection and has the added benefit of removing radar

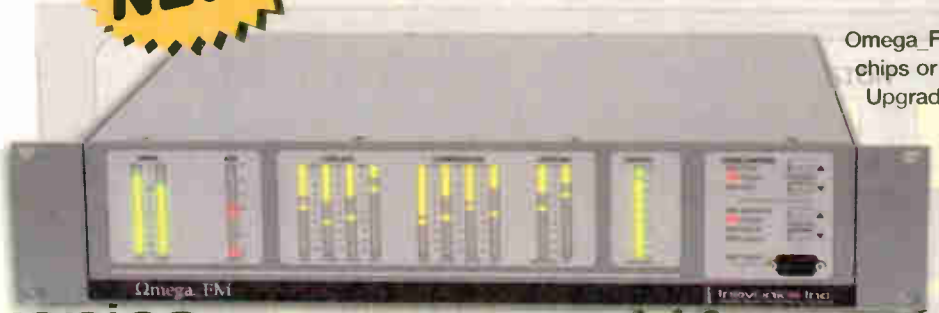
See WORKBENCH, page 32 ▶

Digitally Different

Ωmega_FM – $5880

NEW!

OUR GOAL WAS TO DEVELOP A DIGITAL PROCESSING SYSTEM FOR FM THAT WOULD RIVAL ANYTHING ON THE MARKET. WE MET THAT GOAL...AND THEN SOME.



Omega_FM is a 100%-digital, software-based design. It doesn't use DSP chips or other application-specific parts that rapidly become obsolete. Upgrades don't plug into 'expansion slots,' they're simply uploaded.

Omega_FM is straightforward and uncomplicated. Hardware simplicity keeps the signal path short and your audio clean. Low latency lets you monitor off-air.

Omega_FM is loud, clean and versatile. We don't expect you to take our word for this, and you shouldn't. Schedule a demo at your station through an equipment supplier of your choice.

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World Radio History

Workbench

▶ Continued from page 31

altimeter interference.

Jerry says the filters sell for less than $500. Contact him at (800) 622-0022 for more information.

★ ★ ★

Commstruction engineer Ed Bukont just did a realign from GE-3 to GE-8, and was surprised at how close the carriers are at that end of the sky.

The coordinate program said the bird would be at 13.3 degrees. Ed found the carrier, all right, but not the one he wanted. He cranked up the dish to 15 degrees, and there was GE-8.

Thank goodness for the spectrum analyzer, as you won't perform this kind of realign without one. The acquisition delay of the receiver prevents you from locating the bird using conventional methods.

Mike McCarthy, of McCarthy Radio Engineering adds that if you haven't upgraded to a 3.8-meter dish, you may run into adjacent bird splatter because of the older dishes' lack of selectivity.

★ ★ ★

Here's a stumper: You have a perfectly working StarGuide receiver, with all the lights and asterisks in the right place — but there is no audio.

Neither card produces audio, but if the audio card is swapped to another receiver, it works fine. When a working card from a working receiver is installed, still no audio.

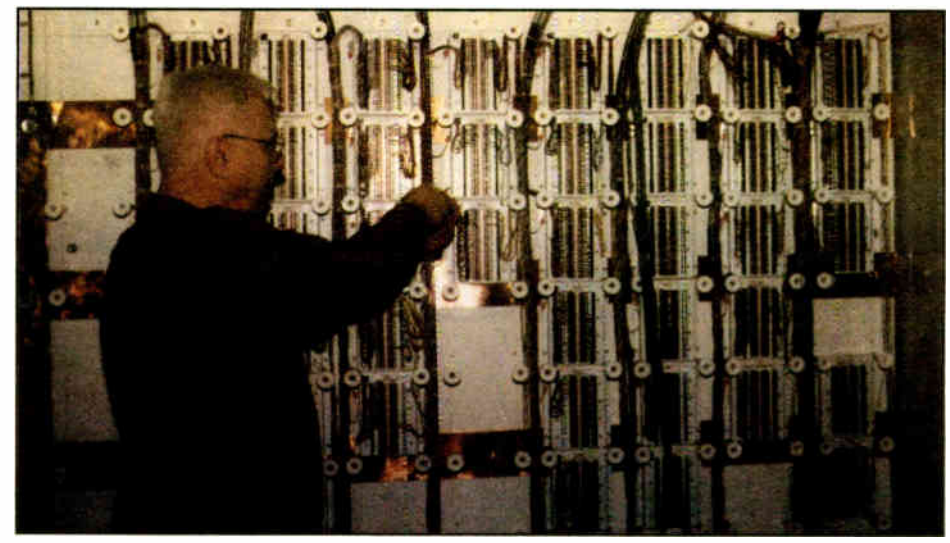

Fig. 3: Good planning on the part of his predecessors helps WTEM's Merl Rinehart punch wires.

Think about it. We'll offer some ideas below.

★ ★ ★

Oscar Medina is the director of engineering with KNSD(TV) in San Diego. He experienced an unusual problem with his TFT EAS 911.

Normally, when the RMT or "activation request" is received, the "message waiting" light will illuminate and begin blinking. When the operator presses the button, the light will extinguish and the manual forward light will illuminate and begin blinking.

Pressing the "manual forward" will initiate the sending of the header, tones, voice message and EOM.

In Oscar's case, when a RMT or activation request was received, the "message waiting" light would illuminate, and begin blinking. Pressing the "message waiting" would cause the light to extinguish, but none of the other buttons would illuminate.

The EAS-911 would appear to be back in "standby" mode. If you pressed the "manual forward" button, the machine would forward the message in memory. The problem was for the staff; when the "manual forwarding" button would not light, there was confusion as to the next step to take.

The LED was fine, and the problem appeared to be logic-driven. Prior to sending the unit back to the factory, Oscar's staff reset the unit by unplugging it, and also disconnecting the memory battery, by sliding a small piece of poster board between the battery and the upper terminal.

Doing this forced them to reprogram the unit, but the reset fixed the problem.

★ ★ ★

Now back to that pesky StarGuide receiver.

Fee Lee, a former Westwood engineer who now is with Denny & Associates in Washington, suggests checking the 5-volt supply. The receiver may have lost some of its permissioning, and a low supply can cause this problem.

The supply must be set at least to 5 VDC, preferably 5.1. It's a good idea to check the Molex plugs on the power supply cable for corrosion and tightness.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

Submissions for this column are encouraged and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com.

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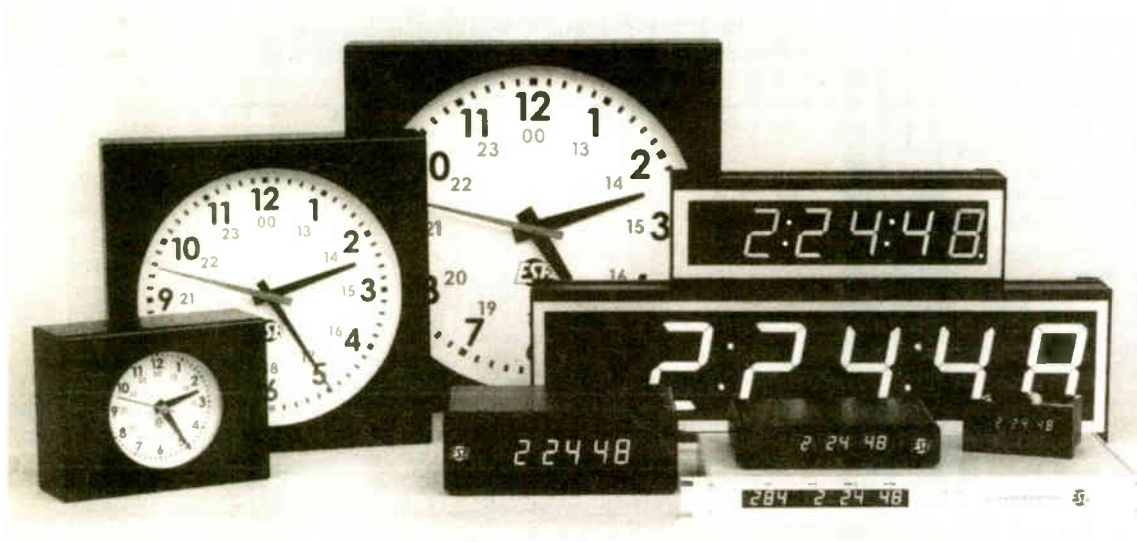

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World Radio History

Decoding Radio's Codec World

A Flurry of Activity Is Increasing Efficiency But Could Confuse Some Broadcasters

by Skip Pizzi

Just as broadcasters were beginning to understand MPEG-2 Audio Layer II and Layer III, along comes another flotilla of new "standard" audio codecs. These upstarts promise higher quality at lower bit rates, but can create a lot of confusion and incompatibility in the process.

The latest developments represent a third wave of audio coding, incorporating many new and sophisticated concepts. Yet as the coding becomes more complex, the opportunities for variation multiply as well.

An important change that has accelerated the current development is the relatively recent possibility for running these systems (encoders, decoders and tools) in software on general-purpose computers, as opposed to the original environment that largely required dedicated hardware.

Sorting it out

The latest list of new codecs includes MPEG-4 AAC; AAC-LD; AAC-SBR; and PAC.

Beyond this "standards" list are several proprietary schemes that continue to develop in the o-line world, but the codecs mentioned above are of more concern to the broadcast professional, as they are used in dedicated broadcast contribution and distribution links and/or in digital radio broadcast systems.

This entire area of development dates back to around 1995, when the MPEG audio developer community began work on a second generation of codecs that would attempt to optimize audio quality at lower bit rates than previously thought possible, but without the constraint of remaining backward compatible to previous systems. Thus this early work was called "MPEG-2 NBC" for Non-Backwards Compatible.

As the coding becomes more complex, the opportunities for variation multiply as well.

The result was the first version of Advanced Audio Coding called MPEG-2 AAC, around in 1997. It could provide MP3 audio quality at about half the bit rate.

Meanwhile, Bell Labs was developing its next-gen codec (it had worked with Fraunhofer Gesellschaft and Dolby Labs on MPEG audio codecs). In the midst of this, Lucent Technologies was formed, and it inherited the codec that became known as PAC, for Perceptual Audio Coder.

All of the latest variations of audio codecs can trace their pedigree to one of these two main branches.

Earlier codecs were impressive in their ability to present high-quality sound at dramatically reduced bit rates compared to the original PCM signal.

Data rate reductions of 80 percent or more were possible without significant degradation. But there were audible artifacts on occasion, and higher compression ratios were thwarted by an excessive amount of these. Therefore, advanced codec design concentrated on ways to reduce or eliminate these artifacts.

Such techniques included tweaking of filter banks, improvements in stereo signal analysis for joint coding (i.e., reduction of redundant discrete coding of each channel for stereo or multichannel signals where similar audio existed in two or more channels), noise shaping, prediction, coding techniques themselves and bit-stream multiplexing of outputs.

Another fundamental factor in all codec design is the selection of block size. Because these perceptual algorithms rely on analysis of the instantaneous audio spectrum to determine the masking characteristics of the moment, a group of consecutive audio samples must be analyzed. (A single sample does not define a spectrum; the frequency content of sound is determined by the rate of change *between* samples.)

The longer the series of samples, the more accurate the spectral determination will be. But such long blocks increase the latency of the codec, and worsen its ability to react to transients, which results in temporal smearing of sound — one of the more obnoxious audible artifacts of perceptual codecs.

Block size

So advanced codec design abandons the search for the perfect single compromise on block size, and uses multiple block sizes, which can be alternately used when the sound warrants (i.e., shorter blocks for transient passages).

AAC not only uses short (256 samples) and long (2048 samples) block sizes but also two different types of long blocks (sine-function and Kaiser-Bessel Derived) depending on the spectral density of the sound. Such adaptive optimization results in substantially reduction in audible artifacts, allowing higher data compression ratios.

AAC was first released under the MPEG-2 label in 1997, but subsequent refinements were added and the AAC codec was reestablished with such extensions under the MPEG-4 flag in 1999.

In two-way applications, low delay is an important requirement. Like most

See CODECS, page 38 ▶

Comrex Gives Customers 'The Shirt Off Our Back'

Comrex Corp. employees sported unconventional booth uniforms at NAB2002 to illustrate the company's new promotion, "The Shirt Off Our Back."

"It's kind of a cool story," said Kris Bobo, Comrex vice president.

According to Bobo, Comrex's founder, the late John Cheney, thumbed his nose at the stuffiness of traditional suits, ties and wingtips at the annual NAB show.

"I set out to find a booth uniform that John would wear," said Bobo. "Every year, John would go to Hawaii and pick up a supply of Reyn Spooner-manufactured shirts, then he'd wear those Hawaiian shirts with sneakers on the show floor."

Photo by Bob Kovacs

Here's a swatch from the custom-created Reyn Spooner Comrex shirt.

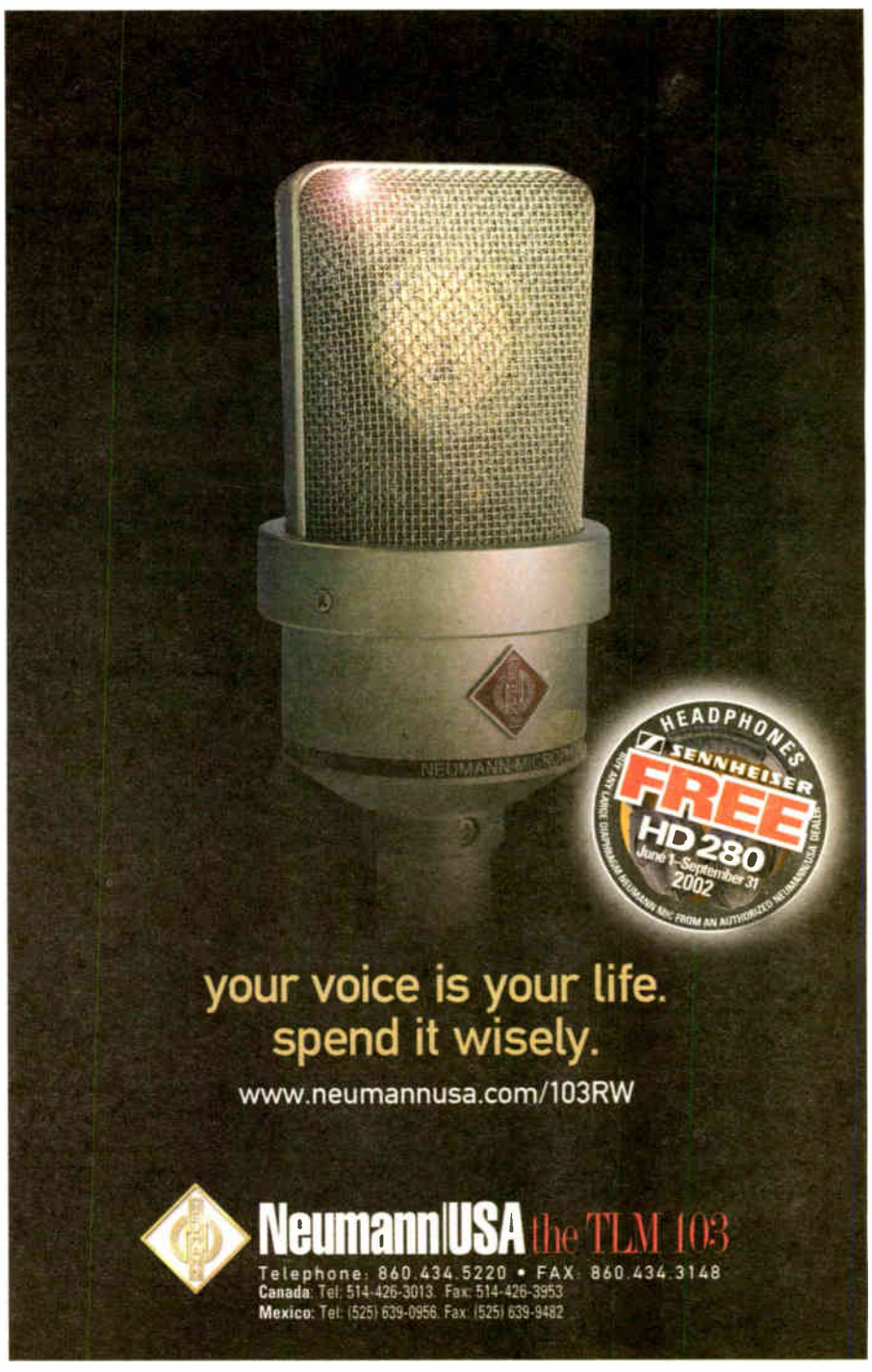
It was a style all his own, and Bobo took the concept a step further.

"We worked with an artist in Hawaii to create the hand-drawn design featuring the line of Comrex products," said Bobo.

While they last, Comrex is giving away a free shirt with the purchase of a Comrex Matrix, BlueBox, Vector or Nexus. For a limited time, Comrex also will double the customer's warranty period.

"We'll give them the shirt off our back," said Bobo. "The customer just needs to request a shirt when they send in their warranty card."

— Sharon Rae Pettigrew



World Radio History

NEWS ANALYSIS

IBOC Implementation Details Emerge

by Michael LeClair

As the much-awaited deployment of in-band, on-channel nears, an IBOC implementation session at the recent NAB2002 convention offered a wealth of practical information.

From theoretical papers that gave an inside look at IBOC signals, to nuts-and-bolts recommendations on how to make it work, this session was a must for those planning deployment of IBOC digital.

Of particular interest was an array of AM transmission system experts giving detailed presentations on the requirements for deployment of IBOC on the AM band. All experts agreed that making it work would require a system bandwidth much higher than needed for conventional AM.

"When IBOC comes along, we're going to be dealing with components out to about 40 kHz," said W.C. Alexander, director of engineering for Crawford Broadcasting and a contributor to Radio World.

G. Michael Patton, a regional consultant and systems integrator, agreed: "IBOC is a whole new ballgame when it comes to bandwidth," he said. "And the problem is if we don't make it, it just might not work at all."

Bandwidth

Various experts defined the required bandwidth requirements differently.

Alexander suggested that IBOC transmission requires a maximum voltage standing-wave ratio, or VSWR, of 1.4 to 1 at 15 kHz above and below the carrier frequency.

Patton said VSWR must be kept below 1.25 to 1 out to 15 kHz. Glynn Walden of Ibiquity Digital Corp. defined adequate bandwidth as having "hermitian symmetry" for at least 5 kHz above and below center frequency. Hermitian symmetry means that antenna reactances are equal and of opposite sign on either side of the carrier.

To achieve this higher bandwidth, special attention must be paid to AM system design and adjustment. Many AM stations may require new antenna tuning and/or phasing equipment.

Challenges

All the experts agreed on the basic design elements for a wideband antenna system. T-networks for matching impedances and shunt power dividers (for directional arrays) are preferred over older methods. Several also suggested the use of input components matched to the slope of the tower impedance to improve matching bandwidth.

However, broadcasters will find that in some cases it will be difficult to meet the new bandwidth requirements.

"Note well: all antennas are not going to work with IBOC," said Patton.

Short radiators, such as antennas less than 70 degrees in length, will be difficult to broadband due to their low base resistance. Alexander suggested that it might be possible to electrically lengthen these towers by extending them or using top loading to achieve a more favorable impedance.

Skirted towers also present some challenges to broadband performance. Alexander recommended that the shorting stub on skirted towers be selected for optimal bandwidth rather than the approximately 50-ohm impedance commonly selected during installation.

"Then use a T-network to match the skirt," he suggested.

In directional arrays, negative power towers, especially those that operate with a small amount of negative power, can cause an array to have poor bandwidth. This type of negative tower sometimes can shift to positive impedance when driven at frequencies offset from the carrier frequency.

Alexander proposed replacing these towers with a resistor in some cases. "It can significantly improve the system bandwidth," he said.

With a series of charts, Bobby Cox of Kintronic Labs Inc. showed the dramatic bandwidth improvements that are possible with careful design. Using a case study of two AM stations diplexed on the same tower, he demonstrated how each element of the design and adjustment contributed to improvements in performance with bandwidth measurements made at each step.

The result was an antenna system with nearly perfect VSWR performance out to a very wide bandwidth.

Separate antennas?

An alternate means of FM IBOC implementation was addressed by Eric Wandel, director of product development at Electronics Research Inc.

Wandel proposed the use of separate antennas to deploy IBOC signals as an alternative to the use of high-power combining into a shared antenna. The second antenna approach offers advantages in efficiency, eliminating the losses required by a combiner attempting to match signals that differ in power by 10 dB.

He also suggested that a second antenna could function as an auxiliary for the main analog channel in an emergency.

The use of a second antenna is not without drawbacks, chief of which is the need for more tower space to mount another antenna. It also is important that the second antenna closely match the coverage pattern of the existing analog signal.

Field tests conducted by ERI have been favorable, demonstrating that the necessary isolation between transmitters demanded by IBOC is achieved easily with dual antennas, even with spacing as close as 20 feet. Initial field strength measurements also showed that digital and analog carrier strengths were reasonably matched in the coverage area. ERI also is planning tests of dual antennas on a master FM antenna system.

It's clear that to achieve sufficient bandwidth for IBOC, special attention must be paid to AM system design and adjustment.

In a paper about the effects of combining audio compression algorithms, Simon Factor, sales manager for Audio Processing Technology, warned about potential audio problems in the deployment of IBOC.

"The PAC compression algorithm is an enabling technology for digital audio broadcasting and a new addition to the broadcast chain with regard to compression. In addition to the many benefits of compression, there are pitfalls associated with multiple cycles of certain types of compression," Factor said.

Stacking algorithms

In particular he cautioned broadcasters to consider the entire broadcast chain to avoid audio problems from multiple passes through digital compression. Automation systems, ISDN backhauls, recording devices (such as MiniDisc), and studio-transmitter links can contribute coding that eventually can cause a severe loss of audio quality.

His recommendations included the use of higher data rates, the use of decreased compression ratios, the use of different compression techniques, and higher bit resolution at all points in the contribution layer. The goal is to preserve the highest possible quality so that the final compression used by IBOC will not result in loss of audio quality.

Finally, Ibiquity Digital Corp. presented three papers about the theoretical aspects of the IBOC waveforms.

Stephen A. Johnson, technical team leader for the Development of AM IBOC, showed the methods used to achieve a robust IBOC signal for AM service.

Orthogonal frequency division multiplexing is central to the IBOC approach. In OFDM, many orthogonal carriers are used throughout the AM channel. Data is distributed amongst these carriers so that a complete digital signal can be reconstructed even in the presence of interference to one or many of these individual carriers.

Greater robustness also is achieved in AM IBOC with the use of slower data transmission rates on the individual carriers that are most subject to interference, those operating in the same channel area as the analog signal. On the outer sidebands, where digital carrier strength is greater, up to 64 QAM modulation is used to achieve the maximum throughput, while only QPSK is used in the analog modulation area.

Johnson also described the four

See IBOC, page 38 ▶

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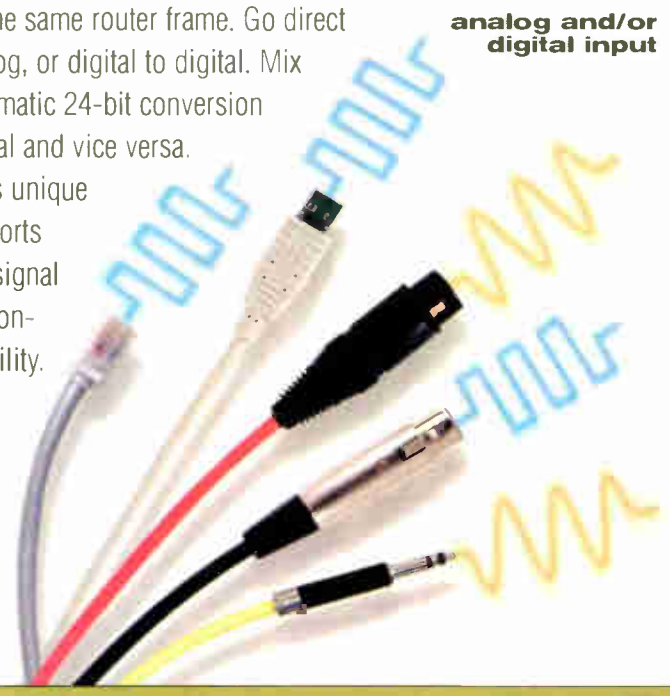

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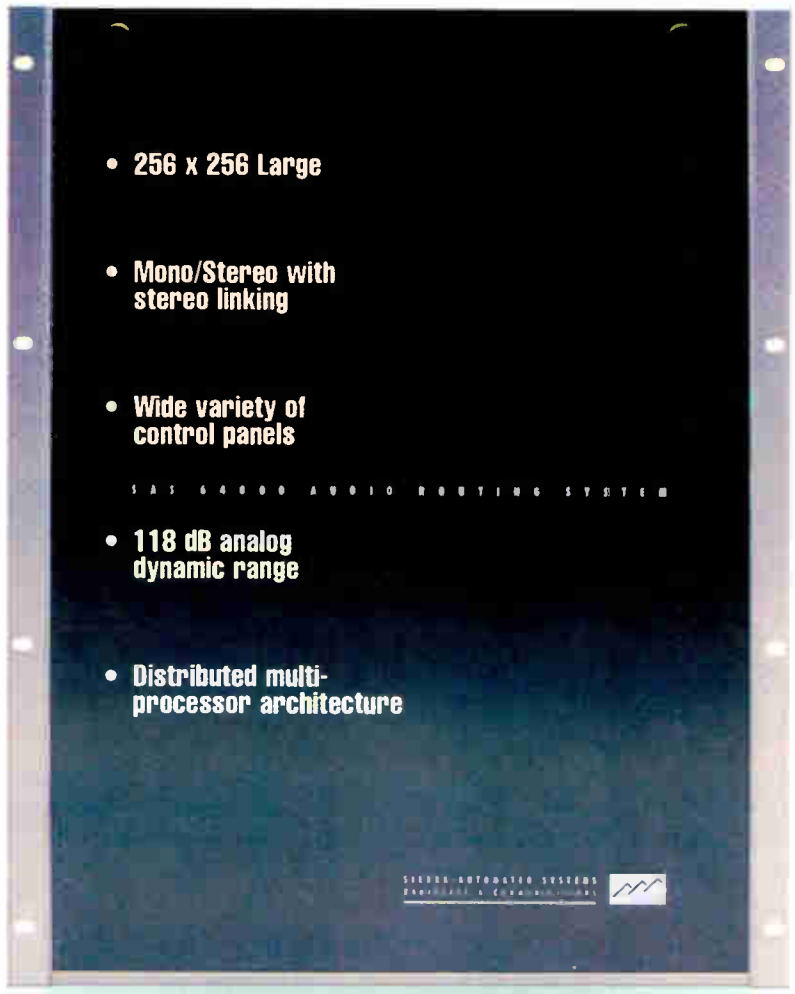

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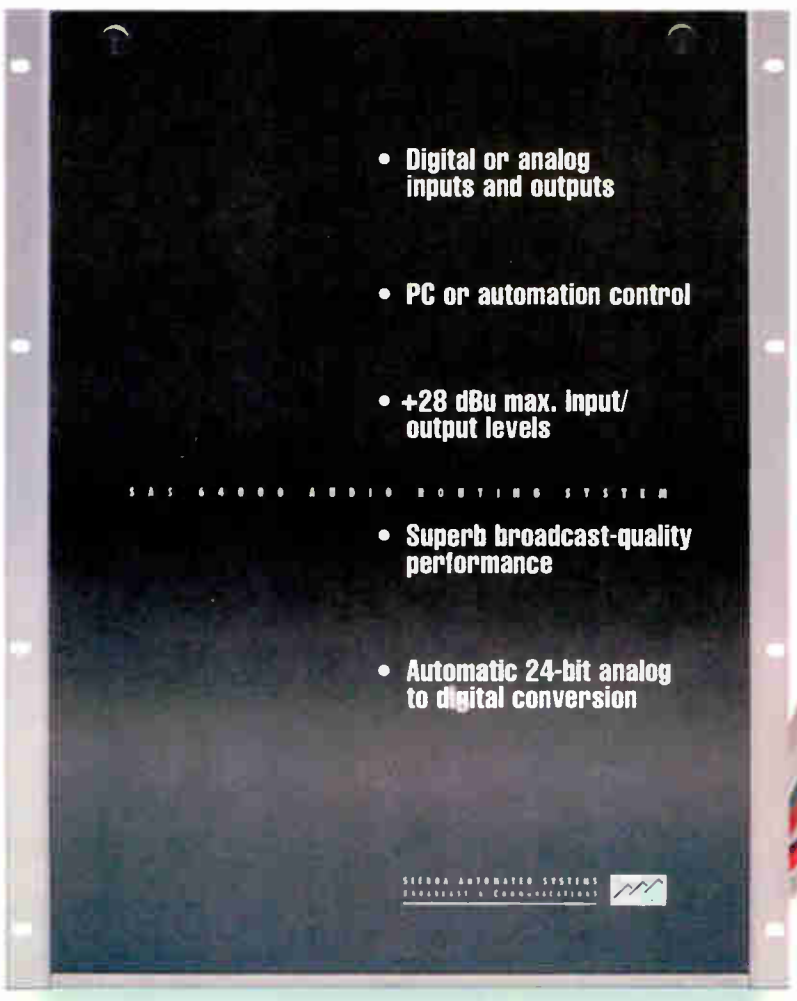

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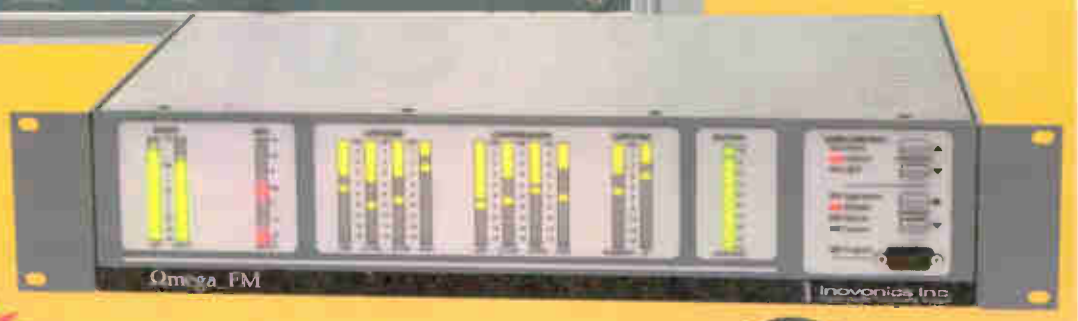

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World Radio History

Codecs

▶ Continued from page 33

codecs, as an MPEG-4 AAC encoder's selected compression ratio is increased, throughput delay also increases.

For example, at 96 kilobits per second, AAC delay is about 100 ms, while at 24 kbps delay extends to over 300 ms. Added to other latency components in a digital audio transmission path, this can begin to cause problems in two-way communications. Therefore a low-delay (LD) version of AAC was developed and included in the MPEG-4 version of the codec standard.

In contrast to standard MPEG-4 AAC, the AAC-LD variant maintains a constant delay of about 20 ms regardless of compression ratio. The tradeoff is a slight reduction in quality at a given bit rate for AAC-LD compared with AAC.

Another variation on AAC is called AAC-SBR, for Spectral Band Replication. This technology is employed mostly in the decoder, where it improves the high-frequency performance of the system. The SBR decoder section examines the lower-frequency elements of the decoded signal and derives a more accurate representation of the high-frequency elements (both harmonic and noise components), thereby improving the perceived audio quality or effective bandwidth of the system at a given bit rate, when compared to decoding without SBR.

A Swedish/German-based company called Coding Technologies has developed SBR, which has been applied so far to both MPEG-2 Audio Layer III and MPEG-2 AAC coding. The resultant products are known as mp3PRO and CT-aacPlus, respectively.

Satellites

The latter has been adopted as the codec used by XM Satellite Radio and Digital Radio Mondiale. (XM also adds proprietary pre-processing at the encoding side from Seattle-base Neural Audio, which are claimed to improve spatial imaging and intelligibility.)

Meanwhile, the PAC algorithm has been inherited by Ibiquity Digital Corp., where its development and deployment continues. It is generally considered to be in the same general efficiency vs. quality class as MPEG-2 AAC, and is currently the codec employed in the Ibiquity IBOC and Sirius Satellite Radio systems.

Another area of greater complexity in the audio codec environment involves intellectual property rights. The earlier process of standard development and implementation has given way to a hybridized world of mixing truly open standard codecs with proprietary extensions and deploying them in optimized variations across specific product lines. This trend is likely to continue.

Even in the MPEG standard world, changes are afoot in the way intellectual property rights will be handled for MPEG technologies. For example, proposed licenses for MPEG-4 involve a per-user multiplier for the first time.

It is unlikely that these developments will subside, as more energy and funding are focused on digital audio distribution systems in coming years. The capacity for such systems' decoders to operate in pure software form also allows downloading of upgrades or wholly new codecs to existing devices, further extending the value of continuing development. XM's recent switch from PAC to CT-aacPlus is a good example of this.

Anyone who thinks that audio codec development is a mature and stable technology clearly is mistaken.

Skip Pizzi is contributing editor of Radio World.

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FIRST WE LISTEN

IBOC

▶ Continued from page 34

possible service modes for AM IBOC that reflect the possible tradeoffs between data throughput and robustness of the signal or coverage.

Paul Peyla, a senior member of technical staff at Ibiquity, presented a similar paper on FM IBOC. The system has the advantage of greater channel bandwidth and accordingly can achieve much higher data rates than on AM.

Modes

Up to 19 possible combinations of service modes are possible with FM IBOC. Peyla discussed these options and the tradeoffs involved in implementing IBOC in both the hybrid and the digital-only versions.

The final paper of the day presented an overview of IBOC deployment from Jeff Detweiler, broadcast technology manager of Ibiquity.

"Consumers are asking for digital," he said. "This is an opportunity for radio to offer them digital."

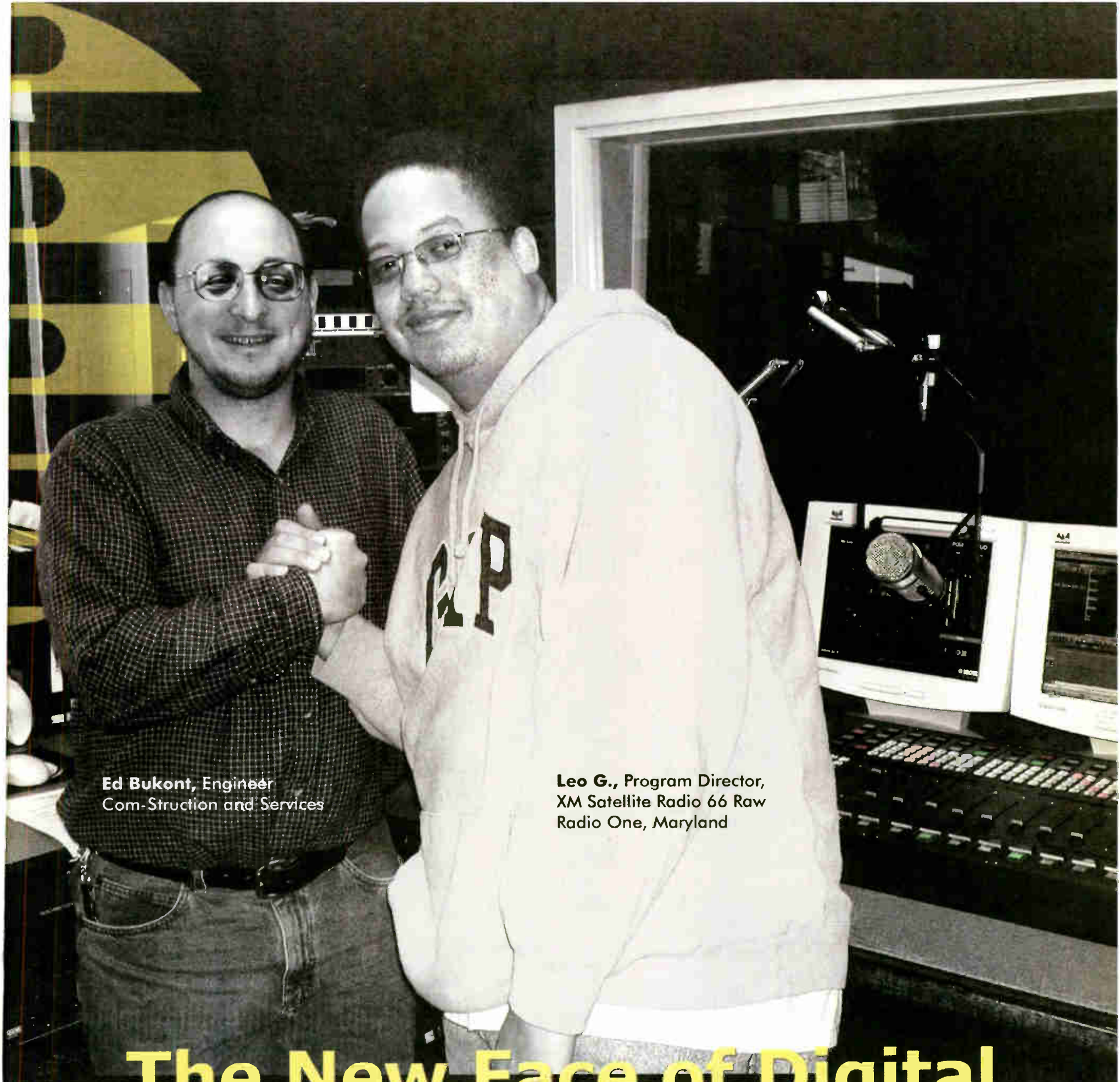
Detweiler discussed the details of IBOC deployment, including the need for GPS receivers in the IBOC exciter to permit exact digital synchronization.

For those using an STL, he pointed out the need for increased STL signal capacity under IBOC due to the increase in frequency response up to 20 kHz and the need to consider any additional data that may be transmitted with IBOC.

Detweiler also reviewed the three methods proposed for IBOC deployment: common amplification, high-power combining and the use of separate antenna.

Tapes of this session are available from www.mobiletape.com. Click on Technology and follow the prompts for the NAB2002 show to the session "IBOC Implementation."

World Radio History



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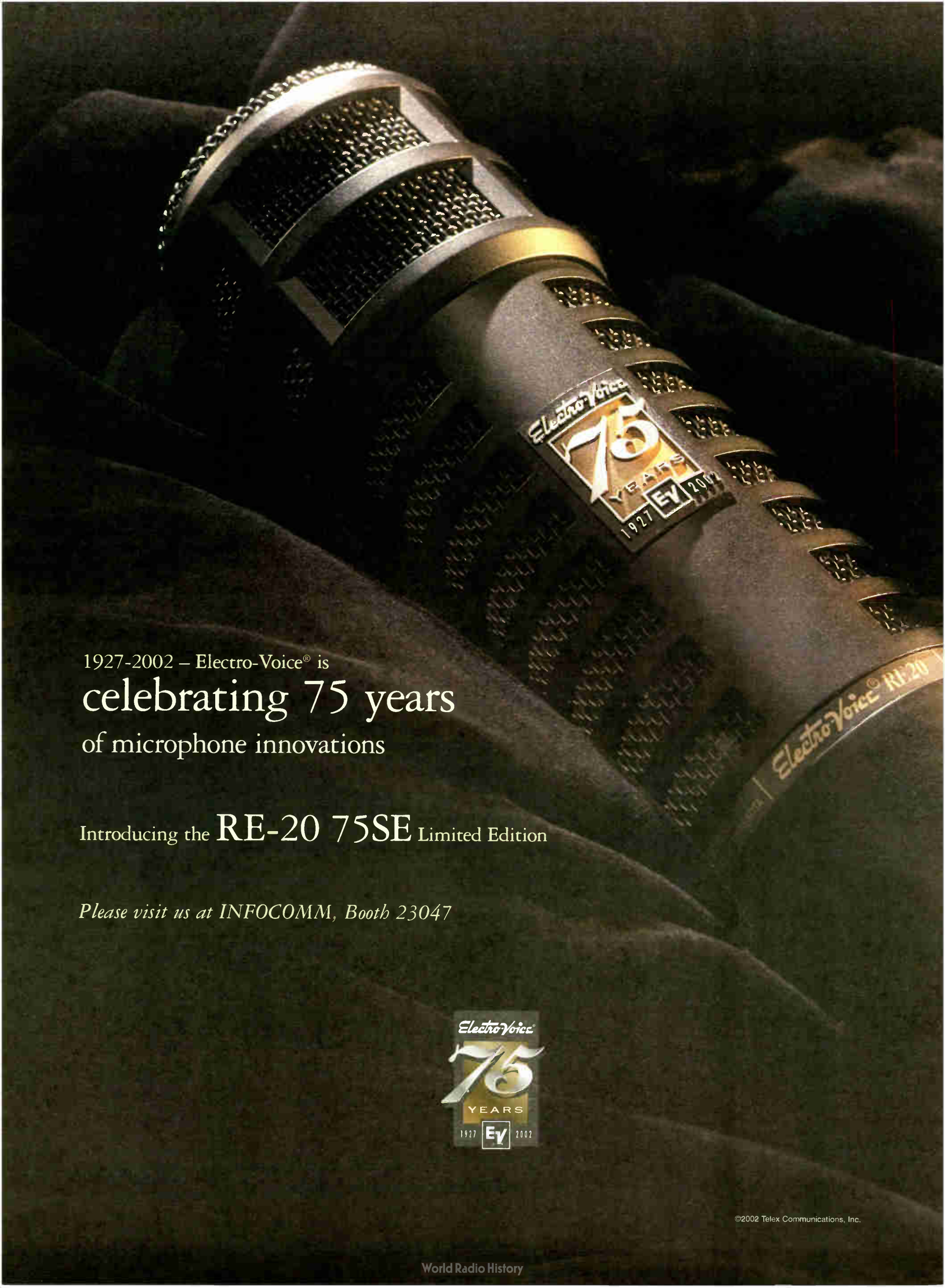

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World Radio History

GM Journal

Radio World | Resource for Business, Programming & Sales | June 5, 2002

Political Broadcasting Primer
See Page 46

MARKET WATCH

GR Radio: From Risqué to Religious

by Randy J. Stine

Ask anyone from Michigan to show you where in the state they live and chances are, they will raise their right hand as if to take an oath and point with their left index finger to a spot on the palm of their right hand.

In the case of Grand Rapids, Mich., that would be in the lower left-hand corner of the make-believe mitten.

Grand Rapids is the second-largest city in this car-obsessed state and is ranked as market No. 66 by Arbitron. It also happens to be the home of the most powerful FM station in the country: Clear Channel's top-rated WBCT(FM) booms out with an effective radiated power of 320,000 watts.

Market domination

Three major broadcast groups own dominant market shares in this city of 197,800 and market of 822,000.

Clear Channel Communications owns nearly 38 percent of the market's audience share with its seven stations. Citadel Communications owns a 17-percent audience share with its four signals. Regent Communications is the market's third-largest corporate owner by Arbitron's Fall 2001 listener measure, with a combined 16 share.

Market revenue for broadcasters had grown steadily until last year's recession, according to BIA Financial Network Inc. estimates. Grand Rapids radio revenue shrunk from almost $45 million in 2000 to just over $40 million in 2001.

Prior to last year's tumble, market revenue had been on a fast track since the Telecom Act of 1996, increasing from $31.6 million to $44.9 million in 2000.

"We definitely felt the economic downturn last year, but we probably made out about as well as any other market," said Skip Essick, vice president and general manager for Clear Channel Grand Rapids. "It certainly helps to have a diverse economic base to draw from."

History

The childhood home of President Gerald R. Ford, Grand Rapids originally was an Ottawa Indian village along the banks of the Grand River. It was settled by Dutch immigrants in the mid-19th century and incorporated as a city in 1850.

The city boasts four museums and is home to minor-league baseball's West Michigan Whitecaps, the Continental Basketball Association's Grand Rapids Hoops, the International Hockey League's Grand Rapids Griffins and even an Arena Football League team called the Rampage.

Often referred to as the Furniture City, Grand Rapids is home to office furniture giants Steelcase Inc., Herman Miller and Haworth. The three companies have nearly 20,000 employees throughout the region. The city's economy also gets a boost from tourism dollars during the summer months because of its proximity to Lake Michigan, which is 30 miles to the west.

WOOD(AM) Radio's Gary Allen and John Matlak of 'Grand Rapids First News' talk with Richard Norton Smith of The Ford Museum during a live broadcast.

Grand Rapids is experiencing an economic renaissance of sorts with more than $200 million in new cultural and recreational facilities underway or recently completed, according to the Grand Rapids Visitors and Convention Bureau.

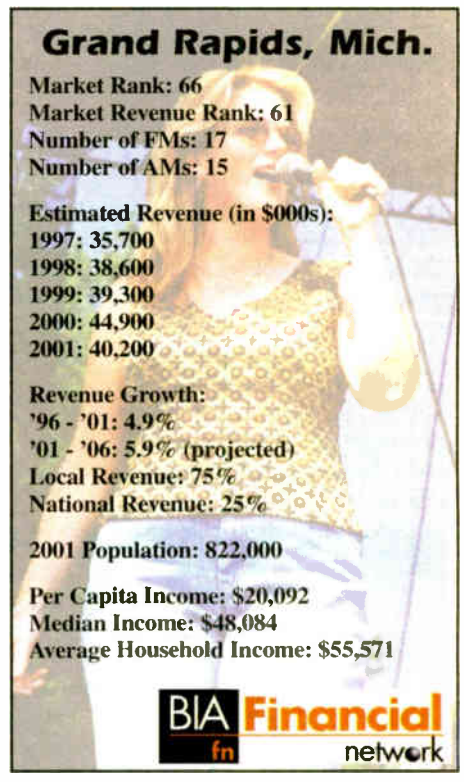
Broadcast executives here say Grand Rapids is notorious for being conservative, partly due to its large Dutch Reformed population. However, the city seems to be moving ahead with the times: Howard Stern's controversial morning show airs on active rock WKLQ(FM) and the "Bob and Tom Show" is heard on classic rock WBFX(FM). Both shows do well in the ratings, according to Arbitron.

Still, many programmers have discovered what plays in neighboring Detroit or Chicago can flop in this city.

"We don't really break much music in this market, so we really don't have to play anything too extreme," said Jeff Andrews, program director for CHR WSNX(FM).

Phil Catlett, market manager for Regent Communications' five-station cluster, said, "Research has shown that this market is typically much more conservative with its music selection. The

See GRAND RAPIDS, page 42 ▶



Background: Tricia Yearwood performed at the B-93 Birthday Bash.

World Radio History

Grand Rapids

▶ Continued from page 41

familiarity the audience has with established artists is very important here."

"There are certainly things you have to be sensitive to when programming," Essick said. "It's a family-oriented and staunchly Republican market for the most part."

Arbitron Fall Book's No. 1, Clear Channel station WBCT(FM), plays country music and has avoided the downturn country music radio has endured the last few years. The station has been the city's top-rated station for five continuous books.

Carry a big stick

"Consistency of staff is key, but having the biggest FM stick with 320,000 watts doesn't hurt either," said Doug Montgomery, program director for WBCT. "To have the set penetration we have ... let's just say we do not have many dead spots."

WBCT's "Moy'nin Boys" is the market's top-rated morning show, hosted by 11-year veterans Neal Dionne and Reese Rickerts. Dionne holds the distinction of hosting the "B-93" morning show and then crossing the Clear Channel hallways to do afternoons at sister station WOOD(AM).

Engineer Mark Wittkoski keeps public radio stations WGVU(AM-FM) and WGVS(AM-FM) on the air to keep west Michigan listeners tuning in.

Second-ranked in Arbitron's Fall Book was WOOD(AM). The news-talk heritage station was the city's first radio outlet when it signed on in 1924. The station, with a colorful woodpecker for a mascot, carries local talk programming in addition to Rush Limbaugh and Dr. Laura.

"WOOD(AM) does very well in what is an otherwise FM-dominated market. We had a great fall book because of the events of Sept. 11," said Phil Tower, program director for WOOD. "People turn to (WOOD) in times of crisis."

A planned power increase at the end of the year from 5,000 watts to 25,000 watts will give WOOD(AM) the second-largest coverage footprint in the Wolverine state, behind only WJR(AM) in Detroit, Tower said.

WTKG(AM), Clear Channel's other news-talk station, carries ABC Radio News and various syndicated talk programming. "It's really just a flanker station to WOOD, but it does relatively well," Tower said.

Clear Channel's seven-station cluster is in downtown Grand Rapids in the 77 Monroe Center building. The broadcaster occupies three floors and nearly 18,000 square feet of the office building.

In terms of revenue, Clear Channel generated nearly half of the revenue for the entire market last year, with just over $18 million in earnings, according to BIAfn.

0Essick, who has worked in the Grand Rapids market on and off since 1971, said Clear Channel's philosophy is to be involved in the community and to program on the level of a major market.

"All of our stations have an obligation to the community. If the community is successful, we'll be successful. The competition is intense like it is in a major market, so we program to the level."

WBFX(FM) "The Fox" is the new rocker on the block in the city. Launched in the fall of 2000, the Clear Channel station features the "Bob and Tom Show" mornings and is positioned between active rock WKLQ(FM) and classic rock WLAV(FM), both owned by Citadel.

The 'Piggin' N' Grinnin' team won last year's annual barbecue tournament sponsored by 101.3 The Fox.'

"We say it's classic rock for 'Generation X' people. Our list pulls from the '70s, '80s and '90s with just a little new stuff thrown in," said Montgomery, who programs both WBFX and WBCT.

In addition to WBCT, Grand Rapids boasts another high-power FM. Clear Channel's WOOD(FM) has an effective radiated power of 265,000 watts and is known as "Star 105.7, Today's Soft Rock."

Market buzz

WOOD(FM) Program Director John Patrick said the station adopted the "Star" moniker last fall with a stunt that created a lot of market buzz.

"We started played nothing but Christmas music on Nov. 11 right through Christmas. It helped create a lot of listener interest and was well-received in this type of market," Patrick said.

Clear Channel's other two stations include "Continuous Hit Music" WSNX(FM), with a Contemporary Hits Radio format, and Hot AC "i96" WVTI(FM), named for Interstate 96 that runs through the city.

WSNX ranked third in the Arbitron 2001 Fall book, while WVTI finished just outside the top 10.

Clear Channel is a big believer in "cross promotion" of its seven stations, Montgomery said. "We cross promote a station an hour across the cluster.

Regent Communications recently completed its five-

Afternoon Drive WKLQ Jock Cristi Cantle, WKLQ/WLAV Promotions Director Christina Walkons and Citadel sales rep Melissa Lanning, from left, whoop it up on a Miller Lite-sponsored station bus trip.

station move into new facilities in downtown Grand Rapids. Ironically, the Clear Channel, Citadel and Regent clusters now are located within several blocks of each other near downtown.

The Regent stable of WLHT(FM), WTRV(FM), WGRD(FM), WFGR(FM) and WNWZ(AM) generated nearly $10 million in revenue in 2001, which was second-best in the market, according to BIAfn.

The group's top moneymaker last year was adult contemporary WLHT. The station was ranked sixth in Arbitron's Fall 2001 book and plays core artists like Phil Collins and Celine Dion.

Market fixture

WLHT Program Director Bill Bailey said the station is a mainstream up-tempo AC with personality.

"Dave Jaeger and Geri Jarvis, our husband-and-wife morning team, have been in the market for 16 years. Having the name recognition and the built-in tradition really helps with our format," Bailey said.

Hiring well-known local talent is one of the programming philosophies for Regent in Grand Rapids, Catlett said. "We have some of the lesser signals in the market, so we compensate for that with big names locally to help the stations stand out as much as possible."

Bailey also programs Regent's other AC station,

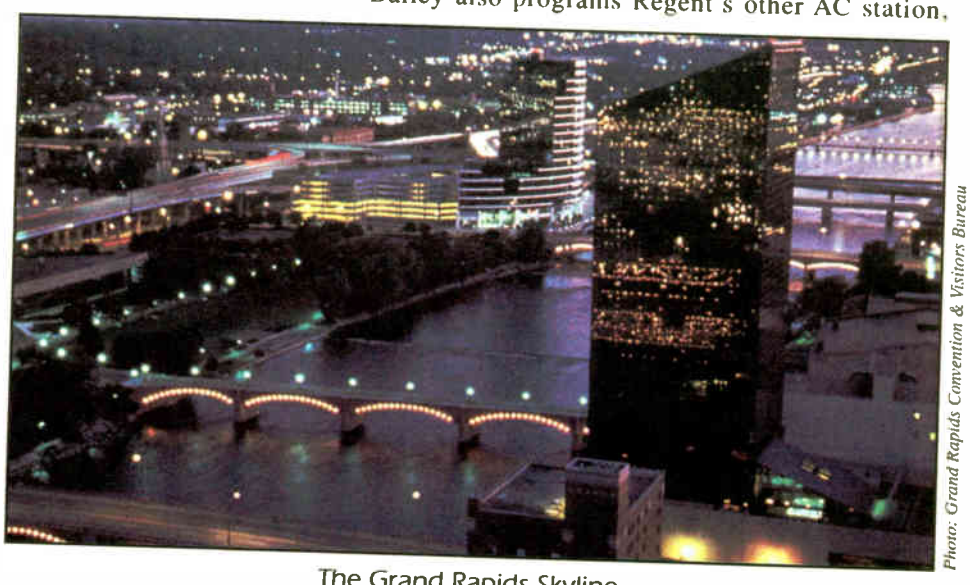


Photo: Grand Rapids Convention & Visitors Bureau

The Grand Rapids Skyline

WTRV. He said "The River" is your classic background soft AC.

WGRD is Grand Rapids' "New Rock 97nine." Program Director Bobby Duncan said the station presents a "pop inclusive" Alternative sound.

"For example, we were spinning the latest Alanis Morissette single called 'Hands Clean.' On the gold side, we play pop leaning artists like Sugar Ray, Deep Blue Something and Matchbox 20. We try to tailor the music selection to the market," Duncan said.

Catlett said classical WFGR and news-talk WNWZ are niche stations that have very loyal audiences.

See GRAND RAPIDS, page 44 ▶

World Radio History

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World Radio History

Grand Rapids

▶ Continued from page 42

WNWZ is Spanish-language and serves the city's growing Hispanic population. According to Arbitron, Grand Rapids' population is 3.6 percent Hispanic.

Urban WJNZ(AM), owned by Goodrich Broadcasting, serves the city's small African-American population. Blacks account for only 6 percent of the city's population, according to Arbitron. WJNZ's share 12-plus in Arbitron's Fall 2001 book was 1.5.

Citadel Market Manager Matt Hanlon, who arrived in Grand Rapids in January after working 19 years in New York City, said he quickly learned to appreciate what the radio market has to offer.

"It's great radio and a very competitive market for the ad dollars we're chasing. However, it's a lot easier to get a grasp on a market this size compared to New York," Hanlon said.

"I think local TV and the Grand Rapids Press are the main competition for us, more so than the other radio broadcasters. Sometimes we get caught up in the battle and ignore the war."

Citadel's stations include WKLQ(FM), WLAV(FM), WODJ(FM) and WBBL (AM). The stations billed nearly $9 million in 2001, according to BIAfn.

Active rock WKLQ is known as "The Rock" in Grand Rapids, with lots of attitude and Howard Stern in the morning. Market sources say Stern gets good ratings, but that Citadel has a hard time selling the show.

Local sound

"I think a bigger concern than the content of his show for us is making the show sound local. Some advertisers have expressed concern over his show, but mostly they want results," Hanlon said.

Stern was No. 1 with men 18-plus in the Fall 2001 book with 9.1 share, Hanlon said.

Citadel's Classic Rock WLAV is the market's heritage rock station and will celebrate its 30th anniversary of rock radio in Grand Rapids in 2003.

"We are unique in that we are not a 500-song cookie-cutter rock station," said Tony Gates, program director for WLAV. "We also embrace the blues and jazz."

WSNX sponsors the annual 'Beach Grind' at Heritage Landing in Muskegon on Lake Michigan.

For being a market that embraces familiarity in its personalities and music, it is surprising to most market observers that "Oldies 107.3" WODJ(FM), with its familiar playlist, has had lackluster ratings success.

"That's the one station we have that has underachieved to this point. The on-air mix just has never been right," Hanlon said. "We have recently hired a new program director to fix the programming issues."

WBBL(AM) "The Ball" is the city's all-sports station. The Citadel station is an ESPN Radio affiliate and features some local sports talk programming, including former Chicago sports talker Bill Simonson's "Huge Show" weekday afternoons.

Religious radio, typically a ratings afterthought in most markets, is a force in Grand Rapids. WJQK(FM) was nearly a top 10 station in Arbitron's Fall 2001 book with a 2.7 share. The station, owned by Lanser Broadcasting, plays contemporary Christian music interspersed with some talk and scripture readings. The station billed over $1.5 million last year, according to BIAfn.

"I don't think there are too many markets in the country that could support five Christian stations like Grand Rapids does," said Les Lanser, president of Lanser Broadcasting.

Lanser's group also owns WJQK(AM), a talk format Christian station. WFUR(FM), WCSG(FM) and WGNB(FM) are the remaining Christian stations with signals that reach the metro.

"We try to sound as polished as the other broadcasters in town," Lanser said of his two stations. "The advertising base is not just Christian businesses either. They are very much results-driven like everyone else."

Grand Valley State University's main campus is located in nearby Allendale, Mich. The 19,750-student university operates WGVU(AM-FM), which offers classical, jazz, news and National Public Radio programming.

Public radio

"The west Michigan area is enormously supportive of what we do. Our fundraising includes several pledge drives each year, but underwriting is really the key to our survival," said Fred Martino, public affairs manager for WGVU.

With only a handful of independently owned radio stations remaining in the market, the opportunities for Clear Channel, Citadel and Regent to expand their holdings are limited. Top broadcast executives in the market agree that consolidation within the market has likely ended for now.

"We would love to grow and expand our broadcast group, but the options are limited. We have no plans to pursue anything at this time," Citadel's Hanlon said.

Randy Stine can be reached via e-mail to randyjstine@aol.com.

Grand Rapids Radio Market Overview

Station	Owner	Format	Fall '01 Rating	BIAfn's 2001 Est. Station Revenue ($000s)
WBCT(FM)	Clear Channel Comm.	Country	10.0	6,300
WOOD(AM)	Clear Channel Comm.	Nws/Tlk/Spt	7.7	3,600
WSNX(FM)	Clear Channel Comm.	CHR	7.2	2,900
WKLQ(FM)	Citadel Comm. Corp.	AOR	6.0	2,000
WLAV(FM)	Citadel Comm. Corp.	Clsc Rock	5.9	5,075
WLHT(FM)	Regent Comm. Inc.	AC	4.8	4,900
WGRD(FM)	Regent Comm. Inc.	Modern Rock	4.7	2,825
WOOD(FM)	Clear Channel Comm.	AC	4.7	2,800
WTRV(FM)	Regent Comm. Inc.	Soft AC	4.4	1,300
WBFX(FM)	Clear Channel Comm.	Clsc Rock	3.7	1,100
WODJ(FM)	Citadel Comm. Corp.	Oldies	3.6	1,400
WVTI(FM)	Clear Channel Comm.	CHR	3.4	1,100
WJQK(FM)	Lanser Broadcasting Corp.	ChrsContemp	2.7	1,575
WMJH(AM)	Birach Broadcasting Corp.	Adlt Stndrd	1.8	400
WFGR(FM)	Regent Comm. Inc.	Classical	1.7	675
WJNZ(AM)	Goodrich Radio Mktg. Inc.	Urban AC	1.5	400
WBBL(AM)	Citadel Comm. Corp.	Sports	1.2	250
WFUR(FM)	Kuiper Stations	Religion	1.1	350
WHTC(AM)	Midwest Comm. Inc.	FullService	1.0	300
WTKG(AM)	Clear Channel Comm.	News/Talk	0.7	300
WKWM(AM)	Goodrich Radio Mktg. Inc.	Oldes/Rhymc	0.6	100
WGHN(FM)	WGHN Inc.	AC	0.5	200
WGVU(AM)	Grand Valley State Univ.	News/Talk	N/A	75
WWJQ(AM)	Lanser Broadcasting Corp.	Altve/Talk	N/A	0
WFUR(AM)	Kuiper Stations	Religion	N/A	0
WGHN(AM)	WGHN Inc.	AC	N/A	0
WNWZ(AM)	Regent Comm. Inc.	News	N/A	150
WYGR(AM)	WYGR Bdcstng. Mich. Gen. Ptnrshp.	Spanish	N/A	75
WMFN(AM)	Birach Broadcasting Corp.	Sports	N/A	0
WAYG(FM)	Cornerstone Baptist Ed. Ministries	ChrsContemp	N/A	0
WBLU(FM)	Blue Lake Fine Art Camp	Classical	N/A	0
WCSG(FM)	Stafford Broadcasting	Christian	N/A	0
WGNB(FM)	Moody Bible Institute of Chicago	Religion	N/A	0
WGVU(FM)	Grand Valley State University	Jazz	N/A	0
WTHS(FM)	Hope College	Alternative	N/A	0
WVGR(FM)	University of Michigan	Nws/Tlk/Inf	N/A	0
WYCE(FM)	Grand Rapids Cable Access	AAA	N/A	0

N/A indicates the station is not rated in the market, but is heard there.

BIA Financial fn network

Stations are ranked in order of Arbitron Fall 2001 12+ share. Copyright 2002 the Arbitron Co. May not be quoted or reproduced without the prior written permission of Arbitron. Other information provided by BIA Financial Network through its MEDIA Access Pro Radio Analyzer Database software.

Photo: Aerial Impact Photography

Background: The West Michigan Whitecaps call Old Kent Park home.

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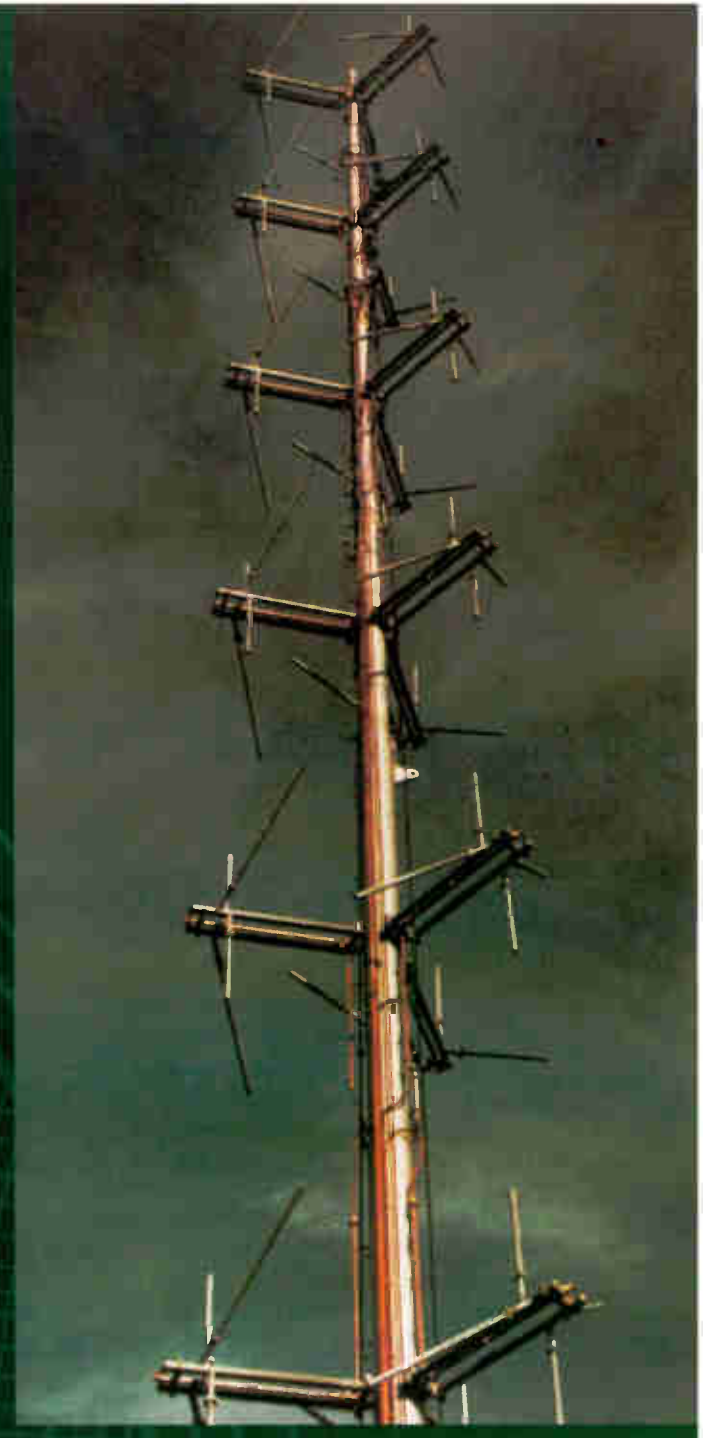

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World Radio History

Political Broadcasting Primer

by Barry D. Umansky

Now with primaries and the entire political season upon us, it's time to review the complex and often confusing FCC political broadcasting rules. FCC fines can be as high as $25,000 per day for violating these rules, so this is important stuff.

Our focus is on the "reasonable access," "equal opportunities" and "lowest unit charge" provisions of the federal law and FCC rules. This summary will help you handle political spots, political programs and other candidate appearances (*e.g.* candidate debates) in an election season.

But, again, it's only a brief summary. As you deal with political candidates, their staffs and ad agencies, you should seek the guidance of your communications lawyer.

Recent congressional legislation will change some of these rules *after* the 2002 elections as reported in these pages. But I won't confuse you by discussing those non-yet-effective changes here.

What's the 'Use' and Who Are 'Legally Qualified Candidates'?

The terms "use" and "legally qualified candidate" are key. The lowest unit charge ("LUC"), "equal opportunities" and "reasonable access" requirements apply only when there is a "use" of a broadcast facility by a "legally qualified" candidate. Reasonable access only applies to federal candidates, and only when there is a "use" and the candidate is legally qualified.

A "use" of a station is any *positive* appearance by a legally qualified candidate. Four kinds of programming never constitute uses: (1) *bona fide* newscasts; (2) *bona fide* news interviews; (3) *bona fide* news documentaries, as long as the candidate's appearance is incidental to the subject; and (4) on-the-spot coverage of *bona fide* news events, such as candidate debates.

To be "legally qualified," a candidate must, at a minimum, have announced his/her intention to run for office and be legally qualified to hold office. There may also be additional requirements depending on the office sought and the type of election.

Reasonable Access — Federal Candidates Only

You must give legally qualified *federal* candidates reasonable access to your station and reasonable amounts of broadcast time. Candidates for state and local office have no statutory right to purchase time on a broadcast station.

Lowest Unit Charge

During the periods 45 days before a primary or primary runoff election and 60 days before a general or special election, you may not charge legally qualified candidates more than the LUC for the same class and amount of time for the same time period. This requirement applies to *federal and non-federal* candidates, but not to ballot issue ads.

All rotations that are offered to commercial advertisers must be offered to political candidates.

Access: Yes or No? — Offering reasonable access to federal candidates is a process negotiated between the station and the representatives of the candidates. If you deny a request for broadcast time, it must be for a valid reason, such as a realistic danger of substantial program disruption or an excessive number of equal opportunity requests.

Time of Day — You may not flatly ban access for specific periods of a day or types of time (*e.g.* drive time) and you may not limit or dictate the format or length of time of political programming, nor may you create preset limits for federal candidates' advertising (*e.g.* one spot per hour). On the other hand, you may bar political broadcasting during news broadcasts, and you do not have to grant candidates access at the specific times requested.

The Campaign Season — The reasonable access requirement does not apply until the campaign begins. The start of the campaign is determined by several factors, such as: (1) announcements of candidacy; (2) the existence of campaign organizations; (3) fundraising activity; (4) endorsements; (5) media coverage of the campaign; and (6) the progress of the delegate selection process (if any).

Classes of Time — You must disclose and offer to political candidates every class of time you offer to commercial advertisers. Each class of time has its own LUC. The commission generally has recognized and defined the following classes of time: fixed position; non-preemptible; preemptible with notice; immediately preemptible and run-of-schedule "*Candidate-Only*" *Class of Time* — You *may* sell candidates a special "candidate-only" class of time at discounted rates if doing so will confer a greater benefit on political advertisers than is available to favored commercial advertisers. The price for the "candidate-only" class generally is the "effective selling rate" for preemptible time.

Rotations — All rotations that are offered to commercial advertisers must be offered to political candidates. Rotations must correspond with your normal commercial sales practices and be based on some objective criteria, such as audience size or demographics.

Computing the LUC — The LUC is the lowest per-spot or per-program charge for the same class and amount of time for the same time period. Candidates must be given all discounts, based on volume, frequency, or any other factor, that are available to your most favored commercial advertiser for the same class of time, regardless of the amount of time the candidate buys.

Include in LUC calculations rates for spots sold to commercial advertisers in packages. Candidates don't have to buy an entire package or a proportionate package to gain the benefit of package rates, but may instead cherry-pick package plans. Also, you must include bonus spots (including paid PSAs) in LUC calculations, by assigning them a value that is factored into such calculations.

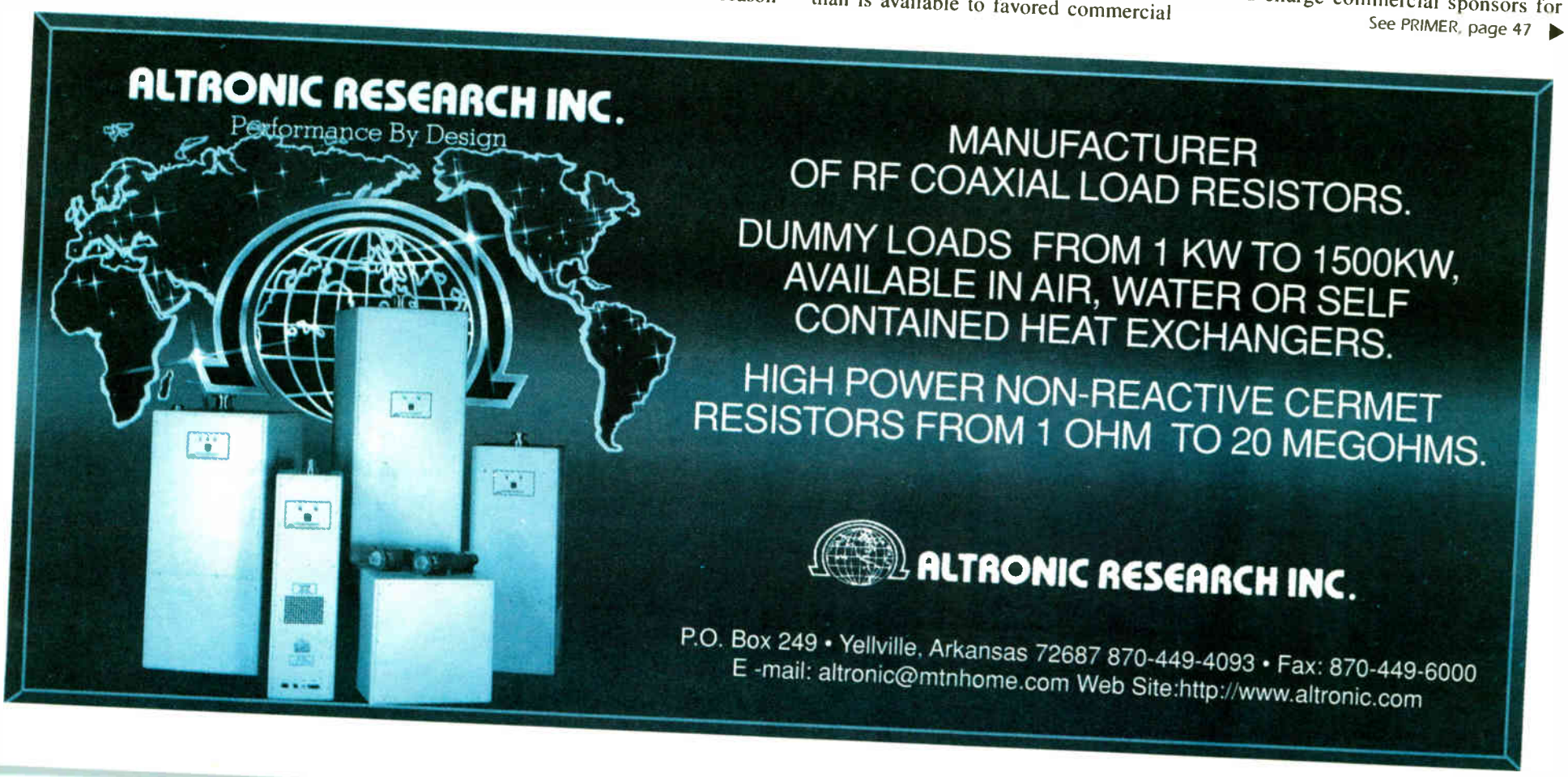
Trade-outs and pure barter deals not involving cash consideration and per inquiry advertising do not need to be considered in LUC calculations. Combination barter/cash deals will require a computation of barter value for determining the LUC.

Rebates and Credits — If the station sells time for a particular class and time-period at a rate that is lower than the rate paid by the candidate, the candidate will be given the benefit of the lower rate either by way of a timely rebate or as a credit against future purchases, at the option of the candidate.

You must establish procedures to review records periodically and provide candidates with rebates or credits in a timely fashion. Ideally, rebates should be made weekly and, in any event, before the election.

"Comparable Uses" — Even before the LUC period begins, you may not charge candidates more than you would charge commercial sponsors for

See PRIMER, page 47 ▶



World Radio History

Primer

▶ Continued from page 46

comparable uses of the station. Under this doctrine, you may charge candidates more than the *most favored* commercial sponsors, but may not charge candidates more than you charge *any* commercial sponsor.

Disclosure Statements — The FCC requires you to notify political candidates of all rates, package plans, rotations, discount privileges and levels of preemptibility that are available to advertisers, including your most favored commercial advertisers. Your disclosure obligation is an affirmative one and is not satisfied by waiting for candidates to ask for the information.

Your disclosure obligation is an affirmative one and is not satisfied by waiting for candidates to ask for the information.

Advance Payment — A station may require advance payment from a federal candidate, to whom the station will not extend credit, no more then seven days before a spot/program is scheduled to run. State and local candidates must abide by the station's general credit/advance payment policies, so long as these policies do not hinder candidates from exercising their equal opportunity rights.

Equal Opportunities

If you allow any legally qualified candidate to use your station, you must afford equal opportunities for all opposing candidates who also want to use your station.

This requirement applies to candidates for state and local office as well as candidates for federal office. However, the rule does not apply to elections involving districts that are beyond a station's principal service area.

Candidates may obtain equal opportunity only by affirmatively requesting such time within seven days of the first use by an opposing candidate after the requesting candidate has become a candidate. If the candidate fails to make the request in time, his/her right to equal opportunity is forfeited for the spots aired by the opponent.

Political File

You must keep a publicly available file (or "political file") describing all requests made for political broadcast time by or on behalf of candidates, together with a notation showing the disposition made of such requests.

Specifically, the file should include the schedule of time purchased, when spots were actually aired, the rates charged, any free time or rebates given and the classes of time purchased. All relevant information must be placed in the political file as soon as possible and retained for two years.

Sponsor ID

Political programs and spots must state that the spot has been "paid for," "furnished by," or "sponsored by" the specific entity that purchased the spot. Moreover, the complete name of the sponsor must be identified accurately.

Ballot Propositions

A station need not offer any time for ballot proposition advertising.

If it does offer such time, it may do so in any amounts, combinations or packages it chooses and may charge market rates, rather than the LUC.

A station may also reject particular ballot proposition advertising for offensiveness, falsity, potential defamation, or any other reason. Unlike the situation of stations' airing candidates' spots and programs, (which are "uses" of a braodcast station), stations are not immune from libel on other actions based on the airing of the "issues ad." Ballot proposition advertising also must carry a clear and accurate sponsor identification.

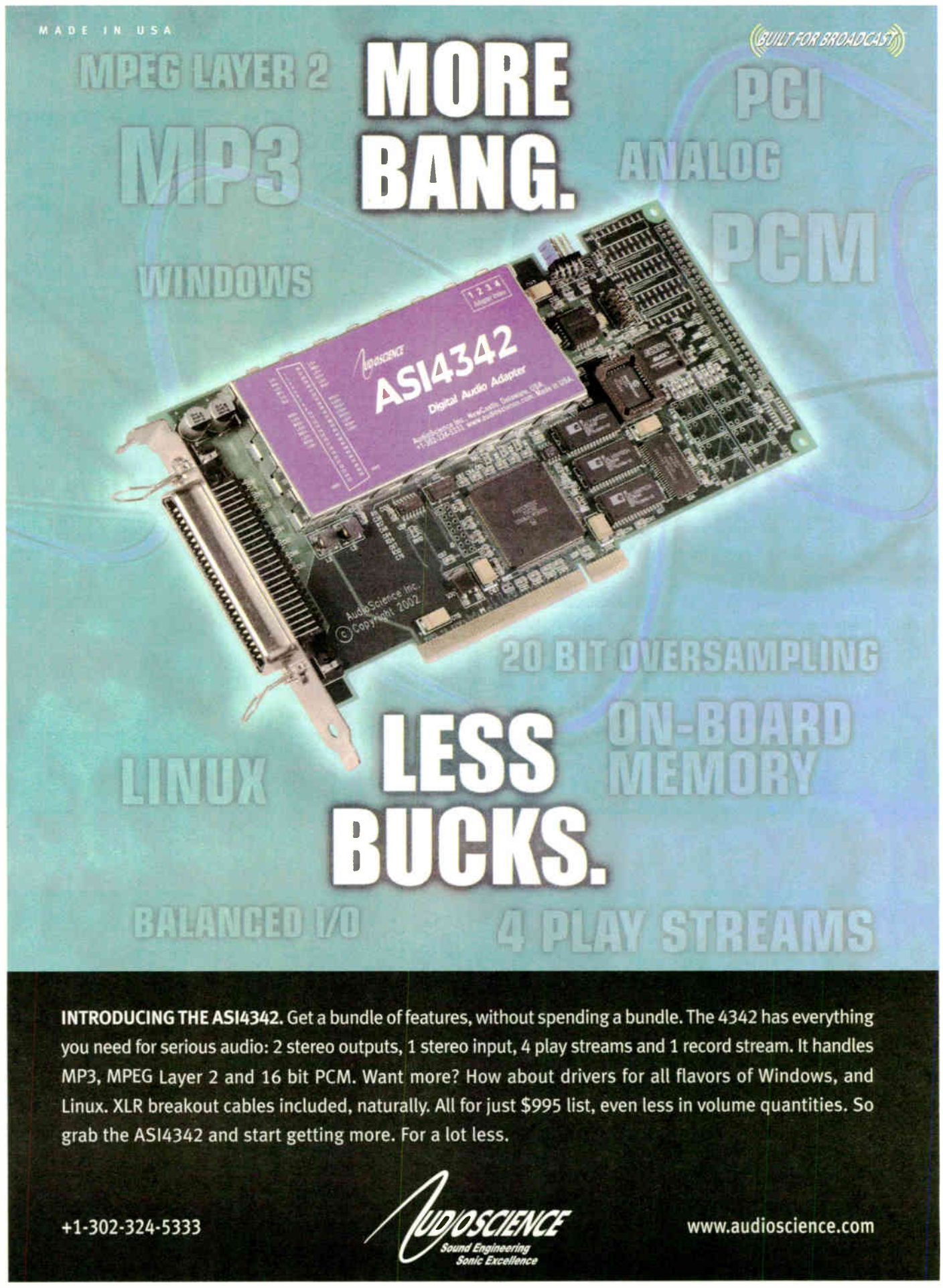
Barry D. Umansky, former deputy general counsel of the National Association of Broadcasters, is with the communications practice group at the law firm of Thompson Hine LLP in Washington. Reach him at (202) 263-4128 or via e-mail to barry.umansky@thompsonhine.com.

Radio Sales Up 1% in March, Down for Quarter

Radio sales increased by 1 percent in March compared to the same month a year ago, according to the Radio Advertising Bureau.

Overall, the first quarter was down 1 percent for radio compared to last year. RAB blamed what it called a "glitch" in February when the lack of TV sweeps advertising affected local revenue growth.

RAB President and CEO Gary Fries said radio traditionally is the first medium to post positive growth following a downturn.



World Radio History

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World Radio History

Studio Sessions

Travis Says 'Make a Profit'
See Page 51

PRODUCT EVALUATION

Mackie Gets Active With HR624

by Mark Greenhouse

Mackie recently introduced the HR624 active studio monitor, aimed toward professional broadcasters and studio engineers.

This high-resolution monitor carries a Lucasfilm THX pm3 certification and boasts a 6.7-inch die-cast magnesium frame woofer, time-aligned with a 1-inch viscous edge-damped aluminum-alloy dome tweeter. Both are mounted within a massive, acoustically non-resonant die-cast zinc exponential waveguide, along with a 6-inch by 9-inch elliptical flat piston rear-firing mass-loaded passive radiator.

The unit is lined with internal open-cell adiabatic "foam fill" acoustical damping material and finished with a 1-inch thick radius-edged MDF construction front panel.

Adiabatic means "no loss or gain of heat." In this case, it is a material that remains thermally neutral.

A modified Linkwitz-Riley crossover-fed biamped monolithic IC provides the power to drive the two-way active monitor system. The IC is kept cool by convection. Low-frequency rolloff is provided by a sixth-order Butterworth system.

Familiar territory

In addition to the amazing number of mysterious hyphenated-name components this system sports, it has a bunch of useful, familiar and flexible features.

I will start with connectivity: balanced XLR, 1/4-inch phone and unbalanced RCA jacks face downward, permitting flushmounting the unit to the wall. Power is via ungrounded AC.

Rear-mounted easy-access controls include input sensitivity and a smart power mode selector that puts the speakers in Standby mode after eight minutes of silence.

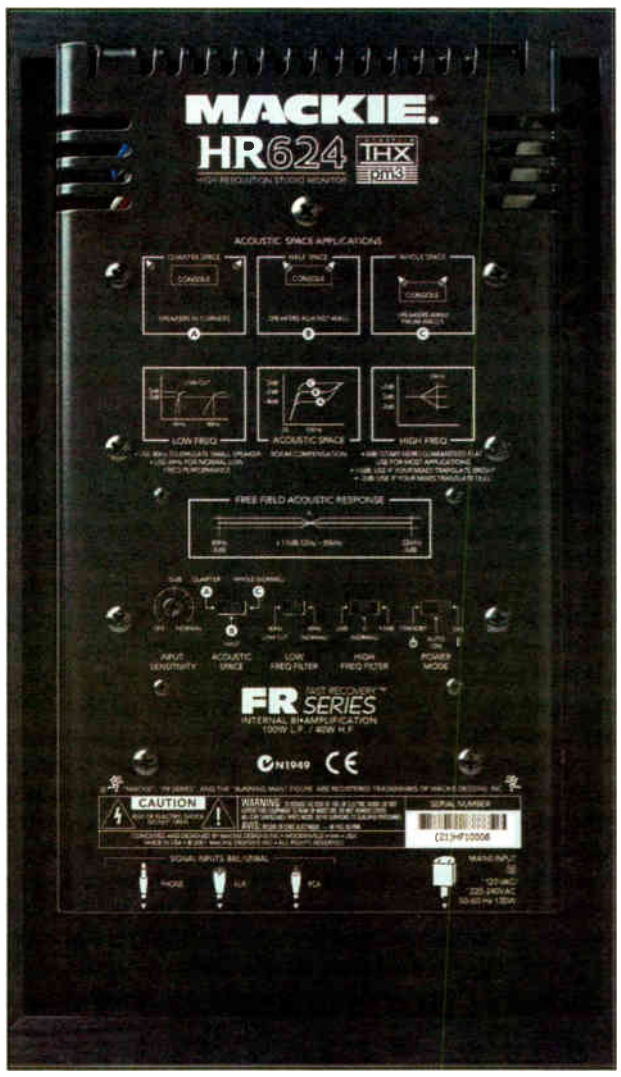
The 100-watt low-frequency and 40-watt high-frequency amplifiers mute briefly upon startup while the power supply and internal circuitry stabilize.

A thermal switch puts the speakers in standby if the heat sinks get too hot, then automatically resets to On when temperatures allow.

An overload compressor protects speakers from overload damage. An overload indicator is located on the faceplate. The unit itself is attractive; a black oak veneer over medium density fiberboard (MDF) wood, with an internal brace to increase the strength and rigidity of the box, which measures 8.25 inches by 13 inches and weighs 25 pounds.

A nice surprise was the excellent owner's manual, which includes sound advice.

See MACKIE, page 53 ▶



Rear View of Mackie HR624

PRODUCT EVALUATION

TuneTracker 2 Brings Automation With a Budget Price

by Tom Vernon

The advent of inexpensive streaming media software and low-power transmitter technology brings many new applications for the broadcast medium.

Tunnelcasting, elevator and on-hold music systems, hospital radio stations and corporate intranet broadcasting are but a few of the ways that this technology is being put to use.

Many of these "broadcasters" are low-budget operations. While setting up a simple PC-based station can be relatively inexpensive, automating a shoestring operation effectively is another story.

Windows-based freeware and shareware solutions tend to be unstable and often lacking in horsepower. Commercial automation software usually is too expensive.

Affordable solution

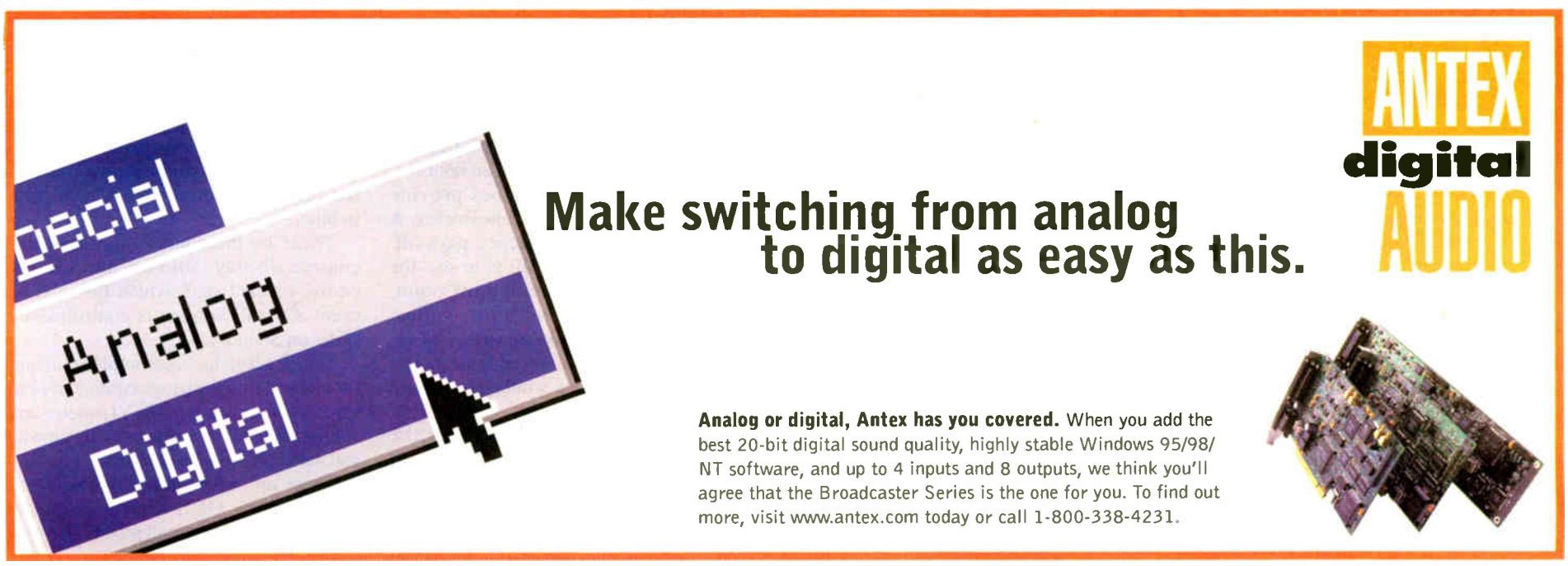
TuneTracker 2 from TuneTracker Systems is a $149.95 solution to the affordable automation software dilemma. Despite the low cost and simple interface, this is a surprisingly powerful package that offers infinite walkaway capability for unattended 24/7 operations. The TuneTracker (TT) system comprises several elements.

Announcers and programmers probably are familiar with the first element of TT, the format clock. Using either supplied templates or user-defined materials, a clock for each unique hour of broadcasting is defined.

These are merged into a single master clock that comprises the broadcast day. Hourly format clock files are combined to create a master log for each unique programming day in the week.

The TuneStacker module combines in one utility both music selection and generation of the daily program log. Using whatever criteria the user sets up in the master log, TuneStacker 2 creates a fresh mix of music, announcements and automation control commands, which are output to the finished program log.

See TUNETRACKER, page 50 ▶



World Radio History

TuneTracker

▶ Continued from page 49

A "ProximityGuard" feature provides multiple levels of protection against undesired repetition. Traditional cart-style rotations of cuts can be included, and these rotations will carry over from one day to the next. Once generated in TuneStacker, the program log is then used by TuneTracker 2.

TuneTracker 2 is the automation control interface that runs the program log, sending each day's audio events to SoundPlay. A simple-to-use interface allows TuneTracker to run unattended or break in at any time to do live programming, manually starting each event as needed.

SoundPlay is the playback engine that takes audio playback commands from TuneTracker, optionally processes the audio files with limiting, compression or reverb as desired, and then sends the finished product on to your transmitter, public address system or other audio input.

MP3/0gg Vorbis streams

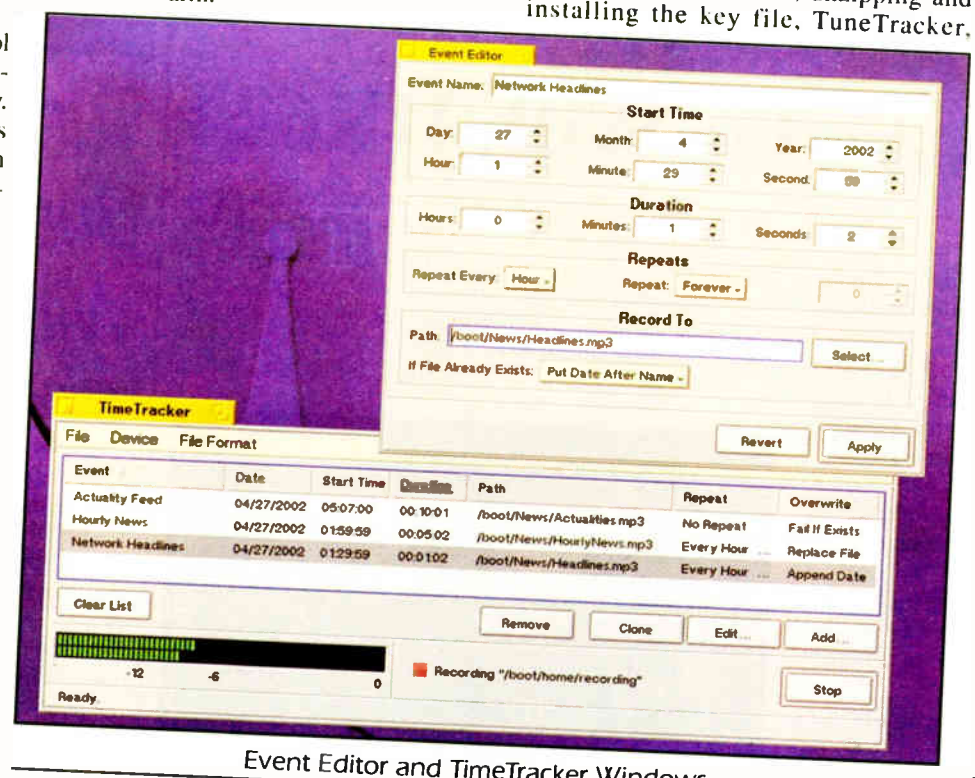
Alternately, or in addition to the audio broadcast, users can use SoundPlay's LiveEncoder plug-in to send multiple MP3 and/or Ogg Vorbis streams (see sidebar) onto the Internet at the bit rate(s) of their choice, in mono or stereo.

Also included in the TuneTracker 2 system package is a third module, TimeTracker, which allows broadcasters to do background recording of network feeds and other live audio on a timed basis.

Any number of recordings can be scheduled, and each can be told to record once, hourly, weekly, monthly or yearly. In a unique, BeOS-related twist, the audio can be recorded in real-time to MP3 format. Other audio formats include WAV, AIFF, RAW and ADPCM.

The entire TuneTracker system runs on BeOS, an operating system designed from the ground up for multimedia applications. The latest version, BeOS 5.0 Personal Edition, is available free online.

Recently, the company developing BeOS was dissolved and its intellectual assets sold to Palm, the manufacturer of the Palm Pilot. Questions have been raised as to the future of the operating system. Dane Scott, president of TuneTracker Systems, said there is no cause for alarm.



Event Editor and TimeTracker Windows

"Free and legal copies of Release 5.0 PE (personal edition) of BeOS are available on the Internet at Download.com and we will continue to develop and support TuneTracker software on BeOS."

Scott said a group of software developers is creating the next generation of the operating system and it will be open source, meaning that its source code will be available for the community to improve on and modify. The group's first release is due by the end of the year and will be backwards-compatible with release 5.0. Information about the group's efforts can be found at *www.openbeos.org*.

Perhaps the hardest part of using TuneTracker is setting it up. Installation involves getting the Be operating system setup on the hard drive, unzipping and installing the key file, TuneTracker, SoundPlay and the sample station.

If things are not put into the right folders, the sample station will not work. Most purchasers probably are working with both a new operating system and a new application. Live telephone, e-mail, forum and chat-room assistance are available, however; and after a call to tech support, I was up and running in a little less than an hour.

TuneTracker Systems does provide good documentation with TuneTracker. A careful read and some practice pays off. The best strategy probably is to use the sample station as a jumping-off point, gradually developing one's own format clock and logs as your skills grow.

Within two hours I was able to master the syntax and design a whole day's worth of format clocks.

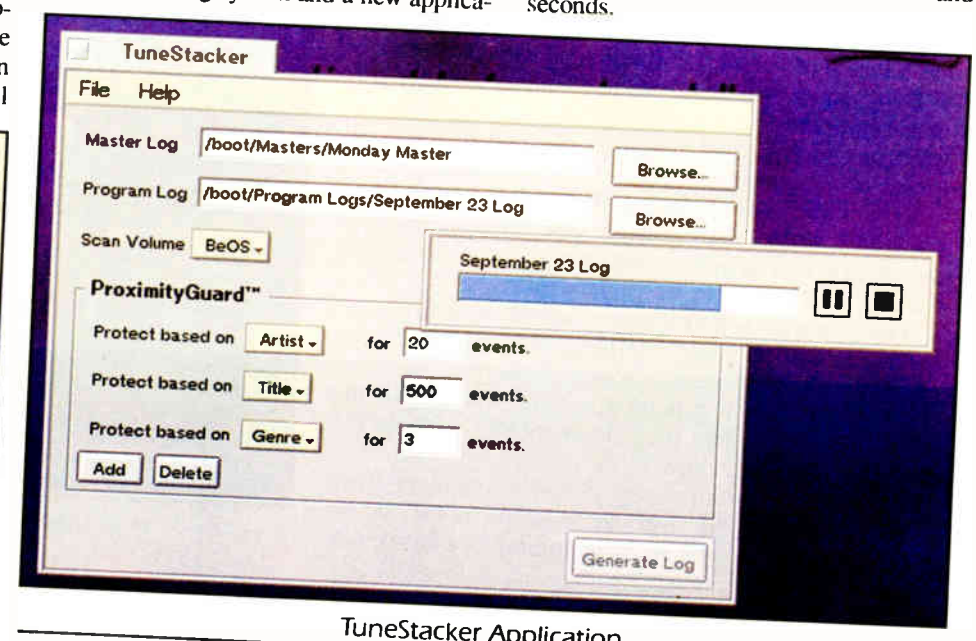
Probably the best thing about the BeOS operating system when compared to Windows is its stability and stamina. It has horsepower to spare and it just does not crash.

With a midrange Pentium, one can run TuneTracker and do production simultaneously. I let TT run for two days and experienced no glitches. In fact, one of the torture tests for TuneTracker is to crash SoundPlay deliberately. TuneTracker will detect the crash and restart SoundPlay in less than a second. Details of the crash will then be noted in a report log.

In session

For most broadcast sessions, both the TuneTracker and SoundPlay windows will be open on the desktop. The optional SoundPlay VU meters are useful to display output levels. The GUI interface for TT is clean and uncluttered.

There is an enlarged display of the system clock, displayed in hours, minutes and seconds.



TuneStacker Application

Three windows display the program log queue, the active program log and an output log list showing what has played. The currently playing event is shown in red and the next event to play is displayed in blue.

There are three buttons on the control console display: auto-on/auto-off, live-on/live-off and start, which fires the next event. Overall volume is controlled by a slider on SoundPlay.

TuneTracker includes numeric displays for elapsed time, time remaining and ramp time, as well as a built-in VU meter and a configurable silence-sensor with threshold and period-of-silence controls.

There are a few minor annoyances to TuneTracker's GUI. After working with TT for a while, the small size of the text in

See TUNETRACKER, page 51 ▶

Product Capsule:

TuneTracker 2

Station Automation Software

Thumbs Up

- ✓ Low price
- ✓ Stable and problem-free when up and running
- ✓ Uses OS designed for multimedia applications
- ✓ Good documentation

Thumbs Down

- ✓ Must first install BeOS operating system
- ✓ Cannot start external equipment
- ✓ Cannot insert local commercials in network programming

Price: $149.95

For information or to purchase, visit www.beosradio.com/tunetracker or call (866) 835-5678.

Ogg What?

Unless you hang with the Open Source computer crowd, it is understandable if you have never heard of Ogg Vorbis.

Sounding like a Klingon salutation, Ogg Vorbis is a relatively new audio streaming and compression format comparable to MP3.

But unlike MPEG compression, a patented and licensed technology, Ogg Vorbis is free and open to anyone wishing to use it. Tune Tracker Systems, reviewed here, supports Ogg Vorbis files, as do such popular players as WinAmp.

The name is derived both from a network computer game called Netrek and from a character in "Small Gods," a science fiction book by Terry Pratchett (1992, Discworld). The project began in 1993 as "Squish," but was changed when it was revealed that another company had registered the name for another project.

The free compression scheme has been gaining interest in the Net community once users discovered that Fraunhofer and other MPEG developers claimed patent infringement.

Apparently, the use of an encoder should entail a royalty payment to the MPEG Consortium. Given the huge number of free rippers and encoders out there, many may be illegally derived from patented technology.

The Ogg Vorbis specification, on the other hand, is in the public domain. Developers may write Ogg Vorbis software that is compatible with the specification without licensing payment or restrictions, although developers must adhere to the rules of the GNU General Public License, found at www.gnu.org.

While still not perfect, developers claim equivalent performance with MP3 in the 128-160 kbps range.

Then, there is the name — Ogg Vorbis — which cannot be said aloud without grinning.

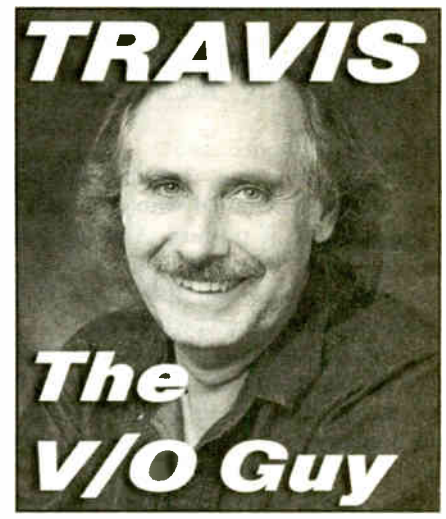
Critics may complain that the name is awkward and has nothing to do with audio. But consider that the MP in MP3 stands for Moving Picture, which has about the same literal relevance to audio as Ogg Vorbis does.

Whether or not .OGG files will catch on in the world of MP3 users remains to be seen. The fact that this product and others can decode and play them points us in an optimistic direction.

— Alan R. Peterson

World Radio History

What to Charge for What You Do



by Travis

Every once in a while, I get an e-mail from someone working in radio who is considering taking on a voiceover project and wants to know what they should charge.

Often they have heard of voice talent getting thousands of dollars for only a few minutes' work, and they are having a tough time figuring out a fair price.

Several factors should be considered when you ponder what to charge for voiceover work.

The most important thing, often overlooked by people just getting started, is that you must make a profit. It is easy to allow yourself to work at a rate that costs you more than you make.

Not long ago, I received an e-mail from an audiovisual producer inquiring as to how much I would charge for what he called a "very large" project. He explained in his e-mail that he had tried using some "local" talent and was not satisfied with the results.

He listened to a demo on my Web site and decided that I would be appropriate for his production. He explained that the project would end up with about 100 hours of recorded audio, and since he needed a "professional" voice, he was prepared to pay $25 per completed hour of audio.

No can do

I e-mailed back, explaining that I could not provide him with what he wanted for the price he quoted. I briefly explained that recording material would require at least three hours of recording time for one hour of completed audio — and that, even if he would pay three times the amount he quoted, that I still would be unable to provide him the service he required.

He replied, outraged. He wanted to know what right I had to charge so much.

See TRAVIS, page 52 ▶

TuneTracker

▶ Continued from page 50

the log windows may become bothersome. It can be easily enlarged, however, by adjusting system preferences.

While there is a bar graph in SoundPlay indicating approximate time remaining on a file, there is no numeric countdown, only a display of elapsed time. I am told the next release of TuneTracker will include numeric displays for elapsed time, time remaining and ramp time, as well as a built-in VU meter.

While TuneTracker is a versatile package, there are some things it cannot do that make it less suitable for commercial stations. There is no capability to send external start commands to remote equipment, meaning it cannot be interfaced to CD players or tape machines.

It does not respond to external control signals such as tones or digital pulses routinely sent by satellite programming services, although it can work with them when start and stop times are known. Thus, joining a satellite network for scheduled newscasts or block programming is possible, but inserting local commercials in that programming is not.

Not a problem

For most of the smaller broadcasters that would be using this system, these limitations are not an issue. If you can have all your source material on the hard drive, the need to remote start sources becomes minimal.

My experience with TuneTracker was most gratifying. I had to keep reminding myself that it cost only $149.95. Once one gets started, the potential of TuneTracker becomes apparent and making it do everything one wants becomes truly addictive.

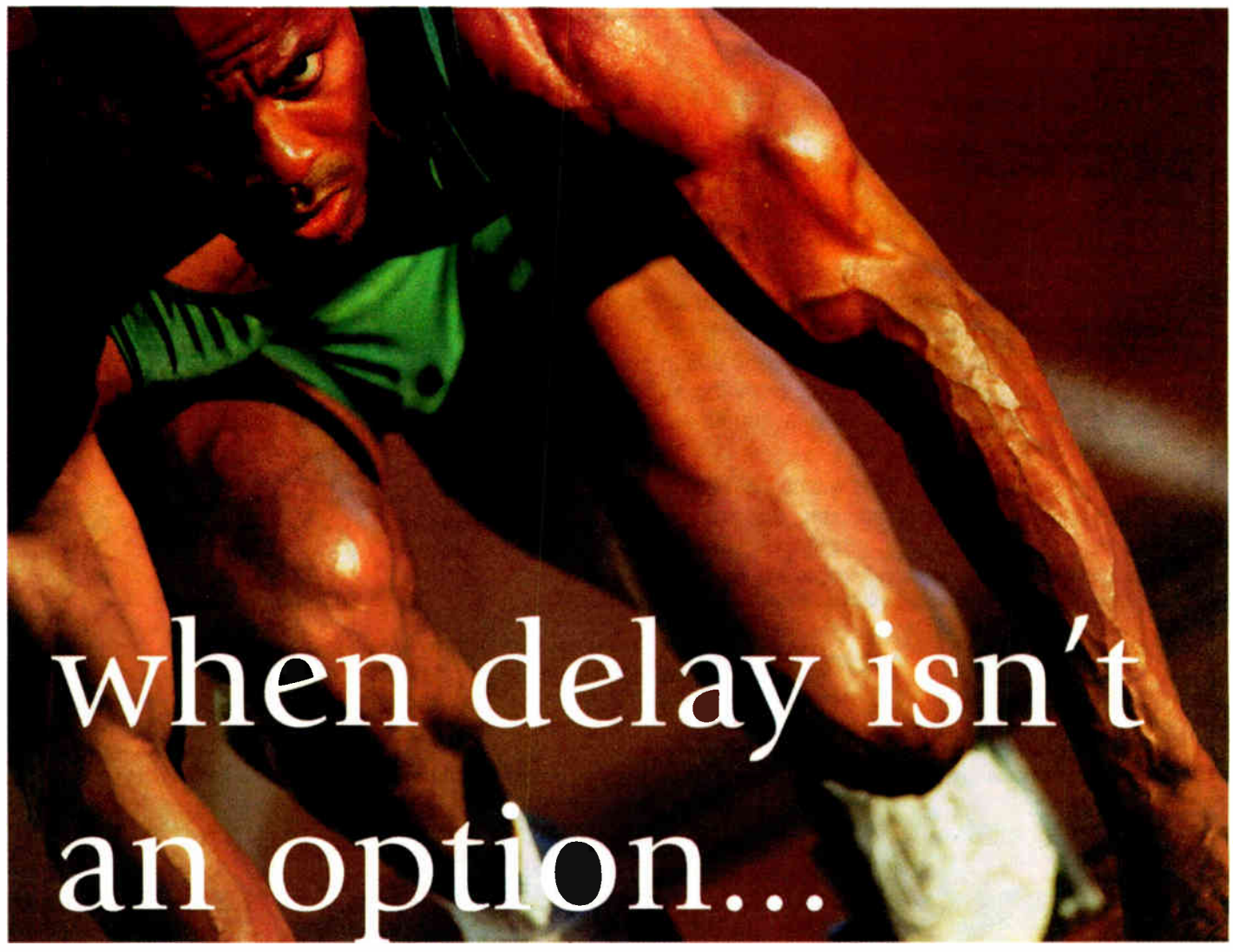
Getting a station up and running is so easy that I am tempted to dub songs from my 3,000 or so albums onto the hard drive and start streaming my own brand of music. Where else am I going to hear sets with Jerry Jeff Walker, Tracy Nelson, Elvin Bishop, Laura Nyro and the New York Rock Ensemble?

It has been said that the next revolution in innovative radio programming will come not from the corporate media giants, but from the smaller operations — those with nothing to lose.

TuneTracker Systems has found this market and given its players an affordable and powerful tool to provide automated 24/7 operations that sound as smooth and cool as the big guys.

TuneTracker is available for purchase directly through TuneTracker Systems.

Tom Vernon is a multimedia consultant working in Philadelphia. Reach him at TLVemon@blazenet.net.



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World Radio History

Travis

▶ Continued from page 51

After all, at his rate, with the size of the job, he pointed out, I would be making "thousands" of dollars. And he didn't understand why a "professional" announcer would take three hours to produce one hour of completed audio.

I knew that I would never be able to change his mind, but I was having a slow week, so I decided to attempt to explain to him why we professional announcers need to charge so much.

I started with a description of the recording process: If I am not recording at a studio with an engineer and/or producer who could listen to what has been recorded and know when a retake was necessary, then I would need to play back the audio and listen to it myself.

That would bring the hourly rate to do his project down to $12.50 per hour — and that is assuming that no retakes are necessary and that there is no additional overhead in the recording process.

The best recording time/completed audio ratio I have ever been able to accomplish by myself is about 4/1, or four hours of recording time for each hour of completed audio.

It is very easy to allow yourself to work at a rate that costs you more than you make.

So if I accepted the fellow's job, I would be making about $6.25 per hour. I did not bother to mention how distasteful would be the recording and editing of a hundred hours of audio by myself, with no engineer or producer. I did point out that, even if he tripled his rate, I would still be losing money if I took his job at his rate.

The producer responded, still apparently outraged — he still could not understand why talent needed to charge so much. He explained that since receiving my previous e-mail, he had contacted some other talent and nobody was interested.

I responded with a short e-mail suggesting that he might consider using students from the local college speech department. I never heard from him again.

You're on your own

If you have always worked for an employer, it might seem that the amounts paid to free-lance talent are a lot more than full-time employees get. As with most people just getting started in a small business, there is a tendency to under-charge at first.

As a voice talent, remember that you are running a small business.

Almost everyone who starts a business is amazed to find out just how much it costs simply to stay in business. When you work for an employer, the amount you are paid is just a fraction of what your employer pays to utilize your services. Your employer pays part of your taxes, pays for the building space you work in, the utilities, equipment and a bunch of other expenses you never even think of.

When you are in business for yourself, you are the one who pays for these things. If you are charging four times what you make per hour at your on-the-air job, there is a good chance you are actually working for nothing.

If your intention is to work full-time doing voiceover work, charge a rate that will allow you to support yourself — and avoid undercharging out of desperation. If you lose money with every job, you will not make it up in volume.

If you are doing voiceover work part time, the amount you charge is not as critical. You can look at it as extra money.

Actual mileage may vary

The amounts talent can charge and make a profit vary widely by geographical location and depend on cost-of-living and other factors.

In Los Angeles, most people work at three to four times union scale as a minimum. That is because the breakeven point for talent is much higher. Most voice talent in Los Angeles spend a great deal of time driving and auditioning. They need to compensate for all the time it takes.

In smaller markets, involving less frequent auditioning and a lower cost of living, talent can charge less and still make a livable wage.

One way to determine an appropriate rate is to find out what the SAG/AFTRA rates are in your area. Most of the time the union rates are a good indicator of the minimum needed to make a profit.

One of the best things to do is to secure the services of a good agent. If you have an agent, you do not need to deal with such things and it is much easier to concentrate exclusively on the "artistic" parts of the business.

Enter to win one of 26 great prizes in Radio World's reader appreciation contest giveaway!

Dear *Radio World* Reader: Last year, many of the greatest names in our industry teamed up with *Radio World* for a year-long sweepstakes extravaganza that resulted in almost $50,000 in prizes given away. Due to the overwhelming response from you, we've decided to do it all again in 2002 as a way of showing our appreciation to our loyal readers.

Throughout 2002, *Radio World* will conduct 26 random drawings. Prizes and winners will be announced in every issue of Radio World. *That's 26 chances to win!*

2002 Radio World READERS' CHOICE Sweepstakes

To enter the contest you need to complete these three easy steps:

1. Go to our Web site: www.rwonline.com
2. Click the Readers' Choice icon on our home page.
3. Follow the instructions and fill out the electronic entry form — *that's it, you're done!*

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World Radio History

Mackie

▶ Continued from page 49

Then there are the unusual features.

A three-position switch, called "Acoustic Space," reduces the low-frequency response of the HR624 to compensate for their placement in the room.

If you place the speakers against a wall you are instructed to set the Acoustic Space switch to position B. If the monitors are set into the corners of your room, set the Acoustic Space switch to A. If the monitors are freestanding — away from walls and corners — set the switch to C.

This is considerate of Mackie, as some users may not have the luxury of situating their console some distance from the front wall. Personally, I would design an appropriate listening environment and keep the speakers set to C (normal).

Pro apps

Additionally, given that Mackie sought THX certification, it appears these monitors are intended for use in professional applications, which suggests critical placement. With that in mind, I think this Acoustic Space switch is potentially dangerous.

Imagine recording a live event in Dolby 5.1 and in post-production discovering one channel is oddly out of character with the other four. Inspecting your recording setup, you discover someone changed one of the HR624s to a different position than the other(s). You could get pretty upset pretty quickly.

There are two other contouring controls (80 Hz and 49 Hz low-frequency filter, ±2 dB high-frequency filter), which are easy to grab. If I really needed to defeat all the engineering that went into making these speakers remarkably flat (52 Hz to 20 kHz; ±1.5 dB), I would select the combination and then cover these switches up.

Okay, enough already with the paranoia.

They sound pretty good. I put them up on my peek-over-the-console stands beside a pair of Genelec 1031A nearfields and did some fundamental testing.

Making sure all switches were set to Normal and Bypass, I reproduced a series of test tones. The Mackie HR624s were astonishing on high frequencies, keeping up beautifully with the Genelecs. The rear-firing passive radiator kept the lows solid down to 50 Hz. A low-to-high sweep tone demonstrated smoothness throughout the speakers' range.

Instrument tracks revealed some differences between brands, though. On saxophone, clarity was noticeably increased over the Genelecs, vocals as well. While this made the music sound wonderful on the HR624 speakers, I was concerned that a mix might not travel well to other speakers.

I put up a DASH multitrack tape of a project I am currently producing and mixed down two tunes — one primarily vocal/ acoustic/ piano/bass/drums/ guitars, the other a big production with every single sound we could think of.

The drum EQ came into focus quickly, piano and supporting instruments sounding three-dimensional in the wide sweet spot these monitors provide. While I personally prefer my mix monitors to possess a tight center, allowing me extremely critical placement of instruments, for pure listening pleasure these HR624s are great.

On the big production number, I had no difficulty getting each component to work tonally with the others; the speakers had no noticeable hole in their frequency response. Again, I noticed a distinct clarity in the Mackies that was absent in the Genelecs. Additionally, there is a midrange presence that made my mixes sound very much in my face, almost compressed. My mix sounded bigger in the Mackies. This made me nervous. I packed them up and took them home.

Simply marvelous

I set the HR624s on top of my Event 20/20bas speakers and had some fun. I listened to Bonnie Raitt's new Tchad Blake recording "Silver Lining," Kid A's "Radio Head," and "Bangra Beatz" (Indian club music) on both systems.

The Mackie HR624 monitors were simply marvelous for casual listening. Smooth, big and bright yet not edgy.

When I switched to the Events, I again noticed a diminished size, however this time the brightness content between the two systems remained similar, suggesting a fundamentally different goal than Genelec.

The songs mixed on the Mackies and played back on the Events demonstrated thinness in the midrange, meaning I had EQ'd too much midrange out during the mix.

Though the Audio Precision printout that accompanies the Mackie HR624s shows a flat frequency response from 50 Hz to 20 kHz, there really is a midrange presence that makes the music presentation big, bright and impressive without being tubby — how'd they do that?

This is the first time in my whole career I have ever complained about a speaker sounding too good.

With the introduction of the HR624 self-powered biamplified two-way speaker system, Mackie adds to its history of innovative designs and quality products, giving us exquisite new tools with which to express ourselves. Thank you, Mackie.

Mark Greenhouse is a broadcast/ recording engineer with National Public Radio. He also has written for Pro Audio Review.

Product Capsule:
Mackie HR624 Active Monitors

Thumbs Up
- ✓ THX pm3 certified
- ✓ Flexible connectivity; rear-mounted easy-access controls
- ✓ Acoustic Space switch helpful when ideal placement is not possible

Thumbs Down
- ✓ Acoustic Switch has potential for misuse

Price: $649 each

For more information from Mackie contact the company in Washington state at (425) 487-4333 or visit www.mackie.com.

Dolby Labs Announces Licensing Program

Dolby Labs recently announced an expanded MPEG-4 AAC licensing program that builds on its MPEG-2 AAC program.

Dolby is the licensing administrator for patents held by AT&T, Dolby, Fraunhofer IIS-A, Sony, as well as the recently added Nokia.

MPEG-4 applications include Internet streaming, electronic media distribution, multimedia playback and wireless applications. The licensing program takes into account various market demands and environments that range from freely distributed PC-based software decoders to high-quality playback consumer electronics devices.

Under the new license terms, licensees will pay the following royalty rates for MPEG-4 AAC products: Consumer (noncommercial) decoder product royalty rates are 50 to 12 cents (volume-based) per channel; royalties for PC-based software decoder products are 25 cents per channel, up to a maximum annual payment of $25,000 per legal entity.

Consumer encoder product royalties will cost 50 to 12 cents (volume-based) per channel; for PC-based software encoder products royalties are 50 to 27 cents per channel, up to a maximum annual payment of $250,000 per legal entity. A professional (commercial) decoder royalty is $2 per channel and the pro encoder product royalty is $20 per channel.

There are no royalties or usage fees for content distribution in AAC format, either in electronic form or in packaged media. A migration path for existing MPEG-2 AAC licensees will be made available.

For more information from Dolby Labs, contact the company in California at (415) 558-2100, e-mail aacla@dolby.com *or visit* www.aac-audio.com.

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World Radio History

Tech Updates Inside

USER REPORT

MoniSwitch Helps in Monitor Delay

by Tom Koza
Chief Engineer, L. A. Cluster
Hispanic Broadcasting Corp.

LOS ANGELES A few months ago, we upgraded our on-air audio processing with the installation of several Orban Optimod-FM 8400 digital audio processors. Unlike analog audio equipment, which operates in "realtime," the Orban unit (and virtually all other digital audio gear) processes digital audio in "batches of bits."

This always introduces a slight throughput delay that causes the output signal to lag behind the input signal. Even if the processor introduces only a slight delay, there's also the delay of a digital STL or T1 circuit, or other equipment in the airchain. It all adds up.

Distracting delay

Although a throughput delay isn't often audible, it becomes noticeable when heard by the air talent who is monitoring the station's off-air signal via headphones. When a CD or spot is playing, the delay can't be heard. But when the DJ turns on the mic and hears himself coming through his headphones with a delay, it's distracting.

It only takes about 50ms of delay to produce an echo effect; delays of only a *few* milliseconds will produce a bizarre comb-filter or "flanging" effect due to the time differential between the mouth-to-ear acoustic path and what is heard through the headphones. DJs don't like it when it sounds like they're broadcasting from the bottom of a well.

MoniSwitch, a new product from **Henry Engineering**, solves the problem of "headphone echo" by providing an efficient way to switch automatically the studio monitor system from "Air" to a local (nondelayed) source when the DJ turns the mic on. Although you can't eliminate the time delay once it's created, you can eliminate its annoying effects. In essence, you're solving the symptom, rather than the cause. That's what MoniSwitch does.

This essentially is a specialized audio switcher. It has two stereo inputs and one stereo output. In most installations, you feed the "Air" monitor signal (from the station demodulator) into one of the inputs; the second input is fed with some other source of program audio. This could be the program output of the console or some other local source that *hasn't* been through the station's digital air chain. The 8400 provides a "low-delay" analog output that can be used for monitoring the signal.

MoniSwitch has a Control input that interfaces to the console's "mic tally" (muting) circuit, so it knows when the mic is on. Once installed, MoniSwitch will switch automatically between the Air and Local sources. When the mic is off, the Air signal is heard. When the DJ turns the mic on, MoniSwitch switches to the Local signal, which is preprocessor, has no delay and doesn't annoy the DJ.

At our stations, I took a slightly different approach. The unit was installed so that we monitor the Local signal at all times, except when an "off-air alarm" is triggered by the air monitor. If this happens, MoniSwitch switches to the demodulator output to alert the talent that the station is off the air. At all other times, MoniSwitch defaults to the Local audio source.

Although you can't eliminate the time delay once it's created, you can eliminate its annoying effects.

This installation would also be applicable when IBOC broadcasting begins, because IBOC introduces several seconds of delay in the transmitted signal.

One unique feature of MoniSwitch is that it has individual gain adjustment for each input. These let you match the levels between the Air and Local audio sources, so the volume stays constant when the unit switches. (There's enough gain to bring a "consumer" tuner up to standard +4 dBm studio levels.)

Another nice touch is the "soft switching" circuit that produces a smooth transition when switching between Air and Local. It almost sounds like a rapid crossfade, rather than a switch. It's one less thing to cause "DJ headphone fatigue."

I did quick measurements to confirm Henry's audio performance specs. The unit has flat frequency response (within 0.25 dB) from about 10 Hz to over 20 kHz, with distortion below the noise floor, which is about -80 dBm. There's nothing to color the sound of your monitor system.

The interface to the console is simple: Just a contact closure (or DC voltage) is needed to make the unit switch between sources. It should interface with the muting relay of any broadcast console that has a mic-tally output.

The MoniSwitch is an easy way to solve a nagging problem. Our unit has been in use for several months and it works well. It does its job: helping me keep the DJs happy.

The MoniSwitch retails for $195.

For more information contact Henry Engineering in California at (626) 355-3656 or visit www.henryeng.com.

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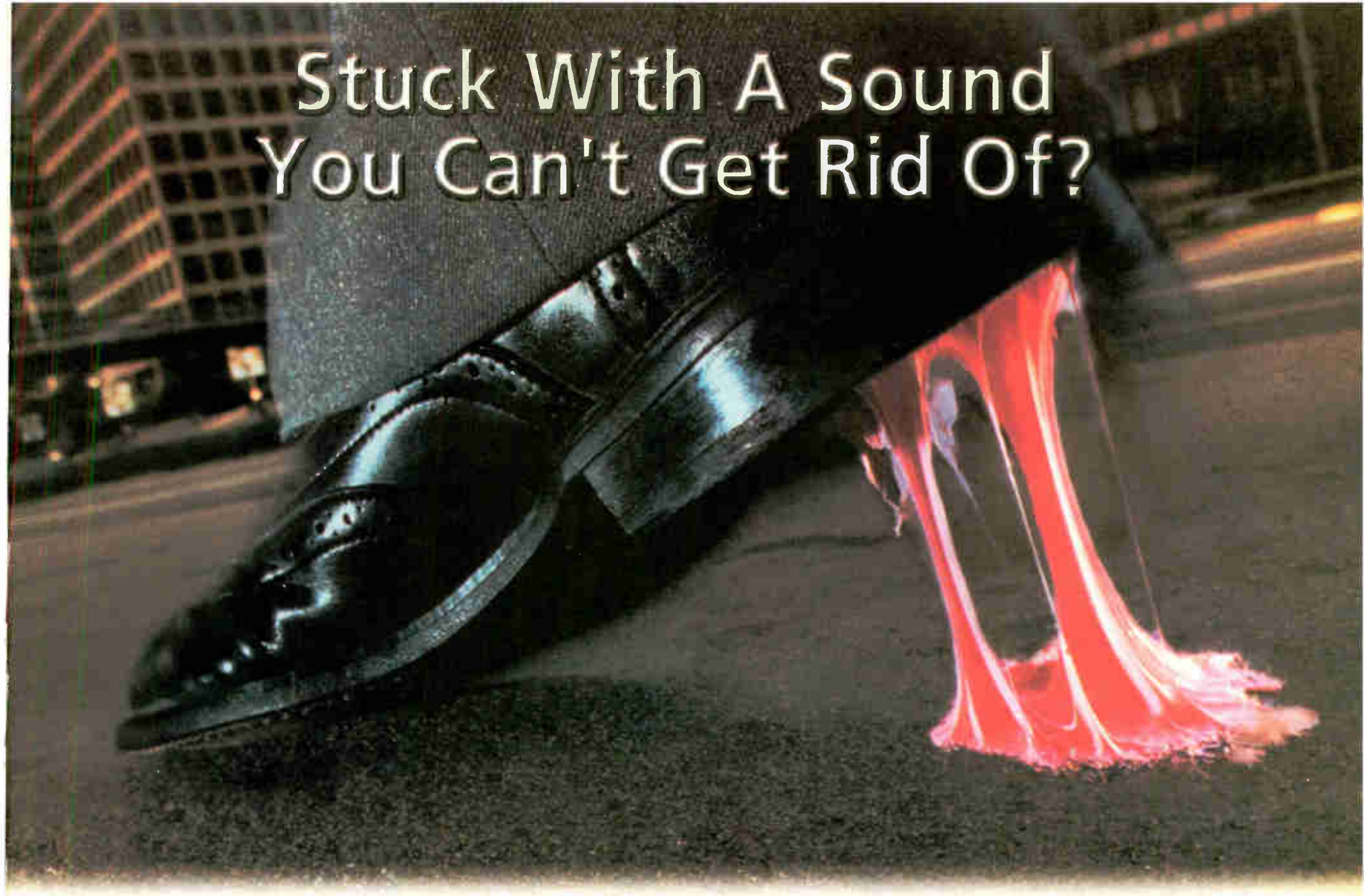

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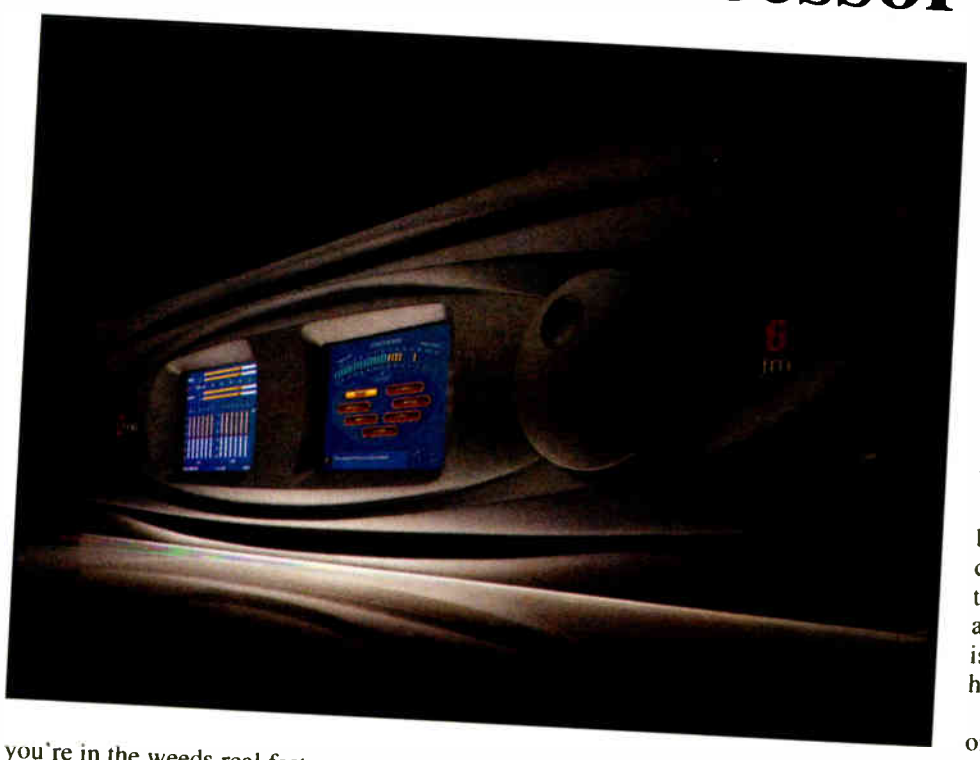
World Radio History

USER REPORT

Racing the Omnia-6fm Processor

by Greg M. Savoldi
Director of Engineering
Clear Channel Columbus Region



COLUMBUS, Ohio I'll admit it. When it comes to audio processing, I'm one tough customer. Just ask Frank Foti at **Omnia**.

I remember the day I heard about Team Omnia's newest baby. Frank had just recruited some new members for his team, and having known some of those guys for years, I knew they had the ears and experience to make a digital processor sing. Blending the art and science of processing take a lot more than raw DSP horsepower.

I reflected on the early days, when Frank drove to Columbus to demonstrate the UNITY 2000. I heard some things I liked, and a *lot* of stuff I didn't! Clearly, my analog chain at that time was better.

Fast-forward to the mid '90s: Frank fires up an Omnia.fm for me. I heard things that blew me away. The transient/leading edges of acoustic guitar, the percussive timbre of hits on a snare, a floor tom ... that detail, and lack of artifacts! I still wasn't totally sold, but the Omnia.fm was certainly a contender.

Hear you at the show

Each year at the Vegas NAB show, I'd visit Frank to do some "racing" between the competitor's boxes and the Omnia. And, each year, Omnia got increasingly difficult to beat.

Now, I knew the competitor's boxes at the show were "barefoot," and the stuff I had back home gave me the edge not only in loudness and texture, but voice control — the dynamics of "live, raw voice" define the worthiness of any processor. Incidentally, this point was a challenge for the first release of Omnia-6fm, but subsequent releases fixed the problem nicely.

The first viewing of Omnia-6 was in Nashville, Tenn., in early 2001, with Clear Channel SVP Jeff Littlejohn, RESM's Mike Gideon, Ben Brinitzer and Dan Mettler. Frank was there adjusting parameters, using his PC *in native code language*! It was the prototype unit!

Against some very good analog boxes (and the Orban 8400), the "6" had a noticeable silkiness. It was processed, but not crunched; textured, but not homogenized. Loud, but not strident.

We primarily listened for "music integrity" that day, and we were encouraged by Omnia-6's power and grace. A marriage of silk and steel.

I ordered two Omnia-6fms soon after, plugged one in, and was not happy — there was "voice/vocal distortion" I couldn't get rid of. Clear Channel's Jeff Bennett and I played for days, but just weren't happy with the voices. Frank came, listened to our concerns and said he'd make it better.

Back in Cleveland, Team Omnia went to work. Weeks later, new software fixed all of our concerns, and we got happy.

I love that disclaimer, "Your mileage may vary." This phrase is *so* representative of today's digital processors, because the high-end boxes give more flexibility and power than most users have ever seen. It's like driving a Porsche — too much gas too soon, and you're in the weeds real fast.

Omnia-6fm gives you an incredible amount of power and control. AES/EBU auto-rate input is standard. Preprocessing adjustments include Phase Rotation, HP filtering, source mode and input gain optimization.

A wide-band AGC is followed by crossover selection into a five-band split AGC, an enhancement section for bass and spectral dynamics and a six-band peak limiter. Final limiting, stereo generation and selectable composite clipping round out the process.

Sample rate conversion on the output of the O-6 is a real plus; users of older Omnias who wished to interface to a 32-kHz exciter had problems, but the O-6 handles this well. You can also choose composite mode and use the onboard composite clipper to tailor your sound. You have control of every characteristic of every band.

If this sounds intimidating, the good news is that the factory-provided presets get you in the game quickly. With some manual reading and tweaking, you begin to understand how each parameter change affects what you hear. The experienced processing guru can get lethal real fast.

Remote control options — dial-in, Ethernet or serial — let you do it from anywhere. In any case, take plenty of time to get comfortable with all that power and learn a better way to do FM audio.

The "6" plays on several signals in my region, including classic rock and CHR formats. In all cases, it replaced earlier generations of digital processors.

Omnia produces impressive loudness/RMS energy, yet it does so in a subtle way. There's plenty of multiband control going on, creating a unique balance between perceived loudness of music, voice and band-limited sources. The low end is big, but not boomy; the highs smooth, silky, detailed and transparent. The midrange has openness, but stays in check with its cousins on either side. The overall spectral balance is really amazing.

Voices and vocals

If you're used to voices and vocals being firmly up front in your current processing, prepare for a change. The "6" tends to relax a bit on voice, resulting in a more natural, clean, "real" sound. This isn't bad; just different, because you're hearing the *lack* of artifacts.

There are many good audio processors on the market, each with unique qualities and strengths. Audio processing is subjective! "Your taste may vary: See/hear/listen for more details."

Omnia-6fm is the product of years of research, vision, passion, sweat and teamwork. Telos/Omnia continues to advance the art of processing with a team of seasoned pros, and I have always been impressed with Frank's willingness to listen to ideas from demanding endusers (yes, I resemble that remark!). Frankie, you've done well. Thank you for your passion and commitment to the industry.

The Omnia-6fm retails for $10,900.

For more information contact Omnia in Ohio at (216) 241-7225 or visit www.omniaaudio.com.

USER REPORT

Octiv Makes Processing Software

by Nathan Smith
Digital Audio Engineer
Hiwire Inc.

LOS ANGELES Hiwire is a developer of advertising solutions for streaming media content providers. Through a proprietary audio and video ad-insertion network, Hiwire inserts targeted audio ads into live and on-demand streams.

Many challenges are encountered when streaming a live Internet radio broadcast while supplying a station with the highest quality of advertisement delivery. As listeners know from switching from station to station on the AM/FM tuner in the car, there are many different levels of volume. The same problem exists for online radio, especially when new, targeted ads are inserted in the stream automatically.

It is my job to ensure that listeners have the highest audio quality from the bandwidth provided to them by the radio station. We turned to **Octiv** to help us achieve that goal and solve the age-old problem of varying volume levels. Not only could Octiv provide software to reach a standard volume level of Internet radio, they could highly improve the audio quality, resulting in an overall better user experience.

We've implemented OctiMax StreamPro five-band dynamics processing software throughout our network. OctiMax is a complete and robust, real-time solution that automatically provides the user with the richest and most satisfying results that can be achieved with the given bandwidth.

Quality improvements are realized at both lower and higher bitrate streams.

Octiv's audio technology was simple to integrate into our operation.

Octiv's audio technology was simple to integrate into our operation. The OctiMax system runs on unused cycles available on most streaming servers so the cost to implement is minimal and can scale as the streaming industry grows.

As a solution for standardizing audio volume levels, OctiMax is unsurpassed — and we did the research to back that statement up. There were many potential companies that had somewhat expectable solutions that would solve some of the problems that one faces when streaming an audio broadcast. We saw, however, that other solutions demanded that you buy hardware that not only cost a tremendous amount of money, but could not scale as the streaming industry grew.

In the next year, Hiwire will have more than 250 radio streams, which means 250 encoders. You can do the math, but we quickly realized that the software solution that Octiv could provide was not only cost-effective but could be scaleable.

OctiMax comes with standard presets and a host of controls on the OctiVu Editing Panel to create custom presents. They include automatic gain control;

See OCTIV, page 57 ▶

World Radio History

USER REPORT

Orban 8400 Brightens Los Angeles Radio

by Terry Grieger
Co-Market Engineering Manager
Clear Channel, Los Angeles

LOS ANGELES As engineers in the entertainment capital of the world, we make it a point to use the best audio equipment available for our radio stations.

We are quite pleased with the performance of the Orban 8400 Version 2.0, the audio processor that we use on FM stations KBIG, KOST, KYSR and KHHT.

I like the new presets, which makes it much easier to do the initial set-up. You simply pick a preset and do some slight modifications — and you're up and running.

Version 2.0 now offers lower delay, which makes out-of-studio broadcast monitoring easier. Our traffic plane reporter can now listen for cues off the air with no echo in his headphones.

Also, I like the new look-ahead limiter setting that allows you to adjust the amount of "punch" each station has. Finger snaps and snare drum hits being washed out are a thing of the past.

Even with the new look-ahead adjustment, the processor lets you have both clean voices and loud punchy music without having to sacrifice one or the other.

We've noticed that, with another manufacturer's processor, every time a commercial comes on, the overall level of the station seems to vary between cuts. The 8400 maintains a much more consistent sound between cuts, be they dry voice or voice and music.

We believe the sound quality of our radio stations is the best it can be through the use of the 8400 Version 2.0 audio processor.

It retails for $10,700.

For more information call Orban in California at (510) 351-3500 or visit www.orban.com.

Octiv

▶ Continued from page 56

noise gate in/out and thresholds; equalizer and final limiter drive settings for the two output stages; limiter thresholds, drive levels and range multiband levels; attack and release times for multiband AGC; and an expert panel that adjusts the global noisegating parameter.

Custom presets

The user interface is simple and easy to navigate. A few clicks of the mouse is all it takes to make your own custom presets. As one may want to make their own custom presets, I have found many of the built-in presets to be useful. If you do not have time or don't know where to start, Octiv has provided plenty of useful presets that come in handy.

As a solution for standardizing audio volume levels, OctiMax is unsurpassed.

StreamRemote provides remote access to the following functionality: the OctiMax StreamPro application layer, the OctiMax processing core, the OctiVu control panel and the FlexConnect audio router. StreamRemote allows you to view and make changes to your settings as well as monitor your streams. I also enjoy and find the visual meter to be useful and will make any traditional audio engineer feel right at home.

The software retails for $1,099.

For more information contact Octiv in California at (510) 280-5000 or visit www.octiv.com.

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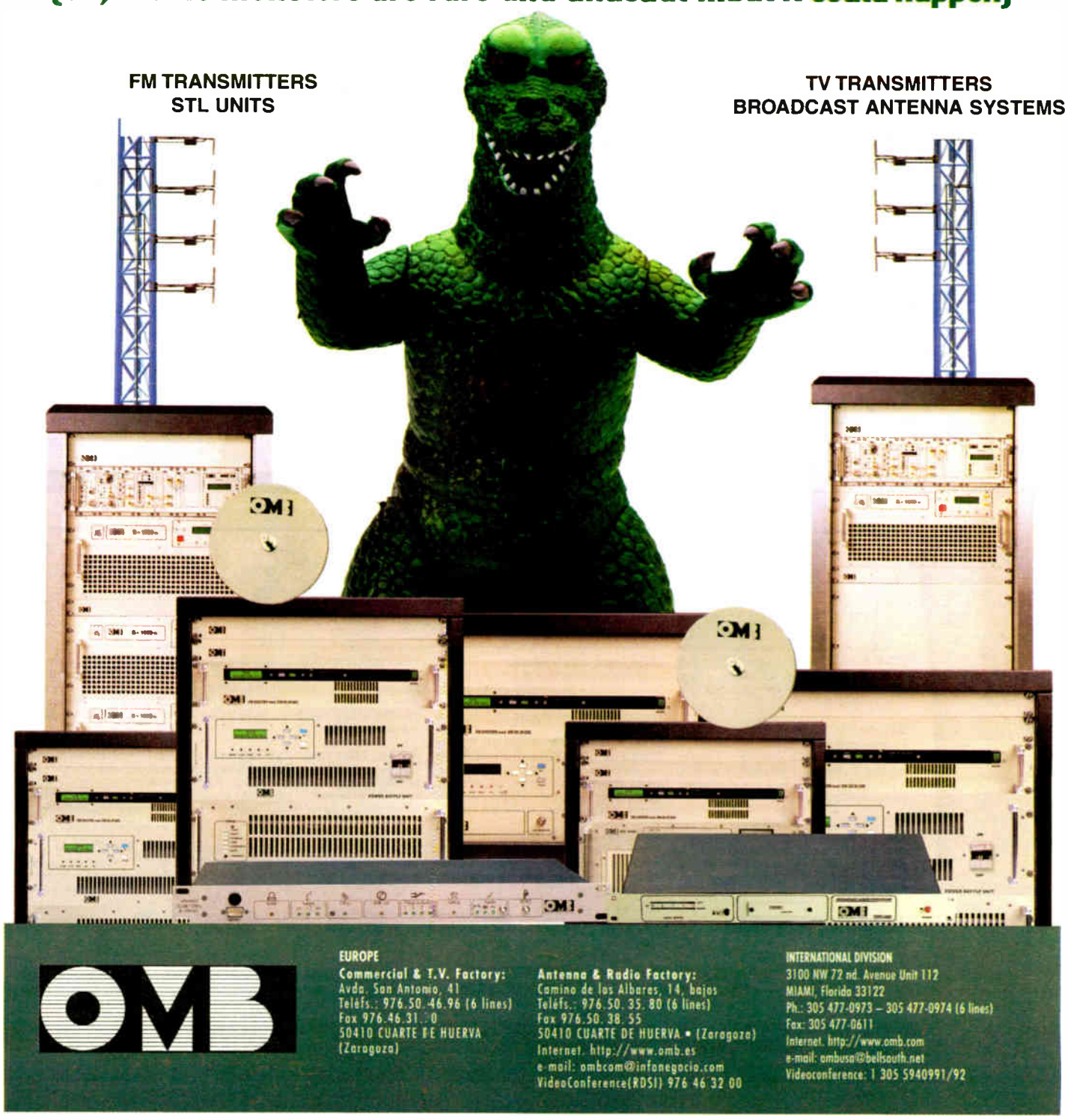

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Equipped with 16 opto-isolated and CMOS/TTL compatible inputs and 16-Relay (Form C) outputs that may be controlled from a host computer or a pair of units can be used in a stand-alone confutation (relay extension cord).

SRC-8 Serial Remote Control
The SRC-8 provides a means of adding 8 channels of remote control to RF, wireline, and fiber type STL systems and may also be used with dedicated modems (full and half duplex models).

AVR-8 Alarm Voice Response
Used as a voice response and remote control system, the AVR-8 automatically reports changes detected on any of its eight digital inputs to a remote telephone and/or pager.

BOS, ROS & PBB-24 Switch Panels
The BOS offers 12 N.O. dry contact switches with status LEDs in a desktop panel. The ROS is similar, but is a single-space rack unit. The PBB-24 provides 24 momentary buttons that can be programmed to output ASCII or hex character strings.

SSM Smart Silence Monitor
Monitors any stereo or two independent monaural sources and generates alarms indicating loss of carrier when white noise and/or silence is detected.

PSC Programmable Schedule Controller
Stores and controls up to 160 events with Hour/Minutes/Seconds, Day/Month/Year, or Day of Week with Daylight Savings Time correction. 20 SPST relays and/or 32 serial custom commands provided.

MC-16 Telephone Hybrid/Coupler
Full-featured telephone line coupler/hybrid provides 32 programs; 32 ASCII strings (DTMF to ASCII); 64 macros; 16 relays; auto answer; 4-digit access codes and more.

UI-411 Universal Interface
Perfect for adding logic functions to mechanical switches/relays, adding remote functions to transmitter control/logic, detecting phone line "ring", etc.

DEC-16 Decoder, Auto-Coupler & Dialer
A dial-up, dial-out or direct connect DTMF decoder. The DEC-16 is capable of automatically calling in, out or connecting to an ENC-16, DTMF encoder or other DTMF encoders.

PSC-II Programmable Schedule Controller
With 512 events intended for controlling up to two RS-232/RS-422 serial devices; 16 - SPDT relays; auxiliary serial ports and relays all in a single rack space. The PSC II controls functions by either scheduled time and date, time and day of week, serial port commands and remote input contact closures.

BOR-4 (Box 'O Relays)
The BOR - 4 provides four independent 2PDT relay interfaces with two optically isolated or 5-volt TTL/CMOS compatible inputs.

ENC-16 Encoder, Auto-Coupler & Dialer
A dial-up, dial-out or direct connect DTMF encoder. The ENC-16 is capable of automatically calling in, out or connecting to the DEC-16, DTMF decoder or other DTMF decoders.

SRC-32 Serial Remote Control
Equipped with 32 opto-isolated and CMOS/TTL compatible inputs, 24 open-collector outputs and 8-Relay (Form C) outputs that may be controlled from a host computer or a pair of units may be used in a stand-alone configuration (relay extension cord).

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World Radio History

USER REPORT

Inovonics Omega Works in England

by Peter Langford
Group Chief Engineer
Forever Broadcasting

NEWCASTLE, United Kingdom Brighton is a key market of some 300,000 on the south coast of England. Recently formed Forever Broadcasting added local station Surf 107.2 to its portfolio at the end of 2000 and went on to relaunch it as Juice 107.2 in mid-2001.

The station's format is youth-oriented (15-34), upbeat and fresh, with an emphasis on rhythmic music from the last 12 months.

During the relaunch of the station, the existing digital audio processor was readjusted a number of times. It was difficult to get the station competitively loud without introducing gritty-sounding distortion on some tracks, especially on voice.

Turn it up/down

Sometimes it seemed to be the classic situation of PD David Harber saying, "Turn it up; I need it to sound more exciting," and the engineers responding with "Turn it down, it's seriously distorted," and neither really happy with the end result.

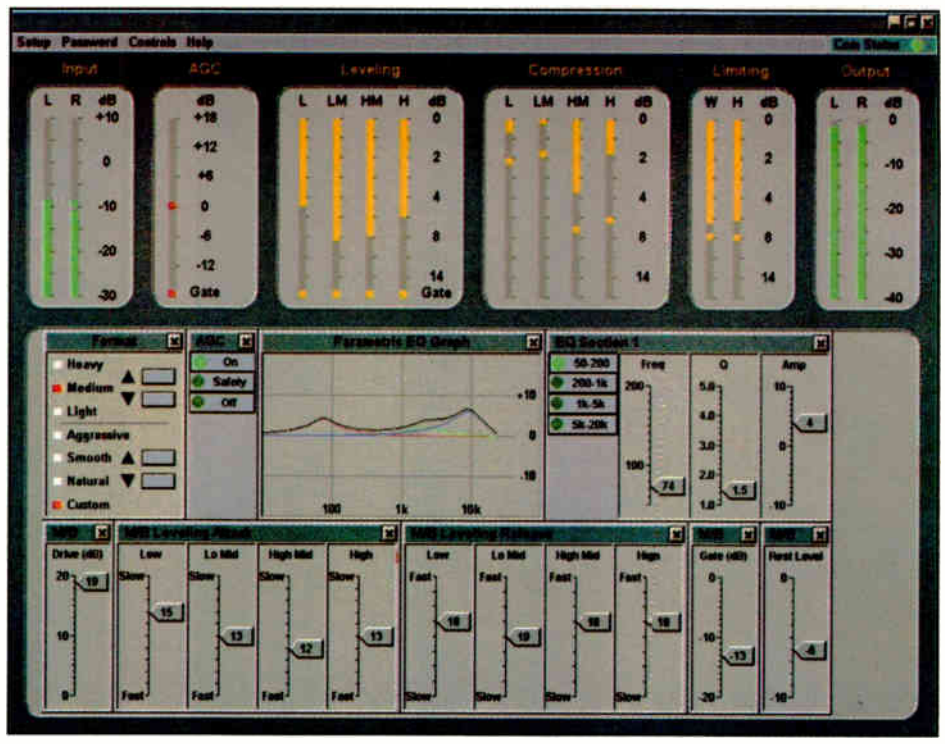
We decided to have a listen to one of the latest units on the market.

The all-digital Omega-FM, listing at $5,880, represents **Inovonics'** first foray into the competitive arena of top-quality digital audio processing for FM broadcast.

The sales literature boasts a "unique software-based" approach. On lifting the lid its immediately obvious that the number-crunching is taken care of by an industrial single-board computer, instead of the usual multiplicity of DSP chips. Inputs and outputs are handled by Inovonics' proprietary PCBs, where A/D and D/A employ the widely accepted 24-bit Crystal parts.

Omega's peak control is innovative. Throughout the processor, clipping is applied only to overshoots and cannot be adjusted to bite into the program waveform and generate extreme distortion. Loudness is instead built up in the controllable look-ahead peak limiters.

The processing architecture is otherwise conventional. A wideband gain-riding AGC is followed by three parametric EQs. The signal is split into four bands with fixed turnover frequencies, leveled and then compressed.



A Screenshot From Inovonics' Omega-FM Processor

After recombining, there are separate wide-band and high-frequency limiters to control the peaks, with the HF limiter acting only on pre-emphasized energy. After stereo encoding, a composite clipper adjustable in the moderate range -1 to +2 dB gives the last ounce of loudness.

Inputs and outputs include analog left and right, AES/EBU, S/PDIF, one composite output and two serial ports for control.

There are two levels of user control. A "quick and easy" mode recalls one of 12 formats from front-panel pushbuttons. Connecting a PC to either of Omega's serial ports (front or back panel; convenient) remotes the format selection and offers control of parameters for each processing function.

There is an unusually wide degree of control here, and care will be needed setting up. But this does allow fine-tuning of processing objectives such as program density, the trade-off between loudness and perceived quality, and tonal balance — essential to achieve the best result in today's competitive markets.

The paper specifications of the unit look good, although the specs tell less than half the story, based as they are on steady-state test signals that bear no resemblance to real programming. Dynamic performance is what counts in a processor; perhaps one day someone will invent some suitable dynamic test signals.

A couple of specs are relevant, though. Latency is 10 ms, which means live monitoring off-air is no problem — this is how Juice operates in practice. The STL we use is a digital microwave radio running APT-X compression at 256 kilobits per second. This contributes only about 3 ms of extra delay.

Second, the boot-up time of the processor after a power loss is only 3 seconds, which is faster than a user is likely to tune out, in contrast with other digital units, which can take 15 to 30 seconds or more to boot.

We started out by setting up the Omega to drive an FM signal generator in the station studios. Fed with station output, that enabled us to do a direct A/B comparison of old and new processors off-air under controlled modulation conditions.

Mod meter

The modulation meter feeding my active Spendor monitors provided a reference receiver, which we augmented with a midi-system and a midsize portable radio. I like to hear what's going on through a decent pair of speakers, as well as the result on typical radios, so that the loudness vs. quality trade-off can be optimized with confidence.

We started with one of the "Aggressive" factory presets but soon modified it with a little more lift at both frequency extremes and revised limiter time constants. The time spent on this proved worthwhile — the Omega went louder and at the same time maintained definition and integrity of the audio better than our old processor, and the annoying distortion on voice was greatly reduced.

After a couple of months on-air, everyone involved in the station is delighted with the new sound. Can't say fairer than that!

For more information contact Inovonics in California at (831) 458-0552 or visit www.inovon.com.

TECH UPDATE

Inovonics Offers Simple Processor

Inovonics makes the Model 235 AM Audio Processor, a descendant of its Model 222 "NRSC Box," which was designed to help stations comply with the NRSC-suggested, FCC-mandated idea of cutting off the top half-octave of highs in the name of AM improvement years ago.

The 235 combines the preemphasis and low-pass requirements with slow, gain-riding AGC, variable low and high EQ adjustments and three bands of compression and limiting.

Although processing is analog, internal housekeeping is digital. RS-232 remote control of processing adjustments is included as well.

It sells for $1,800. Other models with CCIR and shortwave cutoffs are $50 more.

For more information contact Inovonics in California at (831) 458-0552 or visit www.inovon.com.

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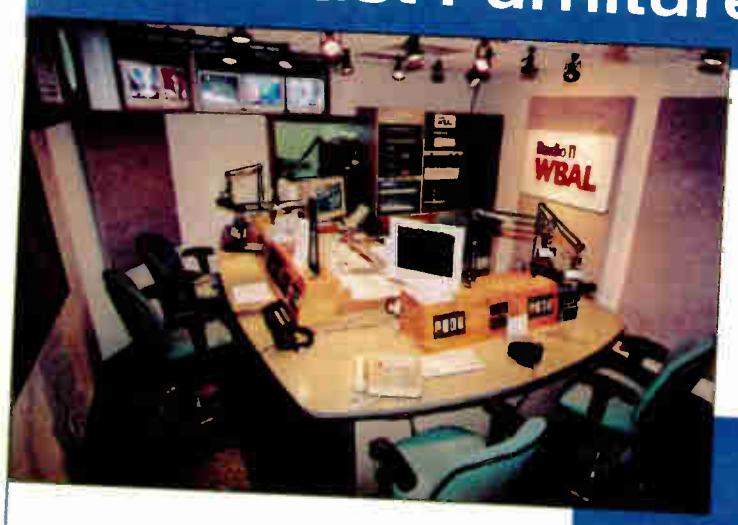

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World Radio History

USER REPORT

Aphex Upgrades 2020 to MkIII

by Andy Laird
VP, Radio Engineering
Journal Broadcast Group

MILWAUKEE Last year I wrote a User Report on the **Aphex** Model 2020 MkII. I was impressed with that model's improvements over the original 2020, so I was not really expecting that much difference when I tried out the new MkIII. How much improvement could there be on something that I think is already quite good?

All iterations of the 2020 are digitally controlled analog processors. This facilitates precise, repeatable and remotable control without significant audio delay through the system.

This is a complete processing system including leveler, multiband compressor, split band limiter and HF limiter. This isn't just a collection of independent functions in one box — the digital control system adjusts a function depending on what may be happening in another function.

The excellent stereo generator and digital I/O are optional so that the unit is configurable for any situation. The remote control software is intuitive and easy to use (also improved).

The original 2020 has a big, clean sound, although with some dynamic "quirks." The MkII kept that cleanliness and openness while solving the quirks. For all but aggressive formats, I felt that there was sufficient loudness. While maintaining fidelity to the source, the MkII could set up to operate without the fatiguing distortion generated by other popular processors.

Different is good

The differences from the MkII to the MkIII primarily are in the HF limiter section. According to Aphex, the filters in the split band limiter in the MkII are not very steep. This creates the possibility of overshoots in the frequency region of the crossover. If pushed by heavy processing, especially on sibilant material, those overshoots hit the final clipper too hard.

The MkIII has redesigned filters so that the skirts are much steeper and the combined output of the two filters still generates a perfect preemphasis curve.

The MkII has opto-isolators as the gain element in the HF limiter, while in the MkIII they have been replaced by Aphex's proprietary VCA1001 so that the attack time could be sped up. There are some minor changes to the flat limiter and to the software.

The biggest change in setting up the MkIII is that the Density can be increased.

My first installation was an upgrade. Our local engineer installed the new HF limiter board, a new PROM, changed 12 same-value resistors (supplied) on the limiter board and installed the new software.

The differences from the MkII to the MkIII primarily are in the HF limiter section.

Our first impression was that the high end was much sweeter and clean, while easily maintaining openness and gaining loudness. We were surprised that it was so audible. There is so much more high-frequency content that I had the sense that there was an Aural Exciter circuit put in. (Aphex says no).

The DJ came in asking about what we had done. He commented that he had never heard himself sound so good on the air. Others later had the same comment. This installation uses the stereo generator option with a composite STL.

The second install was a new unit at an aggressive contemporary station. Unlike previous versions, the MkIII can be pushed hard and match the loudness of others while being punchy and clean through the high end.

When pushed really hard, distortion comes on in the midrange. I could not make the high end splatter under any condition. The threshold for the onset of distortion seems to be the same for both dry voice and music.

This is a good thing because you don't sacrifice the loudness of one for the clarity of the other. Loudness-robbing overshoots are gone. The new density and brightness controls are effective and intuitive. This installation uses the AES/EBU output option directly into the exciter.

There were no drawbacks or compromises that I could hear from the switch from the MkII to the MkIII. The sound was simply more impressive and the unit could be pushed to be louder and thicker but still not be annoying.

My recommendation is that anyone who has an original 2020 should definitely get the unit upgraded to MkIII. Anyone who has an MkII and wants even more loudness and a sweeter high end should get it upgraded. And anyone who has been wanting to get away from sounding just like everyone else on the dial — that "radio" sound — should at least try a MkIII.

The price of the unit is $5,500 for the basic unit (flat processing), $500 for digital I/O, $500 for the HF limiter and $2,500 for the HF limiter and stereo generator. Upgrading a 2020 to MkIII costs $1,250.

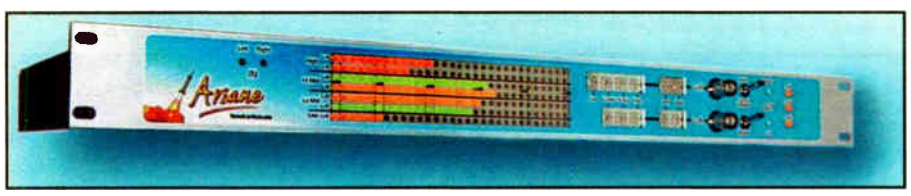
For more information contact Aphex in California at (818) 767-2929 or visit www.aphex.com.

USER REPORT

Ariane Unit Works Multiband Processing

The author is a program director at a station in a major Southeastern market. He prefers to remain anonymous.

I'm a program director in a fairly large market. My entire career, I've always been a "tweaker." My early interest in radio began with my dad and I creating a pirate station in our basement when I was 13 years old. Tweaking knobs, dials and such, then listening to and gauging the results, has always been a favorite pastime.



Part of that includes the processing on the station. Honestly, processing has always been of interest to me. Why certain stations had that certain undefinable "sound" and others just didn't always fascinated me.

I would have to say that I'm more well-versed when it comes to processing than most program directors. It would also be fair to say that I can drive some engineers right up a wall.

A friend of mine told me a while back about a new "box" coming out that would revolutionize multiband FM processing. When the "box" was unveiled, its name was "Ariane," built by **TransLanTech Sound, LLC**.

I couldn't get a demo fast enough. Despite our chief engineer proclaiming, "I don't demo boxes in a large market," he caved and we got our demo two weeks later.

Fresh out of the box, it amazed everyone. More blinkin' lights than anyone had ever seen in their lives! Matter of fact, I would recommend taking the box home, dim the lights, pour a glass of wine and just watch in awe.

Now, some of you will think to yourselves, "What purpose, in this day and age of digital processing, is there for a strictly analog multiband processor?" Good question.

This is merely my opinion. I've tried all the whizbang digital processors on the market and I have yet to hear one that properly handles multiband audio. The early ones were the worst. And while the software and hardware have gotten better, I still feel that digital processors make excellent stereo generators and final

See TRANSLANTECH SOUND, page 65 ▶

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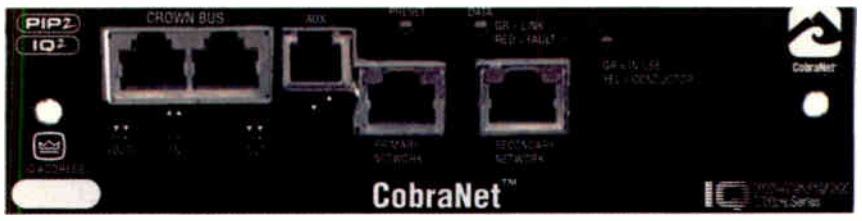
TECH UPDATES

Crown Gives CobraNet Compatibility

When installed in **Crown's** PIP2-compatible amplifiers, the IQ-PIP-USP2/CN 24-bit digital signal processing module creates a CobraNet-compatible amplifier.

The USP2/CN integrates CobraNet audio-networking technology and a complement of audio processing in a package that requires no rack space. The module connects the amplifier to the IQ Bus of an IQ System, allowing the amplifier to be controlled and monitored via Crown IQ.

The new CN version has features including output signal delay to 600ms for acoustic alignment, input and output compressor/limiters, auto standby for reduced energy costs and eight adjustable filters per channel.



The module provides on-screen error reporting of fault, high temperature and excessive distortion so operators can see if any changes occur in their amplifier's status. The USP2/CN's real-time load supervision feature ensures that the user will be notified immediately of any changes to the load.

For more information contact Crown International in Indiana at (800) 342-6939 or visit www.crownaudio.com.

Cedar Unveils Noise Suppressors

Cedar Audio USA recently released the DNS1000 Dynamic Noise Suppressor and the DNS2000 automated dialog noise suppressor.

The DNS1000 is designed as a digital noise suppression system for studio use. It has less than 10 samples latency, so there is no loss of lip sync. The company says the product can be used in radio for removing background noise from live broadcasts.

According to the company, its 24-bit I/O and dual 40-bit floating point DSPs offer better audio quality, control and selectivity than analog systems. Low-, mid- and high-frequency ranges allow a user to tune the process to the type of noise needed. Ranges can be combined for wideband processing if necessary.

The DNS2000 design combines the features of an outboard processor with those of a software plug-in. Connected to a Digidesign Pro Tools host system with a USB cable, the processor unit provides the DSP and the 24-bit AES/EBU and S/PDIF I/O for the system. It has 198 MFLOPS of floating-point power, and can process two independent audio channels simultaneously with virtually zero latency.

The system uses advanced timecode capabilities to add automation to the noise suppression functions.

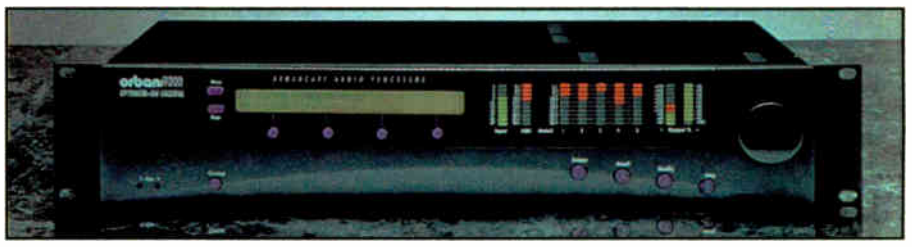
The DNS1000 retails for $5,895 and the DNS2000 for $6,250.

For more information contact Cedar Audio in Maine at (207) 773-2424 or visit www.independentaudio.com.

AM Optimod Adds Punch to Sound

Orban says its Optimod-AM 9200 combines the stability and programmability of digital with the characteristics of the Optimod sound. These include including maximum signal strength and high-quality audio for voice and music.

A less/more control allows users to adjust the processing without complex parameter tweaking. The 9200 can switch presets automatically in sync with dayparts or special events.



The processor uses a five-band limiter with a patented distortion-canceling clipper. The limiter creates a crisp sonic impact coupled with a smooth sound.

The 9200 retails for $4,250.

For more information call Orban in California at (510) 351-3500 or visit www.orban.com.

Yamaha Shows Reverb Data Libraries

The Commercial Audio Systems Division of **Yamaha Corp.** has created a series of data libraries to expand and enhance its multichannel SREV1 Sampling Reverb. The SREV1 Reverberation Data Library consists of two collections on a CD-ROM.

Library RD1-SREV1 includes small-to-medium-sized spaces with programs that include closet, locker, garage, bathroom, recording booth and stairwell. Special programs include public announcement, telephone and car.

Library RD2-SREV1 covers medium to large spaces and outdoor locations, such as a church, theater, arena, stadium or tunnel.

Aimed at the professional studio and broadcast markets, the SREV1 reproduces standard and specialized sound fields in stereo or surround, while enabling the user to sample and create custom sound fields.

It employs proprietary Convolution sampling technology and uses impulse response samples of actual acoustic environments, instead of generated algorithms.

According to Yamaha, sampling reverberation provides faithful reproductions of real-world acoustic spaces based on actual acoustic data acquired on location. The system includes the SREV1 (24-bit 48-kHz, 3-RU mainframe), the RC-SREV1 Remote Controller and the DB-SREV1 DSP Expansion Board.

A selection of onboard, editable reverb programs simulate actual environments. Each offers control of pre-EQ, post-EQ and Reverb parameters. The reverb operates in two-channel (up to 5.46 sec/channel), four-channel (up to 2.73 sec/channel) or two-channel x 2 (up to 5.46 sec/channel for each processor) modes. With the addition of the DSP expansion board, reverb time in each mode is doubled, producing reverbs to 10.92 seconds. The unit can be operated by remote control.

For more information including pricing, contact Yamaha Corp. of America, Commercial Audio, in California at (714) 522-9011 or visit www.yamaha.com/proaudio.

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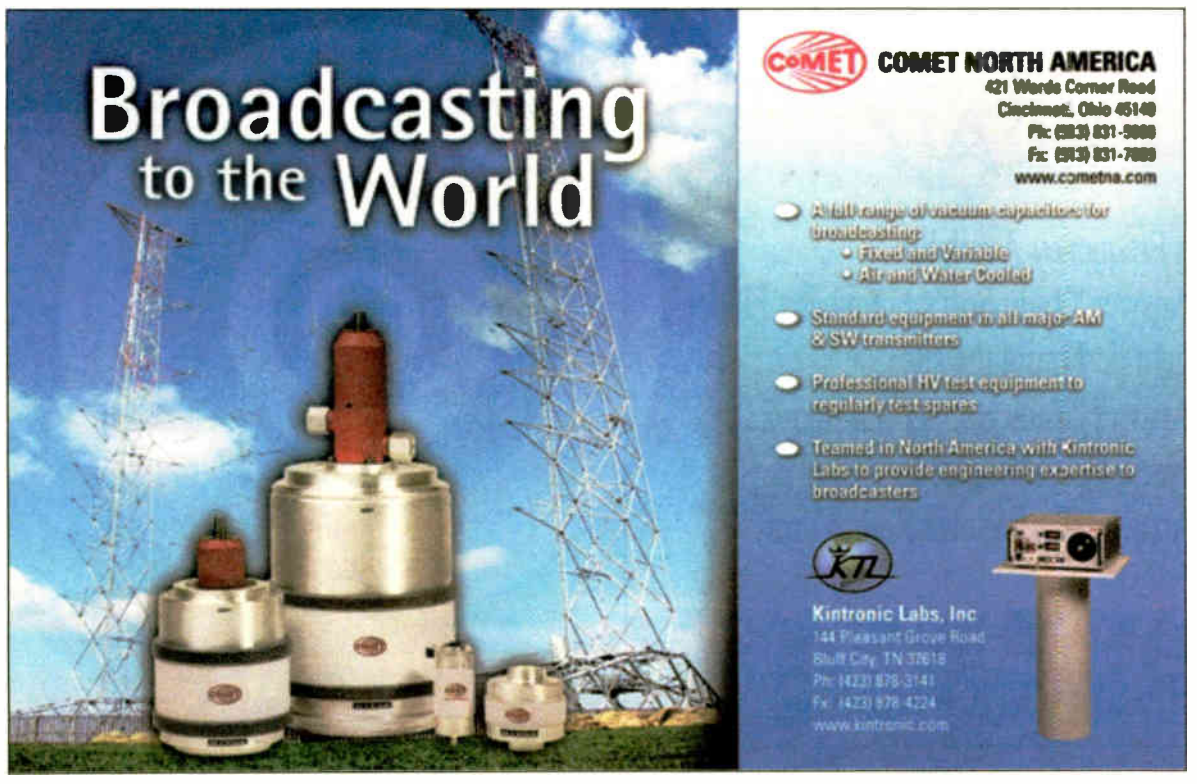

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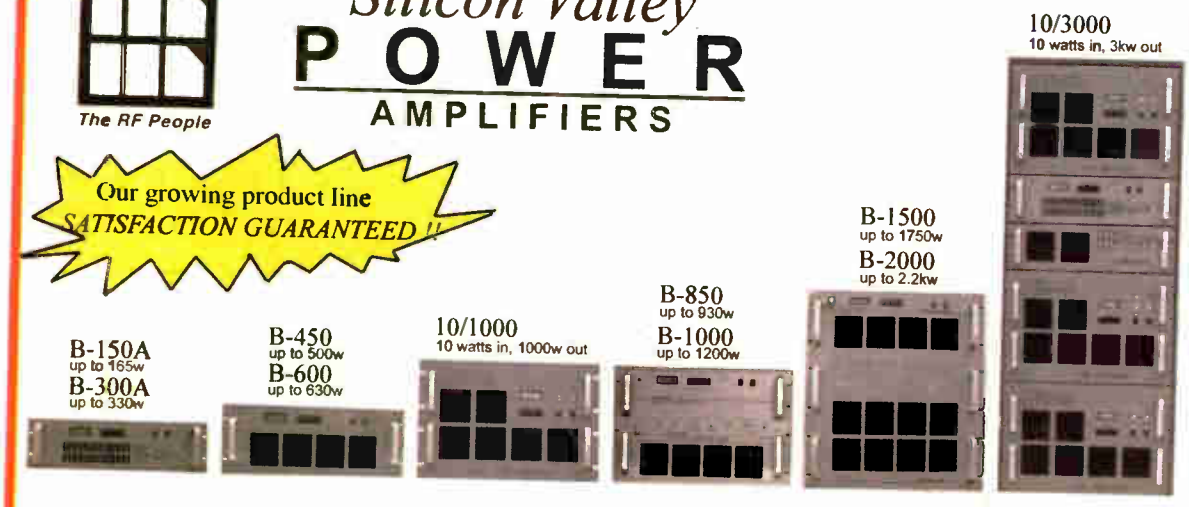

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One of the most requested FM broadcast products over the past year has been a "radio station in a box". Overseas customers, as well as some of the new LPFM licensees have a need to quickly "get on the air" at temporary locations or in the interim to their installed studio/transmitter setup. A number of overseas customers also had to originate short term programming from various remote origination sites for disaster preparedness broadcasts! Well, here you go...a radio station in a box!

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Radio World

World Radio History

TECH UPDATES

Fat Man Adds Warmth

HHB Communication's Radius 3 Fat Man is a stereo tube compressor that the company says adds warmth to recording and live sound applications with 15 preset compression programs.

They include optimum compression settings for vocals, keyboards, bass, acoustic and electric guitars, snare, kick and whole drum kits and pop, rock and dance mixes.

The unit is suited for sound professionals who prefer to control their own dynamics processing. In manual mode, threshold, ratio, attack, release and knee controls are fully variable, while input/output gains and gain makeup remain are always variable. A bypass switch is provided to compare compressed and direct signals, and a vintage-style VU meter can be switched to meter output level or the amount of gain reduction.

In addition to line inputs and outputs, the Fat Man has front-panel instrument inputs for the direct injection of guitars, basses and keyboards.

It has a balanced 1/4-inch jack analog I/O and is unbalanced-compatible and 10/+4 dBu-switchable. Input and output gain are adjustable. An optional 19-inch rack-mount kit can hold two units. The Fat Man retails for $469.

For more information contact HHB in California at (310) 319-1111 or visit www.hhbusa.com.

Omnia-4.5 Ready for AM Processing

Omnia-4.5am, a digital audio processor from **Omnia**, features algorithms and a processing structure designed for AM broadcasters. A range of factory presets designed for talk and music formats are included.

Omnia-4.5am is NRSC-compliant and features 96-kHz processing with 24-bit digital resolution.

Processing consists of five bands of limiting and two AGC bands; compression and limiting are independent. It can process in stereo or mono. A three-part Bass Management section lets stations tailor bass response. An optional Space-EFX stereo enhancement package adds controls to let users improve the stereo sound field.

For international medium-wave broadcasters, Omnia-4.5am includes selectable 4.5-kHz and 6-kHz low-pass filters.

The user interface features Omnia's color active-matrix TFT control screen. 10Base-T Ethernet and RS-232 ports provide remote control (an optional PCMCIA modem card is available), with eight user-selectable remote contact closures.

Like other Omnia processors, Omnia-4.5am features an upgradeable software architecture and two PCMCIA slots for software updates. It's priced at $7,580.

See page 10 for a photo.

For more information contact Omnia in Ohio at (216) 241-7225 or visit www.omniaaudio.com.

Sonifex RB-SD1 Detects Silence

One of **Sonifex's** new Redboxes, a line of analog and digital audio interfaces for broadcasting applications, is the RB-SD1 Silence Detect Unit, which monitors unattended stereo studio feeds.

The RB-SD1 is used to monitor an unattended feed. In the event of the signal going "quiet," after a given period the unit will switch through an alternative stereo audio signal. This signal could be a recorded message (for example, "normal service will resume soon"), a feed from a CD player or MiniDisc machine, or an alternative recorded program.

Controls are provided to start external equipment and to provide remote status indication. The RB-SD1 has a passive signal path so that it will allow a signal to be transmitted in the event of a power failure.

The unit is housed in a red, anodized aluminum box that can be screw-mounted or rack-mounted. Connections and controls are on the rear panel. It sells for $475.

For more information contact Independent Audio in Maine at (207) 773-2424 or visit www.independentaudio.com.

CRL Amigo Serves FM & AM Stereo

CRL's Amigo AM and FM are audio processing systems designed to be flexible and cost-effective.

The systems use wide-range, dual-band AGC to ensure consistent station loudness by monitoring and adjusting audio levels automatically. A three-band matrix limiter maximizes a station's coverage area and loudness for stereo and mono listeners.

CRL's Amigo AM Audio Processing System

Stereo sound enhancement provides additional stereo separation to make a station stand out. A digitally synthesized multiplex generator provides a maintenance-free stereo signal.

With the Amigo FM, operators can set an input level and modulation level, and they're on the air.

Amigo AM provides processing for C-QUAM AM stereo. Amigo AM includes an extra mono output for the standby transmitter and features to improve the performance of older transmitters and directional antennas. NRSC-1 compliance is guaranteed by CRL's patented output filter.

The units sell for $2,495.

For more information contact CRL in Arizona at (602) 438-0888 or visit www.crlsystems.com.

TransLanTech Sound

▶ Continued from page 61

limiters, but time and time again I feel they lack consistency in the multiband processing department. Some just get a busy feeling when taxed by dense audio. Most just lose their "openness."

The processing is the "goalie" — the last chance to either fix something that may be wrong higher up in the airchain (God forbid), or a great opportunity to really put an amazing sound on the air. In my opinion, the whole industry took a step backwards when we rushed to go "digital." The Ariane is here to fix that.

My experience has been in using the Ariane with one of the more popular digital on-air processors. Our format is classic rock and, as such, we play music from a rather wide variety of eras and source material. Plus, we are live-assist and/or automated.

For years, we used this processor with an analog wideband AGC in front of it. I was never happy with the hole punching and other artifacts that occurred. Segues sounded mushy (especially when running automated). No matter how many settings we used in either box, I just wasn't a happy camper until we tried the Ariane.

Unit flexibility

To set up the Ariane, we listened to the output of the box fed with program material and began to adjust the box in a preliminary way. We were pretty floored by its flexibility, especially the "effect" created in the box's L-R adjustments that process the L-R separately from the main left and right channels. If your station suffers from multipath, you can create a subtle or ridiculous stereo "spread" without making the situation worse.

I still feel digital processors lack consistency in the multiband processing department.

Then it was time to put the box in the airchain. The engineers were skeptical. When we first put the box on, we immediately began backing out of the existing processor at the transmitter site. By slowing down its multiband release settings and by using the Ariane to "mix" the audio instead of the main processor, the older unit ran more openly and the Ariane did most of the work.

The engineers were pretty impressed. And myself? I love it. We ended up keeping the demo box, and actually ordered a second box for another one of the stations in our cluster.

Some remarkable things about the box? It takes segues and makes them sound like a pro board op is running the show, even if you have three dumb soundcards feeding an STL. It has given us the opportunity to process very tastefully, tweak the L-R to help with multipath yet keep some nice spread, and basically create the most open, balanced, natural sound I've ever heard come out of a radio.

No, we're not the loudest station on the dial. That is not our goal. The Ariane isn't a "loudness-generating" box. It's a "consistency-generating" box. Is it possible to be the loudest station on the dial with this box? Absolutely. In fact, this box in the hands of some people I know in the industry truly frightens me.

It puts a warm, large, analog sound back into digital processing. It truly is the best of both worlds.

The unit sells for $4,000.

For more information contact TransLanTech Sound in Florida at (352) 622-7700 or visit www.translantech.com.

World Radio History

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Want to Buy

Hughes & Kettner tubeman pre-amp, $150, very little use. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

AMPLIFIERS

Want to Sell

Hughes & Kettner tubeman pre-amp, $175, very little use. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

ANTENNAS/ TOWERS/CABLES

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AM GROUND SYSTEMS: Reliable, On-time Installation, Quality Workmanship, Ground System Evaluation & Repair. www.amgroundsystems.com, 1-877-766-2999.

Dielectric 3-5/8" motorized four port coaxial switch . Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

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Cablewave transmission line, 3-1/8", 500', with three patches, on spool & in good shape. Mike Raley, Bible Bdctg Network, 8030 Arrowridge Blvd, Charlotte NC 28273. 704-523-5555.

Want to Buy

8-Bay used FM antenna for 101.7 mHz or close by. Joseph Bahr, Islands FM, POB 6556, San Juan PR 00914. 787-725-4164.

AUDIO PRODUCTION

Want to Sell

Sony CCP-13B high speed audio cassette tape duplicator, one master, 3 slaves, stereo, excellent cond, $250. Al Ross, 3309 214 St SW, Brier WA 98036. 425-775-8853.

Four channel mike mixer, 3 Lo-Z, one Hi-Z with bridging input. Dual monitor phone jacks. Complete in carrying case with cables; Magnasync, never used, $500. Excellent for remote or production console. John Robinson, WMSK, 270-389-1500 or JB Crawley, 270-465-5762.

AUTOMATION EQUIPMENT

Want to Sell

Computer Concepts DCS (3) automation computers. Each is a 486 class unit with 9g SCSI drive, DA & APTX audio cards, network card & all software. Novell server also available, if needed. $1500 ea. Arthur Morris, KSWM, 126 S Jefferson St, Aurora MO 65605. 417-678-0216 or email: art@magiccircleradio.com.

CART MACHINES

Want to Sell

Broadcast Electronics 10 spot, never used. Includes manual, $800/BO. J Lalino, WLAL, 319 Rt 29, Middleville NY 13406. 315-891-3110.

Want to Buy

ITC Delta, single or triple deck, mono or stereo w/3 tones. Prefer ones with Jones plugs for remote connections & must be working. Bob Sassaman, WNIR, Box 2170, Akron OH 44309. 330-673-2323.

Manual for Audicord R/P stereo 526, spare parts & used carts. G.P. Brefini, GPMJ Broadcast, 12 Bailey St, Foxboro MA 02035. 508-543-0158 or email: gpmjbcast@aol.com.

CD PLAYERS

Want to Sell

Denon DN-961FA drawer loading CD player, $695. 877-722-1031.

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CONSOLES

Want to Sell

Harris Stereo 80 console, $1600 +shpg. Joseph Bahr, Islands FM, POB 6556.,San Juan PR 00914. 787-725-4164.

Otari Series 54 studio console, 28 inputs x24 buss in a 32 mainframe, full TT patchbay. DiskMix automation. Large LEDs, great EQ, $12,000/BO, FOB Austin, Texas. Bill, Phil or Joel. The Production Block Studios. 512-472-8975.

PR&E BMX-5 slide fader console. Joseph Bahr, Islands FM, POB 6556, San Juan PR 00914. 787-725-4164.

Arrakis 12000, 28 mainframe, 3 yrs old, includes 10 line, 2 mic modules. Worked fine before minor water spill. Monitors sizzle, switches pop. Great for parts or may be an easy fix, BO. Barry Armstrong, WRXT, Box 20065, Roanoke VA 24018. 434-237-9798.

Want to Buy

Western Electric 25B. Paying up to $10,000 for this console & other WE amps, speakers & mics. James Phillips, WOOO, POB 438, Paulding OH 45879. 419-782-8592.

FURNITURE

Want to Buy

Digitech DSP-256XL digital multi-effects processor/reverb/delay 100 presets 100 user presets, $175; dbx 166 2 channel gated limiter compressor, like new, $200/BO. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

LIMITERS/ AUDIO PROCESSING

Want to Sell

Digitech DSP-256XL digital multi-effects processor/reverb/delay 100 presets 100 user presets, $200/BO; dbx 166 2 channel gated limiter compressor, like new, $200/BO. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Optimod 8000A reconditioned by J-Squared. $950/BO. P Lopeman, WMOM FM, 907 E Ludington Ave, Ludington MI 49431. 231-845-9666.

Orban 8000-A Optimod, $1350/BO +shpg. Joseph Bahr, Islands FM, POB 6556, San Juan PR 00914. 787-725-4164.

Texar Audio Prism digital controlled audio processor, $150/BO. Will Standley, WRFM, Cocoa FL. 321-427-3512.

Orban 8100A & XT chassis, good working cond, BO. James Phillips, WOOO, POB 438, Paulding OH 45879. 419-782-8592.

Orban 8100A/ST studio chassis, 2 available, $495 & $550. 877-722-1031.

Telos Omnia Toolvox mic processors, 3 available, new in box, $995. 877-722-1031.

Want to Buy

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

EV644 with shockmount & cable, very nice, $200. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

RW Online

MICROPHONES

Want to Sell

EV644 with shockmount & cable, very nice, $200. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Want to Buy

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922. E-mail: billbryantmgmt@yahoo.com.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RCA 44 & 77 mics & RCA on air light. Highest price paid. James Phillips, WOOO, POB 438, Paulding OH 45879. 419-782-8592.

MISCELLANEOUS

Want to Sell

ROTRON BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin. Goodrich Ent. 11435 Manderson St, Omaha, NE 68164 402 493 1886 FAX 402 493 6821

1 kW 9-tower phasor @1520 kHz. 10 kW 3-tower phasor @1520 kHz, $3500 each/$5000 both. P Lopeman, WMOM FM, 907 E. Ludington Ave, Ludington MI 49431. 231-845-9666.

Large quantity of brand new 5" & 7" small & large-hub plastic reels & white boxes. Low package price for all. Bill or Joel, The Production Block Studios. 512-472-8975.

Motorola TA-42 input & output terminals, T&R 2-25 amp fuses, 1-15 amp fuse, $25. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

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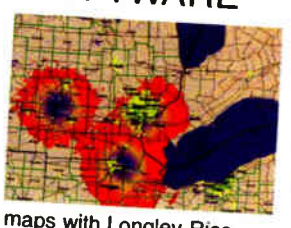

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SAMS Project Studio Blueprint by Greg Galluccio, 236 pages; The Studio Business Book by Jim Mandrell, 335 pages, $25/both. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Standby power generator, Onan, 15000 watts, 3 phase, air cooled, gas & low hours, $8500. Mary, 8264 S Cody St, Littleton CO 80128. 303-972-9698 or email: windchimes5@juno.com.

Two boxes (19 total) of new motors. Oriental motor, Japan S-301 motors, 7.5W 115V 1500/1800 rpm, $30/all. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Honeywell Med. Intensity strobe model KG 225. Good for spare parts, $5000. Mike Raley, Bible Bdctg Network, 8030 Arrowridge Blvd, Charlotte NC 28273. 704-523-5555.

Telos 100 Delta digital phone hybrids, 8 available, 1 year factory warranty, $895. 877-722-1031.

Telos 100 telephone interface, $250; Ramsa 8210A 10x4 mixer, $200; Thompson Audimax 4440A (pair), $250; EXR 14 exciter, $100; WBS 8205 audio DA's w/10 DA's in tray, $150; ADC audio patchbays, $100 ea; Tascam 8x2 unbal monitor mixer, $100. Derek LeDoux, PixMix Video, 156 Westem Ave, Boston MA 02134.

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UREI BL40's in good condition. Call 1-888-433-1141.

RF amp meter, reading 0-1.5 amps or slightly higher, new or used, size or mfg not important. William Boyer, WMOP, 3349 NE 28 Ave, Ocala FL 34479. 352-629-5147.

MONITORS

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Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

Motorola C-Quam package complete with exciter & monitor, $1750/BO. P Lopeman, WMOM FM, 907 E Ludington Ave, Ludington MI 49431. 231-845-9666.

Potomac Instruments 1901. 9 tower digital antenna monitor, $4250. P Lopeman, WMOM FM, 907 E Ludington Ave, Ludington MI 49431. 231-845-9666.

Want to Buy

Potomac Instruments AM19 (204), 4 tower, dual mode day & night. David Senzio, WWJQ, 5658 143rd Ave, Holland MI 49423. 616-394-1260.

RECORDERS

Want to Sell

Tascam BR-20 r-r's (2), both in excellent cond, $850 ea/BO. Joel Block, The Production Block. 512-472-8975.

Otari MX 50 (7) & 5050 (5) for light production work. Great shape, $100 a piece, as is; Revox r-r, $75 each, as is; Tascam BR 20, $100 as is; Audicord cart machines, R/P rebuilt, as is, $200 each. Mike Raley, Bible Bdctg Network, 8030 Arrowridge Blvd, Charlotte NC 28273. 704-523-5555.

Tascam 32B, like new, used only 5 hrs, $850/BO. J Lalino, WLAL, 319 Rt 29, Middleville NY 13406. 315-891-3110.

Radio World

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Burk TC-8 wireless remote control, no relay panel available, $1350. Joseph Bahr, Islands FM, POB 6556, San Juan PR 00914. 787-725-4164.

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Sine Systems remote control package includes (2) RP-8 interface panels, enhanced speech module & processor, $950. Rod Chambers, KSUE, 3015 Johnstonville Rd, Susanville CA 96130. 530-257-2121.

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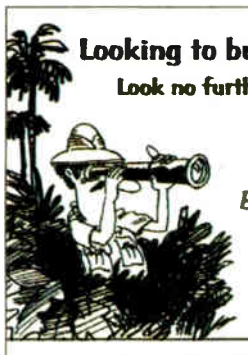
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Comtech Uplink Dishes (2), one mobile; SSE C-band transceiver, (2) PLL LNB's, (2) CM701 modems, (2) DAC 400 encoders, (10) ABR Comstream digital receivers. Great condition, $45K/BO. Bruce Hale, 804-745-0300.

TAPES/CARTS/ REELS/CD's

Want to Sell

Used carts, 50 cents each; new carts, $2 each. J Lalino, WLAL, 319 Rt 29 Middleville NY 13406. 315-891-3110.

TEST EQUIPMENT

Want to Sell

Ampex 300E vacuum tube voltmeter, $30; Beta Scope non destructive thickness gauge, $30; (4) HP 400D vacuum tube voltmeters, $40/all; HP 400L vacuum tube voltmeter, $20; Supreme 574 electronic set tester in case w/manual, $40; RCA – NE Radio wall monitors, very old pair, never used, still in original packing, speaker bolts still in package, natural color w/RCA logo & 2-mi 38309-2 from engineer products division, BO. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

TRANSMITTERS

Want to Sell

AEL FM-25-KE 25KW grounded grid FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

BE FM-30-B 30KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

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Distinguished graduate of ABS desires employment in DFW area. Willing to travel/relocate if required. April C, 817-909-5663.

Greg Frank, 512-636-4898. Recent ABS graduate. Very ambitious. Willing to do whatever it takes to do the job the best. Will relocate for any job.

James Johnson, just completed my training at ABS & looking to get started at your station. Willin to travel, 817-881-3790.

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Rookie jock seeking position as on-air announcer or in production. NE Oklahoma, NW Arkansas, SE Missouri or SW Kansas preferred. David 918-436-6483 or 918-743-6230.

CCA 1000-D-1kW FM xmtr. New IPA tube, no exciter, $4000/BO +shpg. Joseph Bahr, Islands FM, POB 6556, San Juan PR 00914. 787-725-4164.

CCA 3000D with plate transformer to 5 kW single phase, currently on air at 102.7 mHz, $3000. P Lopeman, WMOM FM, 907 E Ludington Ave, Ludington MI 49431. 231-845-9666.

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Collins E/F 10 kW AM xmtr, needs work, choke, reactor & transformer good, $2750. P Lopeman, WMOM FM, 907 E Ludington Ave, Ludington MI 49431. 231-845-9666.

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Harris 10H, 10kW FM xmtr, no exciter, already crated, $9000/BO +shpg. Joseph Bahr, Islands FM, POB 6556, San Juan PR 00914. 787-725-4164.

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Bext TEX-20 front panel programmable exciter, $1395. 877-722-1031.

Gates BCI-F in good condition, $1500 or technical help to switch frequency to 1.8 & 3.8 MHz. Richard Shelar, WYMR, 710 Columbia St, Leetonia OH 44431. 330-427-2303.

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World Radio History

◆READER'S FORUM◆

It's the programming, stupid

I'm the guy who, after four years on the NAB board (1976-80), suggested the association should change presidents.

It took a few years, but it happened.

Maybe it should happen again — first, because we're going to be forced to accept and pay for IBOC digital technology that's iffy at best; second, because the NAB is again opposing another logical form of technology, local satellite radio.

IBOC by itself won't make listeners stick with terrestrial radio.

— Will Sims

The IBOC conversion process with its high costs won't save AM and FM. I believe the public could care less. Quad FM didn't happen. Stereo AM didn't either. Not because the FCC stopped them; it was lack of interest.

TV didn't destroy radio. FM didn't end AM. Why switch from accepted technology when the public already knows AM is different from FM and FM is different from XM? Why buy IBOC receivers when you can have XM? People choose radio for what's programmed, not how it's transmitted.

Many dot-coms went out of business because they thought people would change habits and stop shopping retail. I don't believe the energy and money spent to convert to IBOC will change the way listeners perceive us. IBOC by itself won't make listeners stick with terrestrial radio. They will leave because of commercials and the industry's boring copycat formats, playing the same tunes over and over.

Better radio isn't about being digital, it's about better programming.

NAB's opposition to XM's patent that could provide local origination is knee-jerk and predictable. Stopping new forms of technology to protect the status quo never works. Besides, who will create the local insertions? It's only a matter of time before XM sells ads and offers some channels for free. I see opportunities for broadcasters to partner with satellite radio, providing programming and selling more spots.

Where I live, cable TV offers more than 40 channels to local advertisers, far more than eight-station radio clusters. Partnering with satellite would provide more parity.

Trying to stop new technology and attempting to shoehorn-in the "answer" to digital is the same as getting the cows back after the gate is open. We need to learn to work *with* new concepts, not simply oppose them.

After 40 years in radio, owning 13 stations, I'm getting back into the biz again, following a seven-year hiatus. I'd love to hear from friends and foes alike who knew me as Bill. My e-mail address is *amigo@newmexico.com*. Thanks.

Will Sims
President
Meadows Media, LLC
Santa Fe, N.M.

Offensive ad

Radio World has been one of the better trade publications available to radio broadcasters. It runs both the good and the bad — and offers both opinions when the industry doesn't agree.

But is it really necessary to run ads like the one on page 29 of the March 27 issue (Eventide's "Finger")? I assure you this ad won't promote Eventide's equipment nor Radio World's publication. Show some class.

Carl E. Gluck
VP Technical Research
Salem Communications Corp.
Camarillo, Calif.

Paul Schafer

I note that you have received some negative comments about your article on Paul Schafer (*Reader's Forum*, April 10, "Paul Schafer").

Calling him the "Father of the Demise of Personality Radio" is hardly fair, since he cannot be held liable for how the individual stations used his equipment. Sure, a lot of station owners wanted to get by with low-cost programming. Some even had to do that as a matter of economic survival.

But KOMA in Oklahoma City used a Schafer automation system in the early 1960s and sounded very "live." I'm sure there were others that did likewise.

Automation, you see, is just a tool. A cart machine is a form of automation, because it cues itself. Does anybody want to go back to Maggie PT-6s? And like any tool, automation can be used well, or it can be used poorly.

If station management doesn't have the imagination to properly use their tools, that is hardly Paul Schafer's fault.

Glen Kippel
General Manager
KHCS(FM)
Palm Desert, Calif.

Workbench

Just wanted to say thanks for John Bisset's column! I am an EE student at Auburn University as well as a part-time IT guy for Clear Channel in Columbus, Ga., as well as program eirector/engineer for Auburn's radio station, WEGL(FM).

I have been reading RW this year since we get it at WEGL and have really enjoyed your articles. I am learning a lot by reading your tips and suggestions and am applying some to the station here at school.

Joseph Brannan, CBNT
Program Director/Engineer
WEGL(FM) 91.1
Auburn University
Auburn, Ala.

Get Out The Vote NAB Style

Election 2002 means more than headaches from political broadcasting rules. The NAB is urging local broadcasters to prove their commitment to community service to get out the vote.

The NAB's "Election 2002" campaign offers tips on keeping local residents informed:

In addition to your station's regular news coverage of the 2002 elections and key campaign events, consider some of the following ...

Produce special reports on key issues.
Develop an "Ask the Candidates" segment.
Highlight ballot and referendum issues.
Offer free airtime to the candidates.

The effort also includes suggestions on organizing great debates, including a link (*www.debates.org*) to the Web site of the Commission on Presidential Debates.

This is an opportunity for local broadcasters to highlight their obligation to a strong democracy. Many times, state and local debates don't get the attention they deserve, simply due to a lack of news department preparedness.

There are countless ways even non-news intensive stations can make a mark on Election 2002 get out the vote efforts.

Sponsor a voter registration drive.
Broadcast from polling places
Broadcast voting reminders and PSAs.

Does your station have a Web site? The Internet is a great election-year resource for voters and broadcasters. Make the Web work for your station.

Create an election page on your Web site.
Produce a sample Web ballot.
Highlight Web resources for voters.

Helping local residents make informed decisions at the polls this fall should be a primary focus of your radio station's news or promotions department.

For more information on the NAB's "Election 2002" program, call (202) 429-5448 or visit *www.nab.org*.

— RW

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W.C. Alexander, Bruce Bartlett, Frank Beacham, Naina N. Chernoff, Harry Cole, Troy Conner, Vince Ditingo, Mark Durenberger, Ty Ford, Scott Fybush, Harold Hallikainen, Paul Kaminski, Peter King, Mel Lambert, Mark Lapidus, Carl Lindemann, Frank R. Montero, Ted Nahil, Tom Osenkowsky, Ken R., Rich Rarey, Bruce Rogow, Randy Stine, Travis the V/O Guy, Barry Umansky, Tom Vernon.

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Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

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European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: rcalabrese.imaspub@tin.it
Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: callems@msn.com
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com
Latin America: J.O. Lima e Castro	+55-11-3873-1211	Fax: +55-11-3673-1499	e-mail: limcas@uol.com.br

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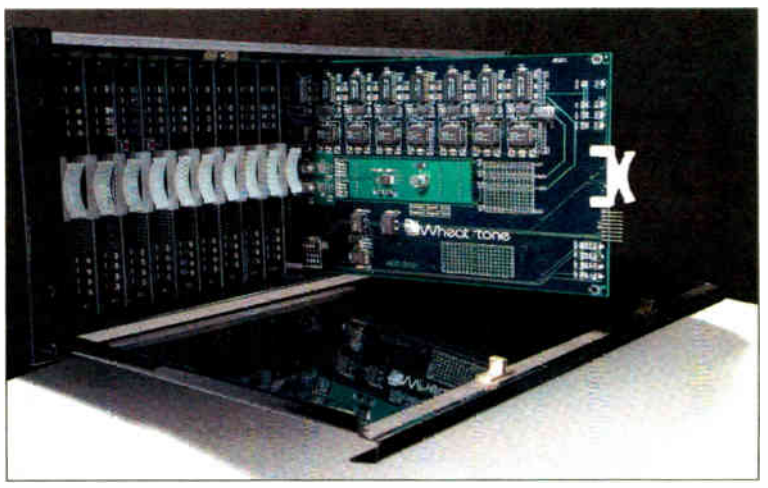

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