

*****AUTO**3-DIGIT 604
 S103723 D08 0606
 THOMAS E BRAXTON 158
 PRESIDENT
 BRAXTON EMC CONSULTING LTD
 201 BULI LN
 BOLINGBROOK IL 60490 1520

XM2go

Frank Beacham tries the Samsung Helix.

Page 41

Rat Patrol

You found what at the transmitter?

Page 36



Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

July 5, 2006

ContentDepot Achieves Liftoff

Officials Hope Much-Delayed Launch Will End Talk of 'Discontent Depot'

by Dan Mansergh

Public radio's long winter of discontent may soon be over, as the much-delayed ContentDepot distribution system begins full-time operation this month.

A 90-day dual operations period, during which ContentDepot and the "legacy" single-carrier-per-channel satellite distribution system will both be available for station use, is projected to run through September, according to Public Radio Satellite System officials. At that time, the existing system will be retired. The project is almost two years late, based on the original target of fall 2004.

ContentDepot promises to simplify operations for more than 400 satellite-interconnected stations, make program distribution more reliable and improve tracking and reporting of program carriage for producers.

Prerecorded programs will be sent through the system as segmented files, making automated operation much easier, while live programs will be distributed as digital audio streams with embedded cueing data. A station need only sign up for a desired program on the ContentDepot's Portal Web site to ensure it is delivered to the station's receivers by the intended airtime.

With these potential benefits, however, comes significant change. The distributed network of uplink stations that previously provided programming from around the country was taken out of service on May 15, when the PRSS centralized uplink origination in Washington

See DEPOT, page 5 ▶

Don't Leave the Radio Behind on Vacation!

Take our annual summer product preview with you and find out what new gear is about to wash ashore on the wave of HD Radio and other new technologies.

Page 6

Continental Delivers!

Continental - the Industry Leader in High-Power HD Transmitter Development.

Introducing the 811HD and 812HD Solid-State HD power for Dual-Antenna HD Radio systems. High-Power or Low-Power, it's your call!

816HD
 811HD
 or
 812HD

Call 800.733.5011
 or go on-line at www.contelec.com
 and get connected with a Continental Broadcast Sales Professional

HD Radio
 The Way It Should Be

Sign Up For NewsBytes Weekly Digest at www.rwonline.com

NEWS WATCH

Big Indecency Fines Could Go to Court

WASHINGTON Several experts predicted that one or more broadcasters would challenge in court the new fines for indecency recently passed by Congress. Critics insist the agency clearly define what is and isn't allowed.

The House passed a measure in June to raise fines for broadcast indecency ten-fold and President Bush said he'd sign the bill.

The Broadcast Decency Enforcement Act raises the fine per indecency violation to \$325,000 from the current \$32,500; S. 193 also caps at \$3 million the maximum a broadcaster can be fined

for continuing violations. The Senate passed the legislation in May.

While the penalties were less than groups like Parents Television Council and the Christian Coalition sought, experts believe its passage could help some Republicans facing tough mid-term elections in November.

Prior to the vote, Rep. Gary Ackerman, D-N.Y., said the bill would have a chilling effect on free speech. He characterized the PTC — which he said is responsible for more than 99 percent of indecency complaints filed — as a “tiny population of scolds.”

FCC Chairman Kevin Martin said the bill gives the agency more tools to enable parents to watch television and listen to radio as a family.

The legislation comes two years after the infamous Janet Jackson/Justin

Timberlake Super Bowl half-time show in 2004. Also that year, the House passed a measure that would not only have raised fines for station licensees, but called for individuals at stations involved in a broadcast deemed to be indecent to be fined. It also gave the FCC the option to revoke a station license after three violations.

Lawmakers said the Senate measure was a compromise that could gain traction.

NAB said self-regulation is preferable to government regulation when it comes to programming.

The American Federation of Television and Radio Artists was pleased that the bill passed by the House does not include provisions to fine individuals. It says performers, announcers and journalists have been targeted by those who advocate censorship.

“Considering the tremendous pressure in Congress to pass an indecency law this year, it's a great victory to keep former fines and license forfeiture out of indecency legislation, which would have been devastating to AFTRA members,” said National Director of Legislative Affairs Thomas Carpenter.

Shortly before passage, the FCC again rejected CBS' claim that the Janet Jackson incident was not indecent and upheld a \$550,000 fine. CBS, now out of appeals short of a court challenge, had not signaled its intentions.

'Disgusting and vile'

In debate prior to the House vote, Fred Upton, R-Mich., said S. 193 was nearly identical to a bill he and others introduced in the House in 2004. What “compelled” him to act, he said, was a review of transcripts of broadcast indecency cases at the FCC.

“My friends, public decorum on this floor precludes me from reading those transcripts out loud, but what I will say is that what I read was disgusting, vile and had no place on our public airwaves.”

Most broadcasters, Upton said, are responsible licensees; he gave a nod to those who have strengthened their zero-indecency tolerance policies and installed software to flag and prevent indecent programming from going over the air.


However, “for those broadcasters who are less than responsible, the FCC needs to have the teeth to enforce the law, and this bill, S. 193, will give the FCC that teeth,” Upton said.

Rep. Greg Walden, R-Ore., supported the measure. But Walden, a radio licensee for 20 years, said recent FCC decisions regarding indecency have left him and broadcast colleagues “a bit confused about where the boundaries are.”

Smaller broadcasters, especially, need clarification about what is or is not indecent because even the past fine levels of \$32,500 could bankrupt them, said Walden.

—Leslie Stimson

THIS IS THE NEXT BIG THING:




WHEATNET™ — FUTURE PROOF!

WHEATNET LETS YOU ROUTE THOUSANDS


of bi-directional signals at ONCE in just 60 microseconds—all secure, virus-proof and in just 2 rackspaces! WHEATNET leaps way ahead of conventional stacked router or IP-based designs, interconnecting up to 48 studios (each with its own independent mix engines and I/O resources) using just one CAT-5 wire per studio, plus providing systemwide X-Y control from one central location. You can even meter and monitor (in stereo) any signal systemwide.

REDUNDANCY? We've got that covered too: just add a second WHEATNET and CAT-5 link from each studio and have an AUTOMATIC standby interconnect for the ENTIRE system!

WHEATSTONE has a proven track record for digital networking; benefit from our experience!



48 CAT-5 PORTS with 128 audio channels (plus embedded control data) per port. THAT'S 6144 TRAFFIC CHANNELS IN JUST TWO RACK SPACES!



GET THE POWER!

copyright © 2005 by Wheatstone Corporation

Index	
NEWS	
ContentDepot Achieves Lift Off	1
Newswatch	2
Test Your Indecency Knowledge	3
From the Editor	4
SUMMER PRODUCT PREVIEW	6-34
FEATURES	
NHPR Expands Service to Plymouth	35
Workbench: I Don't Like Squirrels and Snakes	36
Conquering the Digital Media World	37
HD RADIO	
Digital Radios and Your Station	38
HD Radio Scoreboard	39
STUDIO SESSIONS	
Samsung Helix Doubles as MP3 Player	41
FlashMic Focused on Field Recording	42
BUYER'S GUIDE	
WRVO Selects G5 Control Surfaces	44
Klotz Aeon Heads to the Country	44
MPR Likes Element Modules, Pathfinder	45
Rubicon SL Selected for Pamal Cluster	46
RDP Opts for BC-2000D Functionality	46
Harris Outfits Bonneville Facility	47
OPINION	
Keep First Responders in Constant Contact	54

Test Your Indecency Knowledge

by John Crigler

What's your Indecency IQ? Test your knowledge about how the FCC interprets and enforces its indecency policy by answering "True" or "False" to the following questions. Twenty-one correct answers qualifies you as a Doctor of Indecency. Get 18 right and earn a Masters degree.

Of course, for every wrong answer you could be heavily fined. Congress has raised the maximum fine for a single violation to \$325,000. Get more than three wrong, and you risk possible revocation of your license.

1. Some words are profane regardless of context. TRUE. The FCC maintains that some language is "presumptively profane."

2. A bare breast is more offensive than a bare butt. TRUE. Although breasts and buttocks both are considered sexual organs, an exposed female breast is considered indecent, while buttocks have been considered indecent only if touched in some way.

3. "Poop," "penis," "ass," "kiss my ass," "bastard," "bitch," "dick," "dickhead," "pissed-off," and "booty" are not indecent. TRUE. So long as the reference is fleeting.

4. Stations that air the same programs at

the same time will be treated in the same way. FALSE. As a general rule, the FCC fines only stations against whom a complaint is made, and then only if the program was broadcast outside the safe harbor period.

5. Words that cannot be understood by the average listener may nonetheless be indecent. TRUE. The law is not limited to obscene, profane or indecent material broadcast in English.

6. Indecency counts even if it is broadcast by mistake. TRUE. The accidental nature of a broadcast may affect the amount of a fine, but not the fact that indecent material is broadcast.

7. Profanity is just another word for indecency. FALSE. Although there is overlap between the two concepts, the FCC insists that they are distinct, and that material that is not indecent may nonetheless be profane.

8. A program may be indecent even if no one is listening. TRUE. The broadcast of indecent matter is prohibited between 6 a.m. and 10 p.m., regardless of actual audience. It takes at least one complainant to raise the issue, but the commission has not required complainants to prove that they listened.

9. Local community values determine

whether a broadcast is indecent. FALSE. The standard applied is a national standard. It is intended to reflect the values of an average broadcast viewer or listener, not the sensibilities of any individual listener or community.

10. Song titles are exempt from indecency prosecution. FALSE. There is no exception for song titles.

11. There is a limited exemption for classic songs and great literary works. FALSE. Artistic merit is considered as a factor, but is not an absolute defense to an indecency complaint.

12. The FCC exempts bona fide news events and documentaries from its indecency policy. FALSE. Indecency law recognizes the importance of context, but grants no absolute exemptions for news or newsworthy material.

13. The FCC distinguishes between commercial and noncommercial stations, just as listeners do. FALSE. It applies the same standard to all stations, although it may exercise discretion and impose a lesser fine on a noncommercial station.

14. The FCC distinguishes between the broadcast of live and recorded material.

FALSE. The distinction between live and recorded material became virtually meaningless when the FCC decided to make even fleeting or isolated usages indecent.

15. Vile racial epithets and blasphemous religious slurs are profane. FALSE. The FCC took pains to exclude such language from the definition of profanity.

16. Under the Communications Act, air talent cannot be personally fined for indecent speech. FALSE. The Communications Act permits personal liability for a violation of the indecency law after the individual has received prior notice. Proposed legislation would remove the requirement of a warning.

17. If a listener is upset about an off-color joke on the air, the station must report the complaint to the FCC. FALSE. Stations are not required to report the broadcast of matter that may be indecent.

18. A station won't be fined if it bleeps or pixilates indecent material. FALSE. Even an edited program may be found indecent if a sexual meaning can be inferred. The issue may devolve into a question of proof. If a station cannot provide satisfactory evidence of the broadcast of edited versions of music, the FCC could find that unedited indecent material was broadcast.

See TEST, page 5 ▶

The Dorrrough Loudness Monitor



Two 40-A2 meters in an optional dual rack

Today's audio requires careful attention to precise level control...
 Simultaneous display of Peak & Average. See the actual loudness of program content with the Dorrrough ballistics based on Time and Amplitude.
 Select from 6 different models including AES/EBU meters.

Features common to all models:
 Peak hold functions • Sum/Difference • Alarms for audio loss and full scale
 Scale selection for 14dB and 20dB of headroom
 AES/EBU includes more features



Remote
 Model RW-100
 A wired remote for accessing phase from the 280 analog and 280 digital reading meters.
 Display the functions of L/R, Sum/Diff, Phase, Overs
 Display/Overs Reset, 3 sec. Peak Hold, Peak Hold Permanent, and Reference Mode. Red alarm status lights for Phase, BSC, and Full Scale.



Please visit our web site
www.dorrrough.com

Dorrrough Electronics Inc. 5221 Collier Place • Woodland Hills CA 91364
 Tel: (818) 998-2824 Fax: (818) 998-1507

dorrrough

Get the Best Prices from all the Popular Brands!

www.7bd.com



Broadcast Depot

YOUR #1 BROADCAST PROVIDER



...and much more!

Contact Chuck Maines at Broadcast Depot to get your next quote, and see what you've been missing!
 Email: cmaines@7bd.com | www.7bd.com
 Toll-Free: 877-90-BDNow (23669) | Fax: 765-983-3817

Durst Does Well by Doing Good

When John Lyons told me a year or so ago about a radio system on which he was working, I wasn't sure what to make of it.

We were sitting in a coffee shop in New York and he was explaining the concept, sketching it on a napkin. His employer — The Durst Organization, which owns various high-rises — would install a radio transmission system intended to assist firefighters, police and other rescuers who respond to emergencies.

I could see the system made sense, particularly in a city still deeply wounded by 9/11. It would allow those first on the scene to communicate with each other even from deep subbasements and distant stairwells and floors 80 or 100 stories up.

What I didn't know was how fire officials and others would feel about such a "freelance" system, built outside of their own infrastructure. Also, how much support would the idea receive from Durst management, who would bear the cost?

I needn't have doubted. Durst introduced the system to the press and public recently. It will facilitate two-way communications from outside and inside all parts of eight of the Big Apple's biggest towers — nine, when the Bank of America Tower is completed in 2008.

It's working now in the Condé Nast Building at 4 Times Square, the broadcast facilities of which have been covered here. Lyons, Durst's assistant vice president and director of broadcast communications and a former broadcast engineer, was instrumental in developing the system. On page 54, he explains it in more detail.

I asked Lyons where the idea came from. "Back in the fall of 2003 we got a new COO, Tim Clancy, and he asked me what I thought would be a good project for the portfolio." (That's a word Lyons and other high-powered building managers use instead of saying "a bunch of skyscrapers we own.")

Lyons said he told Clancy, "A communications system for the first responders, as well as upgrading our own system, as there were many non-covered areas. We worked up a budget and the design."

The system enhances coverage for fire, police and EMS on their existing radio

networks. According to the Durst statement: "In addition to enabling first responders to engage in two-way communications from all upper floors, interior stairwells, elevators and building exits, the new system will allow rescue teams operating inside the buildings to transmit requests for additional assistance to dispatchers" who may be situated at a distance from the scene.



First Deputy N.Y. Fire Commissioner Frank Cruthers; Chief of Operations Salvatore Cassano; U.S. Rep. Peter King (R-N.Y.), chairman, House Committee on Homeland Security; Douglas and Jonathan Durst, co-presidents, The Durst Organization; Rep. Joseph Crowley (D-N.Y.), Democratic Chief Deputy Whip; and Durst Assistant VP/Director of Broadcast Communications John Lyons.

Among those attending the press conference were the former president of the Uniformed Firefighters Association, whose son was killed in responding on 9/11; the chairman of the House Committee on Homeland Security; the incoming chief of the city fire department, and others. Keys to the system were presented to the NYFD.

Civic concern

The announcement enjoyed coverage in the New York Times, the Daily News, the fire department Web site, the First Response Coalition blog and other publications. Lyons and Clancy can pat themselves on the backs. Their project is an example of how a savvy engineer, work-

ing with supportive management, can generate not only a significant good deed but a substantial PR success.

Lyons, I hasten to note, doesn't talk in terms of the PR. He says with conviction that the company is "extremely" civic-minded. Co-President Douglas Durst put out this statement: "This is the kind of technological innovation that could save many lives," of tenants and first responders.

For Lyons the project probably also was fun. Not to make light of a serious matter, but having permission to conceive and design such a system would be a delight to any broadcast engineer. Features include house repeaters that enable fire officials to activate their own tactical frequencies at an emergency site equipped with a repeater system. This will give them an added layer of communication, enabling the commander to speak with personnel in any corner of the building.

Included are combiners and multicouplers that will permit multiple frequencies to operate simultaneously without interfering with each other; bi-directional amplifiers to enable EMS to communicate to outside dispatchers even from sub-base-

From the Editor



Paul J. McLane

ments; off-premise redundant radio repeaters; and other innovations.

The company also upgraded its own communications system and tied the portfolio together over a 23 GHz microwave network. The capital budget for the overall project was \$2 million — "in real-estate terms, 26.6 cents per square foot," Lyons said. The first responder equipment was \$1.3 million of that.

Included are 160 Motorola walkie-talkies, 64 Tait APCO 25-compliant repeaters for Durst and the fire department, 16 TX RX bidirectional amplifiers for EMS and police, 14 Harris Trupoint Microwave Radios with NetVX packages, 16,000 feet of 48-strand multimode fiber and 24-strand single-mode fiber and associated equipment, 20,000 feet of coaxial cable and nearly 200 antennas. Not included in the cost are an Avtec VoIP controller and Lonestar-Concepts interoperability mobile command center, both supplied for test purposes at the expense of the vendors.

I asked Lyons why this installation is relevant to radio engineers and managers.

"Radio operators spend a good deal of time at their transmitter sites, in the major cities, atop tall office buildings. There is concern for their safety. Remember, we lost six transmitter engineers on 9/11.

"Radio station and network studios are likewise generally in office buildings," he continued. "So the concern for First Responder In-Building Communications should be a concern for engineers and managers as well as for all their staff."

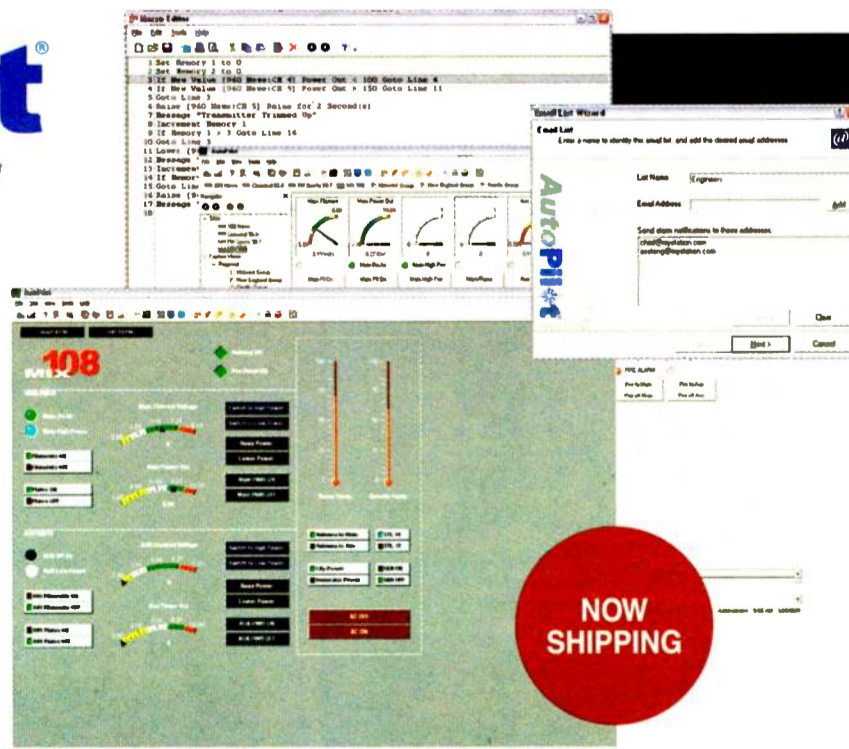
Congrats to John Lyons and Durst officials for doing well by doing good.

AutoPilot

Control, Monitoring & Logging Software for the ARC-16

AutoPilot 3 features custom views for drill-down display, virtual channels, new macros functionality, automatic report printing, email alarm notifications and more.

Learn more about getting started with AutoPilot or upgrading from a previous version. Visit www.burk.com/autopilot.



ALL NEW VERSION 3

NOW SHIPPING

BURK
TECHNOLOGY
800-255-8090 (Main Office)
800-736-9165 (Radio Sales)
www.burk.com

Depot

► Continued from page 1

and reallocated satellite channels to free up satellite transponder capacity for the new system.

Many noncommercial radio producers had been taking a crash course in file-based program production and uploading in the months before the satellite change, and stations have been busily integrating IP-based audio "appliances" into their operations since they received their equipment shipments in April and May.

For smaller stations, the change will be most dramatic. Many of them are getting their first experience with an automation system and learning the nuts and bolts of computer networking at the same time.

Since ContentDepot treats program segments as individual audio files, for 120 stations without an existing automation system, PRSS provided a basic ENCO Systems workstation to allow them to import the segments and reassemble the program from its constituent parts.

Complex System

Conceptually, the ContentDepot system is fairly straightforward. A central database stores audio files and program metadata, which are scheduled based on station needs and distributed through an IP-based DVB satellite link to edge servers and audio decoders located at station sites for storage or live layout.

However, the reality of building out this simple concept in order to make it work well for all users has been a significant challenge. The sheer volume and variety of programs, station formats, schedule data and program metadata, along with a tremendous range in resources and expertise among producers and stations, led system planners to design fairly complicated software to manage the distribution backend.

Originally scheduled for a fall 2004 rollout to replace the existing single-carrier-per-channel satellite distribution system operated on behalf of public radio stations, the complex project ran into numerous snags that forced Public Radio Satellite System managers to revise the timetable several times.

PRSS officials had an opportunity to review ContentDepot's development and offer a preview of system operations to station representatives assembled for the annual Public Radio Engineering Conference, held in Las Vegas just before NAB2006.

The most significant of the delays, said PRSS Director of Technology Marty Bloss, occurred when Siemens Business Systems acquired project integrator BBC Technologies midway through the development of key system software. This forced a six-month work stoppage until Siemens and PRSS were able to resolve project management and contract issues related to the acquisition.

Another significant delay occurred when an early version of Siemens' completed system software did not meet specified performance criteria during

user acceptance testing and substantial portions of the code had to be rewritten, according to Bloss.

Releasing that version of the software would have severely limited the usability of the system and was simply not an option. "We had to get it right," Bloss said.

Stepping into the portal

In the weeks after PREC, the rollout progressed according to schedule. Interconnected stations had received equipment packages by the first week of May, and many engineers reported that they had completed installation of the equipment on the same day that they received it.

PRSS began sending test audio streams and sample files through the system on May 15 to allow stations to test connectivity and configure their automation systems to automatically

We had to get it right.

— Marty Bloss, PRSS

import ContentDepot files. System planners had worked with a number of the larger automation vendors to ensure that stations' existing systems would be able to import ContentDepot audio and metadata.

Now stations face the challenging task of putting the new system into use. Throughout the transition period, engineers and operations staff will be tweaking their automation systems, record schedules and getting familiar with the new ContentDepot Portal.

The Portal is the Web-based user interface for the new system, allowing station personnel to manage their program schedule, audition new programs and control how program-related information and alerts are communicated to operations staff.

The Portal also replaces the ContentDepot Catalog, a Web-only directory of file-based public radio programs that allowed stations and producers to get a feel for managing program distribution through an online interface. Producers will now use the Portal to upload and assign rights windows for their programs.

Producers can choose to distribute their programs as either live streams or files, depending on the timeliness of the content and production requirements. Some producers may elect to provide programs in both ways to simplify station operations and to minimize the expense and coordination headaches of offering re-feeds of live programs that may be broadcast later on some stations.

Behind the scenes, the ContentDepot software handles scheduling for both live streams and file transfers, balancing producers' program feed schedules with the requirements of stations' air schedules and optimizing the flow of data through the DVB channel.

Where's the SOSS?

As difficult as it is to make changes to a key part of their stations' operations, most public radio engineers agree that they're all too happy to put the existing Satellite Operating Support System

behind them. IBM developed SOSS for the existing satellite system rollout in 1995 and built it on that company's now-discontinued OS/2 operating system, forcing stations to support aging PC hardware and making networking and data integration with stations' primarily Windows-based automation systems impossible without custom software.

PRSS officials admit that some limitations of the first version of ContentDepot system software will cause some operational headaches at stations, notably the inability to tune receivers to a program already in progress and the requirement that stations subscribe to each individual hour of each program, but they assert that the benefits of the new system as compared to SOSS will be a dramatic improvement for users.

Improvements to the software are slated for a "ContentDepot 2.0" release to be scheduled when this summer's dual operations period is complete.

Although the development delays, missing features in the software and quirks of the receiver hardware prompted some wags to dub the system "Discontent Depot," the public engineering community generally has been supportive of PRSS' efforts to get the system built and fully tested, based on many posts about the topic on Pubtech, a listserv for public radio engineers.

All are now hoping that, as the Duke of Gloucester once observed on his way to becoming Richard III, a discontented winter makes way for a glorious summer. ☺

Test

► Continued from page 3

19. The FCC will excuse exclamations uttered by winners on a live call-in contest line, such as "Holy shit! I won!"

FALSE. The FCC has urged broadcasters to tape delay all live broadcasts. The fact that a broadcast is live may in appropriate circumstances, affect the amount of the fine.

20. If one program contains six different indecent "utterances," the FCC will consider fining the station for six violations, not just one.

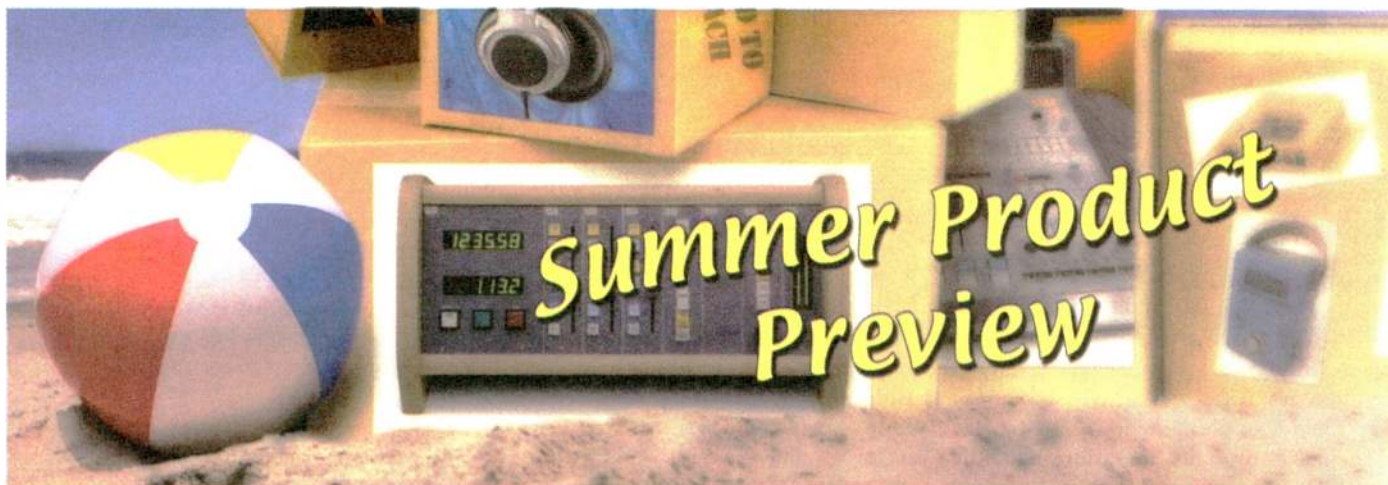
TRUE. The FCC reserves the discretion to fine a station not just for the broadcast of a program containing indecent matter, but for each indecent utterance within a program.

21. Frottage, in any form, is indecent.

FALSE. "Caressing and rubbing" are not indecent if sexual organs are not depicted.

John Crigler is a member of the Communications and Information Technology Group at the law firm of Garvey Schubert Barer. Reach him at jcrigler@gsblaw.com.

The material presented here is intended solely for informational purposes and is of a general nature that cannot be regarded as legal advice. Consult a communications attorney if you have specific questions about law. ☺



This special section offers an overview of new products introduced at the spring NAB2006 convention. "Cool Stuff" winners appeared last issue.

Suppliers, if your company showed a product that we missed, send e-mail to radioworld@imaspub.com so we can tell readers in a future issue.

Contributors to this section include Paul McLane, Kelly Brooks, Ty Ford, Scott Fybus, Paul Kaminski, Carl Lindemann, Tom Osenkowsky and Ken R.

Eventide BD600E Features Panic, Rebuild

At NAB Eventide promoted the BD600E broadcast obscenity delay, which features control capabilities that the company says allow further integration into automated systems.



It offers 16 bipolar opto-isolated inputs that may be configured to drive several BD600E functions or as general-purpose delay inputs; 16 open-collector outputs that may be configured to display BD600E status indicators or to pass through delayed versions of the inputs;

and an RS-232 output that provides a delayed version of the input, which Eventide says is useful for driving a time display or for other control purposes.

Existing BD600s can be upgraded. The company says that like the BD600, the BD600E features improved audio performance and expanded obscenity delay capabilities up to 80 seconds.

Additional features include Sneeze, which prevents throat clearing, coughing or other noises from going over the air; Rebuild, which rebuilds the delay buffer after a portion of audio has been removed; and Ramp-to-Zero, which gradually backs out of the buffer at the end of a program.

The Panic function stores a WAV file on a Compact Flash card to be played when the button is pressed. While the file, which may be a jingle or station ID or other message, is played,

the delay buffer is rebuilding.

The company also promoted the VR615B Broadcast Logger, which features Linux-based digital voice logging and archiving.

Contact Eventide in New Jersey at (201) 641-1200 or visit www.eventide.com.

Radio Systems Works With Axia

Radio Systems showed its Digital Millennium console, which now includes Axia Livewire IP-Audio networking technology.



The Livewire connection allows Millennium consoles to interface directly with other Livewire-capable devices, such as audio processors, automation systems and codecs, over a standard Ethernet connection.

Radio Systems President Dan Braverman says the partnership began with Axia's adoption of Radio Systems' StudioHub+ CAT-5 wiring system, which was introduced in 1999. That system promoted a standard-form wiring protocol to interconnect studio equipment.

Millennium Digital consoles are available in 6-, 12- and 18-channel configurations.

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

SRS Labs Debuts Portable Circle Surround Encoder

SRS Labs debuted the SRS CSE-06P portable Circle Surround encoder, as well as the SRS Circle Surround TDM Pro 2.0 plug-in for Digidesign's Pro Tools Series digital audio workstations. It includes a Music model for mixing and monitoring SRS Circle Surround-encoded music material.

The plug-in also has the Xtract upmixing feature, which produces 6.1-channel surround mixes from mono and stereo material. Mixers can encode surround music in a 5.1 composite L/R without leaving Pro Tools.

SRS Circle Surround is a multi-channel encode/decode system that allows full-bandwidth surround sound to be stored, transmitted or delivered in stereo over a two-channel carrier, such as standard CDs. SRS Circle Surround-encoded CDs play in stereo on a standard CD player and in 5.1 channel surround sound on a matrix surround compatible automotive receiver.

The SRS CSE-06P prepares 5.1 or 6.0 multi-



TDM Pro 2.0 Plug-In

channel audio for recording on two-channel recorders as well as ENG cameras. The unit includes a surround headphone-monitoring mode, SRS Headphone PRO, which monitors discrete 5.1 channel mixes over conventional headphones.

Contact SRS Labs in California at (949) 442-1070 or visit www.srslabs.com.

Middle Atlantic Eases Power- Strip Installation

Middle Atlantic Products debuted cord kit accessories for its PDT Series of configurable thin power strips. The company says the accessories ease ordering and installation of UL-listed PDT Series strips in broadcast enclosures, as well as extend an installer's level of customization.

The cord kit accessories attach to a PDT power strip J-box, facilitating a change from a hard-wired to a corded power strip.

PDT Series power strips are field-configurable for the installer's choice of single or dual circuits, and isolated or non-isolated ground. They are available in 15- and 20-amp models, and provide additional power distribution choices inside enclosure systems.

Outlets are positioned to accommodate plug-in power supplies. The company says the J-box eases hardwiring and alternating outlet colors to denote separate circuit sources when configured for dual circuits.

Contact Middle Atlantic Products in New Jersey at (800) 266-7225 or visit www.middleatlantic.com.

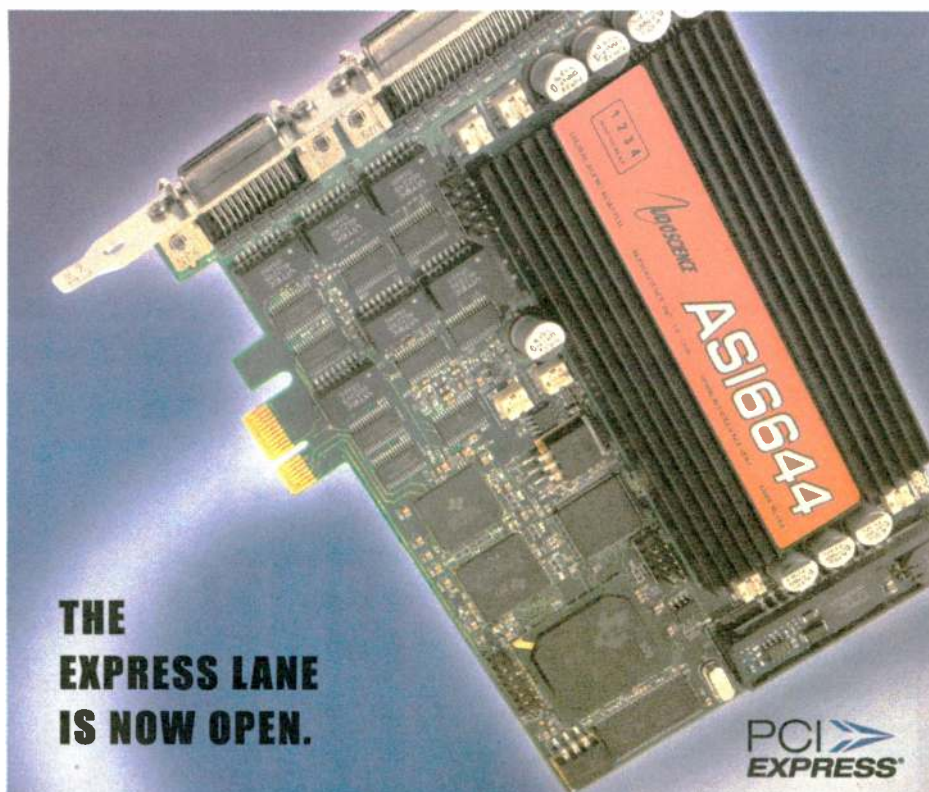
AT Has New Closed-Back Phones

Audio-Technica debuted the ATH-PRO700 SV professional headphone monitors, which retail for \$279.

According to Director of Product Development Mike Edwards, "Part of Audio-Technica's Import Series, these new closed-back phones are designed to provide increased isolation from ambient noise, making them perfect for immersive listening in loud environments. They also fold down and store in minimal space."

A coiled cable at the left earpiece terminates to a mini plug with included 1/4-inch adapter.

The company also exhibited the AT2020 condenser studio mic, which marked its first anniversary on the market with a Radio World "Cool Stuff" Award.



**THE
EXPRESS LANE
IS NOW OPEN.**

PCI
EXPRESS

AudioScience introduces the world's first PCI Express sound cards: the ASI6600 series.

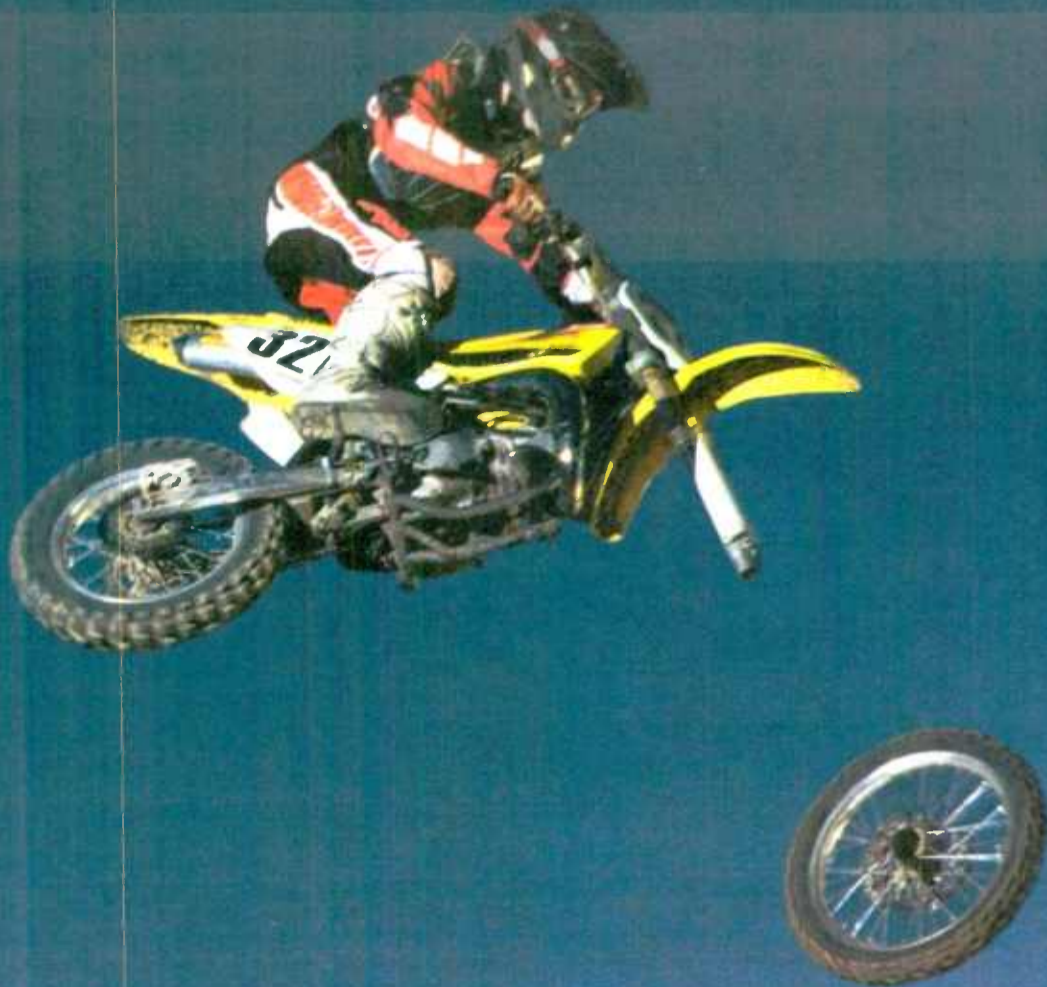
Not only do you get the advantage of speedy PCI Express data transfer, but our ASI6600 series sound cards are loaded with Built for Broadcast™ features. With PCI Express slots fast becoming the standard in new PCs, now is the time to get in the fast lane. Get ahead, and stay ahead, with AudioScience. Learn more by calling +1-302-324-5333 or visit www.audioscience.com.

ASI6600 SERIES FEATURES

- +24dB analog levels
- 96kHz sample rates
- SSX multi-channel support
- MRX multi-rate mixing
- MPEG Layer 2 and 3 encoding and decoding
- TSX time scaling
- SoundGuard transient voltage protection
- Short 6.6" PCI card format
- Up to 4 cards in one system
- Windows 2000, XP and Linux software drivers

BUILT FOR BROADCAST

AUDIOSCIENCE
Sound Engineering
Sonic Excellence



**This is how you feel when you find out
the remote is this afternoon.**

ACCESS IP Codec is how you cope.

ACCESS uses BRIC technology on the **public Internet** to deliver wideband mono or stereo audio on an IP network. Use it on DSL, cable, WiFi, satellite, 3G cellular, or pretty much whatever you've got. It can even operate as a POTS codec, delivering wideband mono or stereo audio over a single POTS line.

Read all about BRIC technology in the IP Audio Coding brochure. Want a copy? Contact us at 800-237-1776 or check our website at www.comrex.com/ip



Your Pass to Amazing Audio From Anywhere

Put Comrex On The Line.

Toll Free: 800-237-1776 • www.comrex.com • e-mail: info@comrex.com
19 Pine Road, Devens, MA 01434 USA • Tel: +1-978-784-1776 • Fax: +1-978-784-1717

COMREX

World Radio History

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

AirTools 6200 Offers Two Pathways

Symetrix displayed the AirTools 6200 digital voice processor, a dual-channel unit that has discrete audio pathways capable of processing microphone or line-level sources independently or as a stereo pair.



Signals are converted to 24-bit, 48 kHz digital after passing through the analog input stages. Once in the digital realm, the user can define specific signal processing modules and their order in the signal chain.

Creation of voice programs and signal pro-

cessing parameters may be done from the front panel or from 6200 Designer, a Windows application. The company says a security scheme ensures only authorized personnel will modify programs.

From a PC, the 6200 may be controlled via RS-232, USB or Ethernet. In lieu of computer control, real-time changes of program and DSP parameters may be actuated via user-supplied ESE time code, pots or MIDI devices.

Voice profile and module order information are saved to 256 program locations. These programs can be recalled manually (from the front panel or externally) or automatically based upon a predetermined schedule using the internal clock, or ESE time code as a reference.

Low-latency converters reduce the total delay from analog input to analog output to less than 0.5 milliseconds, which the company says eliminates the perception of delay in headphones.

Contact Symetrix in Washington state at (425) 778-7728 or visit www.symetrixaudio.com.

Marantz PMD560 Records to CF Card

D&M Professional debuted the Marantz PMD560 CompactFlash digital recorder. The company says it offers one-touch recording to CF media cards or microdrives. Uncompressed WAV files can be recorded at 44.1 or 48 kHz, and MP3 files can be recorded in mono at 64 kbps or in stereo at 128 kbps.



Using a 1 GB CompactFlash card, the solid-state PMD560 can record over 1.5 hours of stereo and more than three hours of mono uncompressed audio, more than 17 hours of stereo MP3

and more than 35 hours of mono MP3 audio.

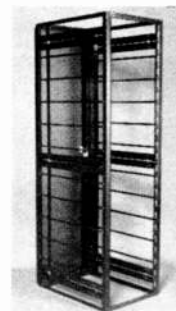
The unit has two editing modes: Copy Segment and Virtual Track. The former uses cut-and-paste-style editing to create a new sound file, which can be uploaded to a PC via the front panel USB port. Virtual Track lets the user create an internal edit list, enabling immediate playback of file segments without using card memory to create a new file. Up to 99 virtual tracks can be created to compare edits, set up multiple sound bytes or provide interview segments of differing durations.

The optional RC600PMD wired remote control attaches to any microphone and is available to supply record/pause control, track marking and peak meter monitoring from the microphone position.

Contact Marantz in Illinois at (630) 741-0330 or visit www.d-mpro.com.

APWMayville Revamps Stantron Rack, Debuts E-Rack

APWMayville says its E-Rack broadcast rack is a modernized version of the Stantron broadcast rack. It has a low-profile 22-inch-wide design and a powder-coat finish; it is available in various heights and depths and comes with a lifetime guarantee.



The company says the rack helps accommodate the increased amount of cabling now required to integrate broadcast systems. Horizontal lacing brackets ease management of cables by spreading them from front to back. The integrator can tie the cables in strategic areas to accommodate a narrower space.

Additional features include thin-profile power strips for space savings in high-density applications; cooling fans; internal lighting for changing front-panel settings; top- and rear-mountable fan panels; and standard and customizable filler panels to plug open spaces.

APWMayville also displayed the Pioneer enclosure cabinet, available in Pre-Configured and Configure Your Own versions, both of which are suitable for multibay broadcast applications.

Contact APWMayville in Wisconsin at (800) 558-7297 or visit www.stantronracks.com.

Arrakis Promotes Subscription Service

NAB 2006 marked the continuing rollout of a new business model for the Arrakis Digilink automation system, a fundamental change that the company



Michael Palmer at Arrakis

thinks could herald a broad transformation in the broadcast market.

Instead of treating Digilink in the same way as a broadcast console or other piece of gear, it is sold as a service, with a monthly fee.

"This provides customers with a very affordable start-up cost — basically, we give them the system and charge them monthly with free software and hardware upgrades," said Michael Palmer, president of Arrakis Systems.

He said approximately a third of the company's clients have made the switch to the subscription model alongside many new clients.

Arrakis exhibited its product lines including mixing consoles, digital audio storage systems for live and automated audio broadcasting and studio furniture systems.

Contact the company in Colorado at (970) 461-0730 or www.arrakis-systems.com.

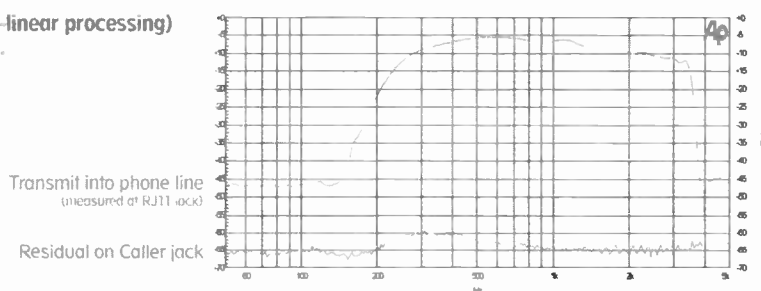


Spers Measured on Broadcast Host - It Only Gets Better From Here!

State of the Art performance without NLP (non-linear processing) and without sending a noise burst down the line.

Conditions:

- Call completed over a standard POTS phone line.
- Transmit bandwidth limited per telecom regulations.
- Phone line noise floor measured at -46 dBu.
- Level at caller jack set to unity gain, RJ11 to XLR.



Got an older Broadcast Host, innkeeper PBX or PBXport you'd like brought up to this spec? Visit www.jkaudio.com for details on upgrades.

BRAGGING RIGHTS!

JK Audio's Digital Hybrids Are the Future!

From our efficient Broadcast Host and innkeeper PBX to our full-featured innkeepers, we've designed and built our digital hybrids for the most natural sound, maximum performance and greatest flexibility.

You probably wouldn't expect a \$495.00 digital hybrid to break any records, but you would be wrong. The graph above illustrates the transmit signal as it is sent into the telephone line and the resulting residual from our Broadcast Host. Our state-of-the-art echo canceller achieves excellent separation on any telephone line. Simply put, we built an algorithm with no compromises.

Our innkeepers 2 and 4, are packed with features to provide total control, making operation as flexible as possible. And you can control them remotely from any place you happen to be? Our optional RIU-IP, serial or IP remote gives you control over every innkeeper operation—dial and answer calls, adjust levels, set up a conference call - anything you can do from an innkeeper 2 or 4 can easily be done from a remote location.

There's so much more. Contact your JK Audio dealer or visit our web site to learn how our hybrids can improve your phones.

JK Audio

TOOLS FOR SUCCESSFUL RADIO

JK Audio, Inc. Sandwich, IL 60548 USA • Toll Free: 800-552-8346 • Tel: 815-786-2929 • Fax: 815-786-8502 • www.jkaudio.com • info@jkaudio.com

Conserves AU.



HD Multicast, HD Surround, conventional stereo — Element handles them all. Upgrade your studios with confidence; you're ready for anything.



Technology can save you money.

Consider: computers, VoIP phone systems and bandwidth cost less and deliver more every year. Wouldn't it be great if broadcast gear did, too? Thanks to Axia, it can.

Axia saves you money by using open Ethernet technology to replace expensive proprietary mainframe routers. Not only is Ethernet less expensive, it's simpler and more reliable — perfect for critical 24/7 operations. The Axia IP-Audio solution eliminates sound cards, DAs, punch blocks and cumbersome cables, so it reduces installation and maintenance costs.

And now, Axia has a cool new modular control surface: Element. Scalable from four to forty faders, you can build the ideal surface for every studio. Element's abundant outputs and flexible architecture can be switched between stereo and surround mixing. Its info-rich user display, built-in router control, and integrated phone and codec support simplify the most complex shows. You'll never outgrow it.

Like all Axia products, Element does more and costs about half what others try to charge for their "Trust us, this is better than Ethernet, would we lie to you?" stuff.

Element. Worth its weight in... well, you know.



www.AxiaAudio.com

Dalet Touts Asset Management

Dalet Digital Media Systems promoted its software solutions using industry-standard IT hardware. It showcased its all-digital systems which the company touts for enhancing productivity through access to and management of valuable media assets.

"The first-generation systems were about automating the overnight, the second to achieving tapeless production. The third generation is about using metadata to optimize workflow, and the fourth generation is about reinventing the business with the arrival of satellite radio and Ipods," said Nicholas Hans, the company's director of marketing.

Hans pointed to Dalet's work with The Weather Channel as an example of how this generation offers a new model of content distribution.

Contact the company in New York at (212) 825-3322 or www.dalet.com.

AudioScience Moves To PCI Express

AudioScience unveiled the ASI6600 series, which the company says are the first broadcast sound cards utilizing the PCI Express (PCIe) bus.



Kea Ross With PCI Express Cards

PCI Express uses serial data interconnects that provide a peak throughput of over 200 MB per second, almost

double that of the older parallel 32bit PCI bus.

The ASI6600 series of sound cards upgrades the company's ASI6000 series with a faster DSP, short-length PCI format, +24dBu analog levels, 96 kHz sample rates and SSX multi-channel support. The cards incorporate the features of the AudioScience ASI6000 range including MRX multi-rate mixing, MPEG Layer 2 and 3 encoding and decoding, TSX time scaling and SoundGuard transient voltage protection on I/O.

The ASI6644 and ASI6614 are the first products in the ASI6600 PCI Express range and include balanced analog and AES/EBU digital I/O. Four stereo inputs and outputs are provided on the ASI6644, while the ASI6614 has one stereo input and four stereo outputs. Hardware sample rate converters are present on AES/EBU inputs and a dedicated AES/EBU and Word Clock sync input are standard.

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

Digigram Upgrades Audio Interface Products

Digigram showed several additions to its audio interface products as well as its EtherSound PCI sound card.

An attention-getting display showed the UAX220-Mic, a major upgrade to the UAX220 USB released last year. The new version adds professional-grade microphone preamps and other features while, the company says, maintaining the audio quality and ease of use of its prede-



cessor. Features include 2/2 balanced analog I/Os with no driver to install or external power supply required. Direct control of settings are provided.

Digigram said it also broadened its HR (High Resolution) Series with the launch of five new stereo sound cards. The VX222HR, VX222HR-Mic, PCX22HR, PCX924HR, and PCX924HR-Mic offer the same benefits as the multi-channel HR Series of PCX and VX sound cards, the supplier said, including low-latency WDM DirectSound, ASIO and Wave drivers, as well as support for Digigram's SDK through a single driver.

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

ViaRadio Launches RDS Early-Warning System

ViaRadio displayed a series of new products including networked clock radios that



can be used to create an inexpensive and effective emergency warning and messaging system for civil defense and private industry.

Warning messages are sent using the RDS channel over commercial FM stations. The new units are adapted for the U.S. market following their use in Europe.

The company's system uses a customized clock radio that can send text messages on the display. The system manager decides what to send to which groups of radios using a simple Web interface. The company says the RDS infrastructure provides for reliable distribution and is used worldwide as a robust data channel.

The ViaRadio RDS Early Warning Receiver looks and acts like a normal FM clock radio until

it is triggered. It is equipped with two tuners, one for the clock radio, and a second that listens to the RDS-emergency-channel continuously even if the radio is off or tuned to another station.

Contact the company in Florida at (321) 242-0001 or www.viaradio.com.

Videoquip Expands Metering Lineup

Following last year's introduction of the AVU-24 high-resolution 2/4 Channel VU/PPM audio meter, Videoquip Research Ltd. unveiled three eight-channel high-resolution audio meters at NAB. According to David Tomiszer, director of engineering, this marks a new arena for the company.



David Tomiszer

The products include the AVU-8, a digital audio meter for four stereo (eight mono) AES digital audio signals in a half-rack space form factor. The 26 LED segments for each channel provide detail on levels. Features include four AES3 XLR inputs and an optional ADAT light-pipe input. An AES3-ID 75-ohm BNC connector is also available.

The AVU-8HD is for analog or digital audio. It is a half-rack space, 2RU unit that has four AES3 inputs with AES3-ID 75-ohm BNC connectors as an option. The AVU-8HA is an analog meter with eight XLR inputs with a metering range of -48 to +18 dBu.

Contact Videoquip in Ontario at (416) 293-1042 or www.videoquip.com.

AM Multiplexed Directional Antenna Systems For The Digital Revolution

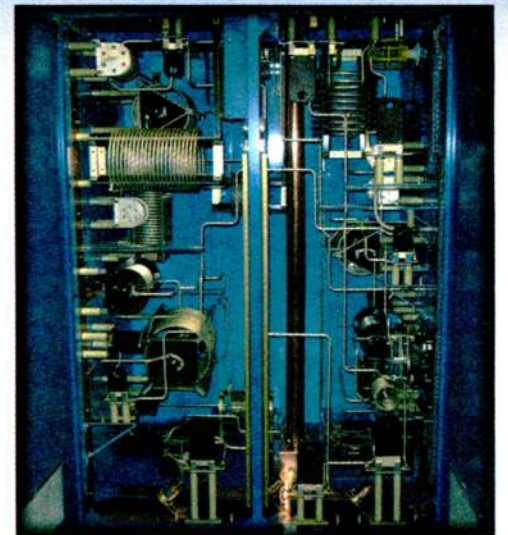


Directional Antenna Phasing Systems

The way they ought to be...

**WFLF - AM 970
50/46 KW DA-2**

**WQTM - AM 740
50 KW DA-2**



Interior Craftsmanship Synonymous With Kintronic Labs

Built by Kintronic Labs for Clear Channel Communications, Tampa, Florida



Nobody Does It Better!

423.878.3141 fax 423.878.4224 Email: ktl@kintronic.com www.kintronic.com



Remote Broadcasting over the Internet

CELL PHONE
WIRELESS
FREE Demo
BROADCASTING



The remote from Mexico was a spectacular success, in no small part thanks to the flawless sound which the Tieline G3 provided over the public Internet

**-Mike Rabey Chief Engineer
Entercom Indianapolis**



Read the full story and get a **FREE** IP demo
www.tieline.com/ip

800-750-7950

Tieline 
www.tieline.com

Dave Scott Back With Four New Lines

Dave Scott, formerly of Scott Studios, is back with four new products.

Doug Raines, regional manager, said that with RadioTraffic.com, stations can use the Internet to share sales reports, schedule logs and enter commercial orders from anywhere. (Photo: software showing avails for the week on a Blackberry. Avails are also available by cell phone SMS text message, laptop and pager.)

CaptainDigital.com, he said, actually is 17



systems in one package including on-air automation, live assist, spot or bit recorder/editor, voice-tracker and music scheduler.

"UnattendedWeather.com is a problem-solver," said President Dave Scott. "Working with station automation, it gives current temperature and weather including call letters, and can interrupt a broadcast with a severe weather warning and send e-mail or text messages. You can also include weather sponsorship and tie it back into the station Web site with the same sponsor."

UncompressedMusic.com is the fourth product from the company.

"With the coming of HD Radio, it's a shame that a typical teenage girl with an iPod has better-quality music than most stations," said Raines. "Clients can now choose from among 60,000 songs for just \$1 per song, delivered the next day on hard drive in uncompressed form. It's perfect for those instant format changes."

Contact the companies in Texas at (888) 888-0777 or www.radiotraffic.com.

Pristine SmartPromo Automates Tease

SmartPromo works within Pristine Systems' Content Delivery System automation to select upcoming songs and blend them into a "coming up next" teaser at air time. A SmartPromo marker may be inserted into the on-screen log for playback at any time.



"Each song's hook is identified as it is imported into the system," said George Thomas, president. "A link is then established to a voice track and CDS assembles these and other elements into a smooth sounding promo in real time."

Also new from Pristine is the Blackbox digital monitor/recorder/alert system with up to 16 stereo or 32 mono channels of logging and a virtual radio player for listening to multiple stations' histories. The system can mark all points at which the talent's microphone is open, allowing easy review of on-air performances.

At NAB2006, Pristine also announced its recent traffic and billing acquisition, Summit Traffic.

Contact the company in California at (310) 831-2234 or www.pristinesys.com.

ENCO Streamlines Automation

Built onto the platform of ENCO Systems' existing DAD automation system, "StreamLine" adds brand name traffic management and music scheduling with the incorporation of products from Wicks Visual Traffic and Powergold, respectively.



"With these new products in the mix, you can reconcile your spots at the end of each day and change your music after every song if you want to," said Don Backus, vice president of sales and marketing. "Now everything meshes tightly with no importing or exporting."

Backus also said that his company has unveiled a new graphic user interface for the DAD automation system. "It's a new skin on the existing functionality for our 7,000 workstations out there on six continents," said Backus.

Contact ENCO in Michigan at (248) 827-4440 or www.enco.com.

Grab Spots at Bid4Spots.com Auction

Stations with unsold inventory can participate in weekly auctions to pick up additional buys from local and national advertisers. It is all done online.



"Any station can use the system and no special software is needed," said Bid4Spots.com Marketing Manager Scott Gelman. "Advertisers start the process by picking criteria such as market size and format they desire; then stations can bid against each other on a cost-per-thousand basis."

Bid4Spots.com currently works with 2,000 stations and has placed over \$1 million in inventory.

"Inventory is perishable and stations can monetize it," said Gelman. "We don't get involved in the 'creative,' but we have the spots produced in advance and stations can preview them if they like. We try to help both sides, the advertiser and the station."

Contact Bid4Spots.com in California at (866) 326-7788 or www.bid4spots.com.

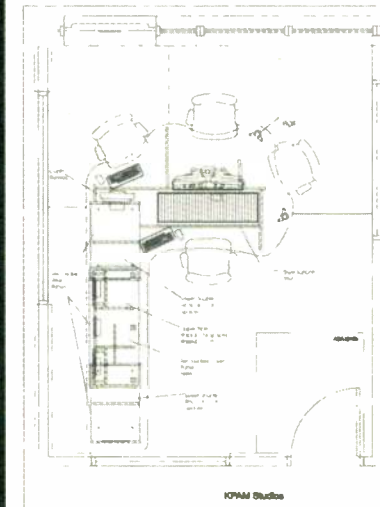
OMNIRAX

BROADCAST FURNITURE

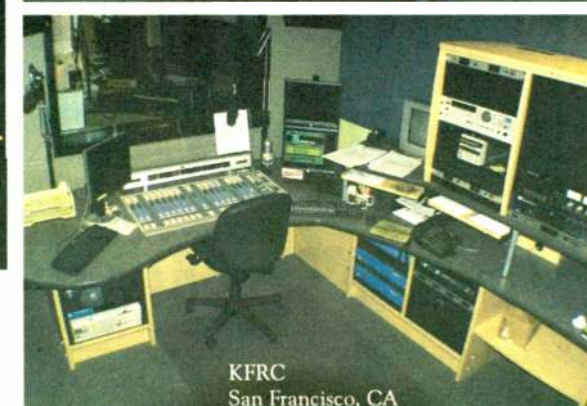
Omnirax from Design to Production

- At Omnix we work together with you from initial design concept all the way through finished product, ensuring that your furniture will provide you with years of satisfied use.
- Our strength is forging partnership relations where we can use our expertise to turn your ideas into reality. We are able to work to your exacting specifications or provide comprehensive design services that remove the guesswork from your investment.
- Our CAD/CAM process ensures precision fit and finish, repeatability, and ease of modification. All of our designs are rendered in the computer prior to manufacturing. We are able to make alterations and adjust to your equipment, guaranteeing you not only get what you want, but exactly what you need.
- We are small enough to give every job the personal touch, large enough to outfit a complete facility.
- The measure of our success is the achievement of a synthesis of form, function and ergonomic comfort.

CAD drawing



CAD rendering



Some of our many customers since NAB 2005:

- KFIR, FM (CBS / Infinity) San Francisco, CA
- Westwood One New York, NY
- KZYR Avon, CO
- Z99 / Rooster 101 Cayman Islands
- KKIQ Pleasanton, CA
- WGLY Essex, VT
- KSKA Anchorage, AK
- KNBA Anchorage, AK
- WZBA Baltimore, MD
- KYSL Frisco, CO
- WRBZ / WDNC Raleigh, NC
- KNEW (Clear Channel) San Francisco, CA
- Metro Networks Jacksonville, FL
- Univision Radio Houston, TX
- KPAM Portland, OR (in process)
- KCWU Ellensburg, WA (upcoming)

"I'm blown away" - Dave Williams, Director of Engineering, Clear Channel San Francisco

"High quality, heavy duty furniture. Great workmanship and finish. Most importantly, it was packaged so well that we had no shipping damage. Design services were excellent. We got an effective, attractive, user friendly design."

- Jon Banks, Jon Banks LLC, Technical Consultant to Krystal 93 Radio, KYSL, Frisco, CO

P. O. Box 1792 Sausalito, CA 94966
800.332.3393 415.332.3392 FAX 415.332.2607
www.omnix.com info@omnix.com

“Everything is bigger in Texas. Except equipment budgets.”

“I’d gotten the green light to build new studios for our South Texas radio cluster. We wanted the ability to put any of our stations



on air from any studio, so we started investigating networked audio.

“Also, management said we might add more stations to the cluster, so I needed a system that could be easily and affordably expanded later on.



“We looked at several systems. Some did what we wanted, but were very complex and required us to buy their expensive routing mainframe, whether we were building lots of studios or only a couple. That was completely outside our price range.



“Then we looked at Axia. They showed us how an IP-Audio system would let us share audio sources, switch air studios quickly, even customize console settings for individual jocks. And Axia cost about half what some companies wanted us to spend.

“Of course we were a little skeptical — how often is the least expensive solution actually the best?

“Then we learned that Axia’s Ethernet backbone scales, like a computer network. All we’d have to do to grow is connect



more nodes and surfaces, maybe add another Ethernet switch. We didn’t have to commit to buying equipment for all of our studios at once.

“So we built one studio using Axia, and it worked great. Went together fast and smooth. A few



wrinkles during installation were ironed out by Axia support right away. Those guys were amazing. It was like their entire team was there to make sure I was happy.

“We liked Axia so much we installed a second studio. Then a third. Then a whole second cluster.



My colleagues are so impressed with how well Axia works, they want it in their stations, too!”

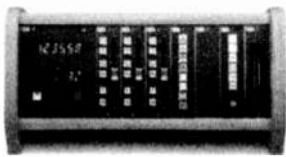
— Jorge Garza, Univision Radio, McAllen, Texas



www.AxiaAudio.com

Rubi-T Is a Mini Rubicon From SAS

New from Sierra Automated Systems is the Rubi-T Mini Console, a



Rubicon console that is six inches high and can accommodate any number of input, monitor and talkback modules. It targets news booths, edit booths, voice booths, voice tracking, mini secondary effects mixer in on-air studios and similar applications. Features include full-length 100 mm P&G faders, On/Off and four programmable source select or bus assignment buttons.

Also new, the RIOLink now can operate as a stand-alone 32x32 router and mixer in conjunction with a Rubicon, Rubicon-SL or Rubi-T Console Control Surface. A second RIOLink can be added to reach 32x32 audio I/O, analog and digital.

The company also expanded its range of turret modules. The TP-L4 Turret Panel provides a 100 mm linear fader and Off/On +4 buttons. It is intended for studio control of a source level with On/Off/Cue etc. and can be used as a headphone or monitor level control with six source buttons.

The TP-MTR is a Stereo LED Meter with analog input. The TP-CT Clock/Timer accepts SMPTE or ESE; it has front-panel start/stop/reset and accepts external reset command to slave to the console or another timer. The SP-M/R6 Surface Panel has On/Off/Cough control and headphone source and level control. A version is available with three programmable buttons typically used for talkback.

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

Sabre Builds Monopoles for STLs

Owen F. Ulmer, broadcast sales manager for Iowa-based Sabre Communications Corp., said a trend his company is seeing in the broadcast industry is the use of monopoles.

"Sometimes it is easier to get zoning approval for a monopole rather than a traditional tower for STL applications," he said. "Monopoles are steel-tapered self-supporting structures used primarily where space is very limited."

The company, which manufactures a line of AM, FM and TV towers, Doppler radar towers, monopoles, concealment products, tower components and HF antennas, has manufacturing facilities in Sioux City, Iowa and Fort Worth, Texas, and is a GSA-approved supplier.

Contact Sabre at (215) 799-0882 in Iowa or www.sabrecom.com.

RFS Monitor Supports 16 Transmitters

The new MS Series RF Monitor System from Radio Frequency Systems features 50 configurable inputs and can support up to 16 transmitters plus an antenna system.



Mike Dallimore, vice president, broadcast and defense systems, said the device can monitor all waveforms including 8VSB, NTSC, PAL and DVB.

got wire?
cables & connectors
racks
tools
problem solvers
test gear
& much more
www.systemsstore.com

"It has adjustable alarm points, an optional LAN connection for remote viewing of selected screens, a color touch screen display and active mimic display which shows patch panel configuration," said Dallimore.

The MS Series can save data for up to three years, and its microprocessor-based system enables it to independently evaluate non-linear multi-channel systems.

Contact the company in Connecticut at (203) 630-3311 or www.rfsworld.com.

Visually Impaired Listen to Web Radio

The Internet Radio Information System receiver is the newest product from Netherlands-based Solutions Radio. It allows blind or visually impaired people to listen to audio books, newspapers and magazines via the Internet without a computer. A telephone line is the only requirement. The device can also be used with Ethernet or even with a wireless connection.



The light and simple IRIS is also capable of receiving podcasts and other stored programming from a server which can be played on demand. It can receive any Internet stream from any station in the world. The box is MP3 empowered and each radio has a unique ID number that is recognized by the streaming platform. Most software changes can be made remotely.

In the United States, Solutions Radio is represented by Talking Solutions Corp.

Contact Talking Solutions Corp. in Massachusetts at (617) 969-7500 or www.solutionsradio.nl.

Traffic.com Cracks Top 40 Markets

Stations in large markets can replace recording artist and titles on their RDS and HD Radio streams with quickly updated traffic information including road closures, slowdowns and accidents using technology from Traffic.com.



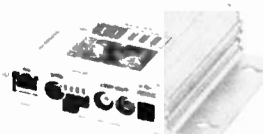
Jeannine Dooley, marketing manager, said that through her company's digital roadside sensor network, police scanners, cameras and GPS devices, localized traffic specifics can be updated. These reports can be broadcast on the air, on an HD-2 channel or sent via e-mail, PDA or cell phone.

"We also have an automated product called Jam Cast, and this allows broadcasters to provide current traffic reports automatically with no human interaction for broadcast across digital channels," she said. "As an option, stations can get a co-branded Web page which allows listeners to access real-time traffic reports."

Contact traffic.com in Pennsylvania at (610) 407-7400 or <http://corporate.traffic.com>.

Barix Offers Exstreamer Gold Decoder

Barix, with offices in Zurich and Saint Paul, Minn., specializes in IP audio streaming technology.



The Exstreamer Gold is a real-time audio

decoder with an amplifier built in and a speaker output. It communicates over a standard network connection with PCs, digital audio servers, Internet radio stations and analog audio sources, with heightened power when used with a Barix Instreamer real-time audio encoder at the origination point.

Serving as an MP3 player, it can pull digital audio from a network and convert it to music or voice. The simple controls use a standard Web browser such as a PC, palm device or the Barix IR remote control accessory. Exstreamer Gold can be configured with various audio outputs including two-channel stereo, analog RC, coaxial or optical S/PDIF.

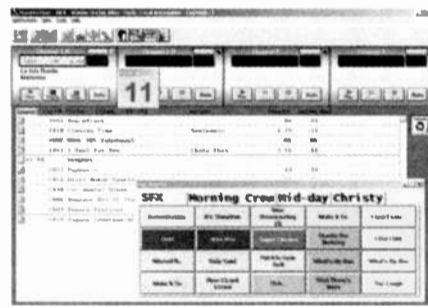
The Exstreamer Gold is part of a product line that also includes the traditional Exstreamer, Exstreamer Wireless for network use and Exstreamer Digital.

These products can also handle uncompressed audio.

Contact Barix in Minnesota at (866) 815-0866 or visit www.barix.com.

dMarc Makes Music With Maestro

Recently acquired by search engine goliath Google, dMarc offers several station automation products including Maestro, an all-inclusive package which controls commercials, songs, live copy, log preparation, music rotation and satellite connectivity. It can be used in live, live-assist or fully automated studios. Each user can configure his/her screen using the Windows XP interface and the system can work with most traffic and music rotation software.



For stations that are primarily live-based, dMarc offers SS32 Automation, another all-inclusive package with a touchscreen interface. It can record satellite broadcasts for later use and on-screen copy can be entered from any computer on the LAN. This product is scalable so that stations purchase only the functionality they need.

Other modules from dMarc include VoiceTracker, RevenueSuite and server solutions for backup.

Contact dMarc, a division of Google, in Texas at (972) 620-2211 or www.dmarc.net.

CircuitWerkes Ships Sicon-8

CircuitWerkes is shipping its Sicon-8 dial-up transmitter site controller. It provides eight channels of metering, status and control and is expandable to 32 channels.



While it ships with common English-language phrases pre-configured, the Sicon-8 uses voice-recordable technology that allows custom phrases to be recorded in any language. The system can communicate with X-10 modules, allowing equipment at remote locations in the transmitter building to be controlled with no direct wiring to the Sicon-8. It incorporates a real-time clock that can handle time-of-day/month/year automation functions, with support for more complicated macro programmability planned in a future firmware upgrade. An audio connection allows the Sicon-8 to work with a cellphone interface as well as with a landline.

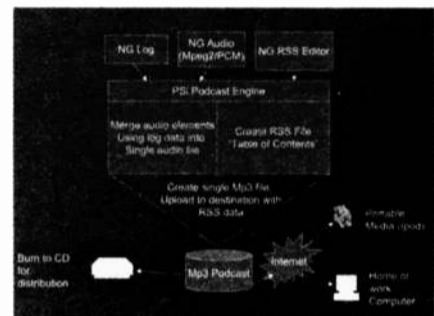
CircuitWerkes also showed an updated ver-

sion of its MicTel amplified mic/line to telephone interface, which mimics the functionality of the now-discontinued Gentner Microtel, adding balanced mic/line inputs and outputs and extended battery life. Also new is the Trancon-16 bidirectional contact closure transporter.

Contact the company in Florida at (352) 335-6555 or www.circuitwerkes.com.

Prophet Systems' XLR8R Speeds Podcasts

Prophet Systems aims to speed up the process of turning a radio show into a podcast sped up with the introduction of the XLR8R ("Accelerator"). The system stamps an MP3 with ID3 tagging; the updated RSS information including iTunes tagging and new MP3 information is then uploaded. XLR8R promises to shorten the podcast creation process by a factor of five, or more assuming station audio is not compressed.



Any NexGen log can be used to create a podcast. This could be based on a future series of events or past events. Programmers can place experimental podcasts on non-terrestrial stations.

Additionally, a pre-recorded show can be uploaded from a menu option found in the production library. All methods operate within NexGen Digital software.

Podcasts can be used for testing new formats, creating shows for distribution to other stations or creating "evergreen" music hours that can be played at any time in emergency situations.

Contact Prophet Systems Innovations in Nebraska at (877) 774-1010 or visit www.prophetsys.com.

Klotz Introduces Xenon Consoles

Klotz Digital showed its new Xenon series of entry-level, stand-alone digital consoles.

They are available in six- and 12-fader configurations at prices starting at \$5,900. The company said these consoles bring its digital console technology to a new price point.

The Xenon's 16 inputs (12 stereo inputs and four mic/line inputs with integrated voice processors) can be configured locally or remotely. An expansion module offers the option to add four additional stereo inputs. The console comes with an integrated audio router, three stereo main busses, two mono clean feeds and one stereo cue bus. Fader modules are each hot-swappable.

(For photo, see Tech Update, page 48.)

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

What's Up, MAC?

Davicom introduced next-generation Monitoring, Alarm & Control systems. MAC208 offers eight metering, 16 status, four audio inputs, 16 relays and four serial ports; MAC216 has 16 metering, 32 status, eight audio inputs, 32 relays and eight serial ports.

This iteration includes secure, 128-bit encrypted IP communications (LAN, WAN, Internet); they can accommodate two modems (one as a primary link using landline, and a backup using GSM for example). Four users can connect simultaneously to the units.

The MAC units offer automation capability, placing standby transmitters on the air upon

“Connect POTS to ISDN? You’ve got to be kidding!”



At Telos, we’re obsessed with quality audio. We were the first to marry DSP with broadcast phone hybrids to achieve clean, clear caller audio. We invented Zephyr, Earth’s most popular way to send CD-quality audio over ISDN. And now our DSP experts have built the **best-sounding POTS codec ever — Zephyr Xport.**

Instead of proprietary algorithms, we chose **MPEG-standard *aacPlus***[®], the same coding used by XM Satellite Radio, Digital Radio Mondiale, Minnesota Public Radio, Apple Computer and many others to deliver **superior audio at low bit rates.** (An optional ISDN interface lets Xport connect to Zephyr Xstream with Low-Delay MPEG AAC, or with nearly all third-party ISDN codecs using G.722.)

There’s no need for a studio-side POTS line. Your studio’s Zephyr Xstream receives Xport’s POTS calls via its existing ISDN line, **eliminating the cost of a second POTS codec** and delivering smooth, clear digital audio to your listeners.

And Xport makes **unexpected modem re-training extinct** thanks to custom DSP algorithms that extract stable performance from even marginal phone lines. Xport gives you **surprisingly clean 15 kHz remote audio at bit rates as low as 19 kbps.**

No wonder clients tell us Zephyr Xport is the world’s best-sounding POTS codec. But don’t take their word for it — hear it for yourself.

Zephyr Xport: **It’s all about the audio.**



Two-input mixer with sweetening by Omnia, switchable Phantom power, and send / receive headphone mix make life on the road easy.



Ethernet port isn’t just for remote control: feed PCM audio right into the codec from any Windows™ laptop. Great for newsies on the go.



Xport’s *aacPlus* and Low-Delay MPEG AAC deliver superb fidelity. G.722 coding enables connections with 3rd-party codecs, too.



Xport lets you easily send and receive audio using a cell phone headset jack. Gives a whole new meaning to the phrase “phoning it in.”

Telos
AUDIO | NETWORKS

telos-systems.com

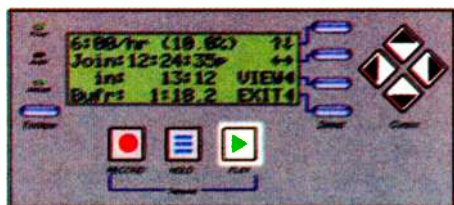
detecting RF failure and alerting on-call staff. Alerts can be delivered via e-mail, phone (voice or SMS), pager, SNMP traps, fax, modem or by the MacNet multi-site alarm management software. The MACs reach-through serial ports allow users to control legacy/ancillary site equipment remotely.

Each unit has 128 timers to program AM day/night pattern changes, set up alarm-call lists for day/night work shifts or vacations, etc., 128 virtual logic gates and mathematical functions (to program more conditional actions and complex logic operations) and 128 virtual relays. Physical and virtual relays can be configured for latch & follow modes, and variable pulse length (0.1 sec steps).

Contact the company in Quebec at (418) 682-3380 or visit www.davicom.com.

25-Seven Buffs Up

25-Seven Systems showed the latest version of its Audio Time Manager, which time-compresses audio to allow up to 12 minutes of additional program material per broadcast hour.



In response to customer requests, 25-Seven Systems President Geoff Steadman said, the ATM now has an expanded buffer capacity, allowing up to an hour of audio to be stored and compressed, as well as a cue mode that lets users navigate through the unit's buffer.

"We're increasingly focusing on timeshifting uses in addition to time compression," he said, noting that stations are now using the ATM for delaying network newscasts and other syndicated programming, as well as creating additional time for public radio pledge drives.

The ATM can be remote-controlled with GPIO or RS-232 or using a Flash-enabled Web browser over a LAN or WAN. The browser interface (pictured) provides a simple graphic interface facsimile of the unit's front panel.

Contact the company in Massachusetts at (888) 257-2578 or visit www.25-seven.com, or distributor BSW, (800) 426-8434 or www.bswusa.com.

Comet Introduces Integrated Drive

Comet introduced the Integrated Drive for its line of variable vacuum capacitors.

The Integrated Drive consists of a digitally controlled stepping-motor coupled to the capacitor shaft by a backlash-free coupling. Advantages of the Integrated Drive, the company says, include accurate, repeatable adjustments of the capacitor, integrated reference index and a single supplier solution. Various length insulator tubes are used to isolate the high RF voltage from the motor and controller assembly.

Contact the company in Connecticut at (203) 969-2161 or visit www.comet.ch.

Myat Exhibits Coax Transfer Switches

Myat Inc. showed its new 301-180-X series coaxial transfer switches, which offer high isolation and low VSWR across the broadcast frequency bands, from AM radio to UHF TV. The switches feature 3-1/8-inch 50-ohm EIA connectors and silver-plated and tellurium copper signal paths for low loss and maximum power handling capacity.

Myat also showed its X01-180-X series transfer switch controllers, which fit in a standard 19-inch rack mount and can be used for local or remote control of the 301-180-X series transfer switches.

Contact the company in New Jersey at (201) 767-5380 or visit www.myat.com.



GSS-Net Is Subcarrier Data System

Global Security Systems showed its Global Security Systems Network, or GSS-Net, which utilizes digital FM subcarriers to transmit data to emergency providers.

The company holds a contract with the state of Mississippi to implement GSS-Net there. In times of crisis, GSS-Net chips incorporated into

paggers, cell phones and other electronic devices can access critical data when other communications systems are disrupted.

Contact the company in Mississippi at (228) 255-7220 or visit www.gssnet.us.

Dielectric Debuts FM Manifold Combiner

Dielectric showed the DFM FM Manifold combiner, now shipping. The design differs from conventional constant impedance filters, the company said, in that it features smaller size and reduced cost while retaining IBOC-compatible electrical performance.

Physical size is dependent on frequency separation and relative input power but Dielectric said component orientation allows flexibility in meeting size restrictions. The DFM Combining of up to six stations is possible. Two models are available to accommodate high- and low-power needs. A combination of manifold Tee junction and band-pass filter causes each input to appear as a short circuit stub to each of the other inputs. Appropriate spacing of manifold entry points in conjunction with stub lengths at each input allows adjustment for optimum combiner performance.

Contact the company in Maine at (207) 655-8100 or visit www.dielectric.com.

Energy-Onix Advocates For DRE

Energy-Onix President Bernie Wise spent much of his NAB time talking to broadcasters about Digital Radio Express, the digital FM subcarrier system for which Wise's company offers encoders and receivers. The Idea Bank recently said it will consider the system for member stations.

"I think I've landed six or eight (new stations) at this convention," Wise said. He says several foreign countries are looking at implementing DRE on their existing FM transmitter networks. The company promotes the system as an economical way to produce multiple digital stereo programs within the industry's existing technical infrastructure.

Energy-Onix also showed its Tel Link II remote control, which now runs on a Linux-based platform, and its Documenter logger system.

Contact the company in New York at (888) 324-6649 or visit www.energy-onix.com.

LBA Displays Phasor Control Counter

At NAB, LBA Group showed a slip-free counter knob for its custom AM directional antenna phasor systems.

One of the major problems with knob dial counters, LBA says, is slippage, resulting in erroneous indications and the inability to return to previous settings. LBA's new assembly features direct linkage with a pressed pin to ensure positive control action and repeatable front-panel indications.

Contact the company in North Carolina at (252) 757-0279 or visit www.lbagroup.com.

Propagation Systems Offers Turnkey

Propagation Systems introduced turnkey installation of FM and TV transmission systems.

PSI now provides turnkey sales and installation of towers, transmission lines and FM/TV antennas. In addition to furnishing the equipment, PSI said, it will accept responsibility for all aspects of the RF transmission plant including commissioning of the transmitter and providing proof of performance to the customer upon completion. The customer has the option of providing portions of their own equipment, if desired.

Contact the company in Pennsylvania at (814) 472-5540 or visit www.psbroadcast.com.

Belar Promotes FM HD Monitor/Analyzer

Belar exhibited the FMHD-1 HD radio monitor. The company said the unit is in beta testing and quoted shipping dates of this summer.

The unit decodes the HD radio signal and analog signal simultaneously displaying HD radio status, data, time alignment and configuration information as well as audio metering and RF/audio spectrums. The display is a 640x240 color LCD with rotary encoder. Audio spectrum analysis and metering include analog and HD L/R, L+R, L-R. HD monitoring includes HD SIS and MPS Data Status and Data.

The FMHD-1 can monitor off-air or utilize two high-level RF inputs for operation at a transmitter site. The dual RF input allows monitoring of two transmitters that are used to generate the combined analog/HD signal. The RF input supports the entire FM band.

There are eight user-assignable XLR analog audio outputs and three assignable AES/31D outputs for support of scenarios such as multicasting and surround sound. Additionally, there are two each analog/digital composite outputs, Ethernet, RS-232 and relay outputs.

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

Potomac Has PI 4100 Field-Strength Meter

Potomac highlighted the PI 4100 AM/Medium-Wave Field-Strength Meter, expected to ship in the fall. This is a self-calibrating system that features digital tuning and field strength display, digital spectrum display and digital data cap-



Worried about Translator Hijacking?

The recent flood of cheap FM repeaters for Satellite radio and MP3 players has raised the risk of someone overpowering your distant translator source with inappropriate content.

With our RBDS encoder at your station and an RD10 RBDS Receiver/Decoder at each translator, you can automatically mute the translator if the received signal has been hijacked or overcome through atmospheric skip.

The RD10 is available now for only \$395 for the Serial version, \$475 for the USB version.

Visit www.viaRadio.com or call us at (321) 242-0001 for more information.

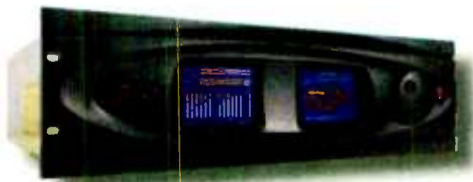


viaRadio
Radio Data Systems

ViaRadio Corporation tel (321)242 0001
760 North Drive, Ste B, Melbourne, FL 32934 www.viaradio.com
Specializing in RBDS solutions

Don't look down

(You're standing on your competition)



More than 60% of the Top 100 highest-rated FM stations in the USA have already upgraded to Omnia-6EX—the six-band dual path processor for standard FM and HD Radio signals. The reason these leaders choose Omnia? Once you've heard it, you'll know.

The Empire State building is pretty tall. Taipei 101? CN Tower? Even taller. But Omnia dwarfs them all. In fact, if you stacked up all the Omnia audio processors in use around the world, you'd have a tower well over 3,000 feet high.

In just a few short years, Omnia has emerged as the best-selling audio processor in the world. More importantly, it's the most successful stations in top markets like New York, Los Angeles, London, Paris, Rome, Beijing, Tokyo, Amsterdam and Berlin, that have put Omnia on top. And more broadcasters are upgrading every day, using Omnia as their secret weapon to stay miles above the competition.

Speaking of heights, did you know that Omnia processing now powers stations broadcasting from every one of the famous structures pictured above?

Big or small, isn't it high time you upgraded to Omnia?

Omnia
A Telos Company
www.omniaaudio.com

DRM85

FlashMic

THE WORLD'S FIRST
DIGITAL RECORDING MICROPHONE



**Forget tapes, discs,
cards and cables.
Just pick up a
FlashMic and go.**

Combining a broadcast-quality Flash recorder with a Sennheiser mic capsule, HHB's new FlashMic is perfect for interviewing, journalism and any type of voice recording.

One button press is all it takes to start recording in either linear or MPEG 2 formats. 1GB of built-in memory stores a massive 18 hours/999 tracks of recordings and it's easy and quick to transfer files for editing or onward transmission via FlashMic's built-in USB interface.

Power comes from standard AA batteries and the included FlashMic Manager software makes it easy for individual users or news organizations to configure single or multiple FlashMics for particular applications and file naming protocols.

FlashMic is all you need for broadcast-quality recording

So just pick up a FlashMic and go.

www.flashmic.info



Distributed in the USA and Latin America by:
Sennheiser Electronic Corp.,
1 Enterprise Drive, Old Lyme, CT 06371 USA • Tel: 860-434-9190 • Fax: 860-434-1759 • www.hhbusa.com
Latin America: Telephone: 52-55-5639-0956 • Fax: 52-55-5639-9482
Distributed in Canada by HHB Canada: Tel: 416-867-9000 Fax: 416-867-1080

ture and storage.

The 4100 has internal SBAS augmented GPS positioning and antenna orientation compass. Electrical specifications include a frequency range of 520 kHz to 5.1 MHz, 4 kHz measurement bandwidth, field strength range of 30 uV/M to 20 V/M, BNC RF input/output jacks, USB bi-directional interface for data output/control input and rechargeable NiMH batteries. The LCD screen simultaneously displays GPS time/date, field strength, magnetic bearing and distance to station, true azimuth from station, latitude/longitude GPS coordinates, frequency and other GPS info.

The spectrum display has a frequency span of +/- 63 kHz and 1 kHz resolution bandwidth. Flash memory is used for data storage and download software is Microsoft Excel-compatible. The PI 4100 may be used as a tuned RF voltmeter with a 116 dB dynamic range.

Contact the company in Maryland at (301) 589-2662 or visit www.pi-usa.com.

D.A.V.I.D. Embraces Web & Emerging Tech

One of the more provocative radio technologies at the show may have been a software suite from D.A.V.I.D. Systems. The company touts it as more than a recording/automation system, reaching past broadcasting and into Web publishing of text, pictures, audio and video.



According to President Richard Doll, "Radio is seeking emerging technologies to remain competitive. To speed this transition, we developed tools that integrate stations with these technologies."

Pictures, text, video and sound files, he said, can be organized through D.A.V.I.D. Systems for Web presentation. "PAD data links listeners to retailers like Amazon.com. Station employees can have bidirectional access to our database from virtually anywhere in the world. We are partnering with organizations like StratosInteractive that will employ cell phone technologies for listeners to participate in polls and order books and CDs with the push of a button."

Contact D.A.V.I.D. in Virginia at (888) 374-3040 or www.davidsystems.com.

Coaxial Dynamics Has LCD Display Directional Wattmeter

Coaxial Dynamics unveiled the model 81030 Wattmeter.

Power and frequency ranges are determined by user selected elements. The 81030 can measure forward and reflected power in the 0.1 to 10,000 watt range from 2 to 2300 MHz. The customer may specify type N, UHF, C, BNC, LC, SMA, TNC, SC and other male/female Quick Match connectors. Range Set and Range Check front-panel switches allow the user to select the preferred scale. Power is supplied by internal rechargeable batteries.

The 81030 is capable of measuring RPU, STL and FM broadcast transmission power using the



appropriate elements and line section.

Contact the company in Ohio at (440) 243-1100 or visit www.coaxial.com.

Aphex 230 Is for Voice

Marvin Caesar, president of Aphex Systems, showed the company's single-space Model 230 multiprocessor for voice, which retails for \$799.



"Voice processing is even more critical for broadcasters engaged in Webcasting because of the ravages of bit rate reduction," the company stated. "Consonants are critical for intelligibility and the Model 230 maintains and enhances them, even through the heaviest downstream processing." The Model 230 has several Aphex circuits such as the RPA tube preamp, Easy Rider compressor, Logic Assisted Gate, split-band de-esser, Big Bottom and Aural Exciter.

Caesar also said the Aphex 1788A eight-channel remote controlled mic preamp is now controllable via Pro Tools TDM software, version 5.3 and higher, and Digidesign control surfaces.

Contact Aphex in California at (818) 767-2929 or www.aphex.com.

A.N.T. Adds Remote Control Accessories

A.N.T. introduced the ANT 130 Protocol Bridge. The model is an interface module between equipment with proprietary protocols and A.N.T.'s RDF. The ANT 130 translates any known protocol on RS-232 or RS-485 into the ANTLAN protocol.

Also introduced was the ANT 131 Advanced RF Probe. It has a range from -50 to +33 dBm allowing power monitoring over a wide dynamic range. Two models are available, one that covers the 10 MHz to 1.0 GHz frequency span, the other from 900 MHz to 2.5 GHz. Digital modulations, with crest factor correction, as well as analog signals may be monitored. The dynamic range is internal pad-selectable.

These modules connect to A.N.T.'s RDF remote control system, which allows monitoring and control linking over radio, satellite, Internet, DSL, GSM and GPRS communications. The Control Room software runs in a multi-user environment. Interaction via e-mail and SMS is possible. New in the control room application is the possibility to connect SNMP-enabled equipment (through Ethernet) and view the data blended in the same user interface. A variety of interface devices and software drivers is available.

Contact the company's U.S. representative in North Carolina at (704) 973-0913 or visit www.antgroup.it.

Heil Mic Line Grows

Bob Heil continues his attack on the cardioid broadcast mic market by adding the PR-30 and PR-40 to the PR-20.



These three dynamic mics have diaphragms in excess of one inch in diameter. The PR-30 (\$239) features a unique quilted metal diaphragm and humbucking coil and a 40 Hz to 18 kHz frequency response. The PR-40 has a 5 kHz frequency peak to give on-air voices extra punch. Frequency response is listed at 28 Hz to 18 kHz.

Contact Heil Sound in Illinois at (618) 257-3000 or at www.heilsound.com.

AKG Has Perception

AKG showed low-cost studio condenser mics in the new Perception line. The basic Perception 100 cardioid lists for \$199, while the Perception 200 adds bass rolloff, pad and shock mount and lists for \$319.



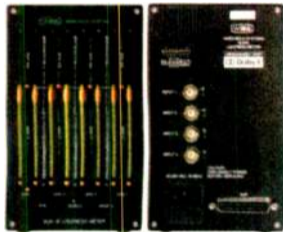
Market Development Manager Mike Torlone also showed the new HSC and HSD condenser and dynamic headset mics, based on the K271 and K171 headphones. The new series adds a condenser or dynamic boom mic ready for on-air use. When the headphones are removed, a micro switch turns them off. When the attached mic boom is lifted it also turns off silently.

The HSD 271 is also available in a special version with a single earphone for jobs where the user needs to listen to natural sounds as well as those coming through the headphones.

Contact AKG in Tennessee at (615) 620-3888 or at www.akg.com.

Ward-Beck Ships SLM8E Meter

Ward-Beck is now shipping a new portable, desktop SLM8E loudness meter with PCM inputs and built-in decoding for Dolby E and Dolby Digital.



According to Managing Director Eugene Johnson, "The SLM8E simultaneously displays average (VU) and peak (PPM) content of up to eight audio signals. Each high-resolution meter has 61 LEDs in a vertical bar-graph arrangement. DIP switches are used to select the appropriate four-, six- or eight-channel monitoring mode."

A status LED associated with each AES input displays LOCK when a viable signal is connected. The meter can be supplied with balanced, 110-ohm inputs on three-pin pluggable terminals or unbalanced, 75-ohm inputs on BNCs.

Contact Ward-Beck Systems in Toronto at (800) 771-2556 or at www.ward-beck.com.

TLM 49 Is Neumann Condenser

Sennheiser/Neumann offered the first showing of the new Neumann TLM 49 (shown), a large-diameter, transformerless, cardioid condenser microphone with EA3 suspension mount, now shipping. The design employs the K-47 dual diaphragm capsule used in the M 49 and U 47 microphones with a lower 12 dB-A self noise. The TLM 49 features a unique sound imaging vacuum tube emulation circuit.

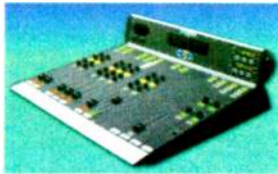


HHB, distributed by Sennheiser, showed the new DRM85 FlashMic. Director of Marketing Dawn Birr said that with 1 GB of internal memory, the omni-capsuled DRM85 can be set to record 32 kHz, 44.1 kHz or 48 kHz, 16-bit WAV files, at 4.5 hours, 3.25 hours and 3 hours respectively. The product won a "Cool Stuff" Award from Radio World.

Contact Sennheiser USA in Connecticut at (860) 434-9190 or at www.sennheiserusa.com.

Sonifex Digital Consoles, Redbox On Display

Independent Audio President Fraser Jones announced that Disney Radio in New York recently acquired two new Sonifex S2, 24/96 analog/digital radio consoles.



Sonifex has also added products to its established Redbox Range including the RB-ADDA2 24/192 converter, RB-DA6G six-way stereo/12-way mono distribution amp, RB-ML2 stereo mic and line-level limiter, RB-DS2 stereo delay sync and time zone delay, RB-PA2 dual stereo RIAA

phono preamp, RB-MM1 mix-minus generator and three DHY Series digital telephone hybrids.

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

MGE UPS Adds Pulsar

MGE UPS Systems introduced the Pulsar MX 5kVA double-conversion online UPS system.

The Pulsar is three rack units high and contains hot-swappable battery and power sub modules, auto battery test, LCD display and power management software. External battery modules can be added for extended backup time.

MGE also introduced various components of its Power Management software suite, like the Enterprise Power Manager, which acts as a monitoring console for power devices and allows engineers to manage their UPS systems remotely. Also new is a revision of the Network Shutdown Module, which can manage redundant power

sources. Its Pulsar EX RT and EX RT Uninterruptible Power Supply families have form factors that allow use in tower or two (Pulsar EX RT) or three (EX RT) rack unit configurations. The company also showed its Galaxy 4000 UPS system for network grade facilities.

Contact the company in California at (714) 557-1636 or visit www.mgeups.com.

Sony Offers MZM200 MD Deck

Sony showed a new, refined version of its Hi-MD MiniDisc recorder.



According to Marketing Director Paul Foschino, "The MZM 200 streamlines the lines set by the MZ100 and

Mixed Messages? Perfect!

Messagecasting and HD2 Multicasting builds listenership and revenue.



Your listeners are learning to "watch the radio" as what you're playing. Messagecasting (available only from BE's Total Radio Experience) takes you beyond simple title and artist display. Station promos, contests/winning messages, linked to commercials, traffic, weather and emergency alerts can all be displayed on many analog and HD radios as well as on your website, billboards and electronic signs.

Use the power of HD2 to send a mobile message to your listeners via their subscriptions with now, pay, later and about 100 other HD2 features. "kills" apps, the ability to transmit multiple program messages via FM channels and you will find the formula for total success.

BE can help you manage and defeat the competition with the only Total Radio HD Radio solution available today. Our exclusive Total Radio Guarantee eliminates the risk of unpredictable expenses or rapid obsolescence. Messagecasting, HD2 Multicasting, improved quality and more to work for you...contact BE today.



Broadcast Electronics Inc. • 4100 North 24th Street, Quincy, Illinois 62305
Telephone: (217) 224-9600 • www.bdcast.com • E-Mail: dontpanic@bdcast.com

Broadcast Electronics and the BE logo are registered trademarks and Total Radio Guarantee, The Radio Experience and Messagecasting are trademarks of Broadcast Electronics Inc. HD Radio is a trademark of iBiquity Digital Corporation.

goes further by including a spectrum analyzer. USB transfers are now 4x faster and the internal rechargeable battery can now be fully charged via the USB connection." It retails for \$439.

Also of interest to radio, Sony was showing the new MDR-7509 HD headphones that claim a frequency response to 80 kHz, yet are flatter than the industry-standard MDR 7506.

Contact Sony in New Jersey at (800) 686-SONY or www.sony.com/professional.

Omnirax CAD/CAM Database Expands

At Omnirax, Designer David Holland was telling customers about various recent custom installations.



"We add each newly designed component to our CAD/CAM database. As our library grows, we use those designs as reference points for other designs," he said.

"Our CAD/CAM process ensures precision fit and finish, repeatability and ease of modification. All our designs are rendered by computer prior to manufacturing. That allows us to give every job the personal touch, yet we are large enough to outfit a complete facility."

Among the company's offerings is the Innova line of custom furniture, which combines modular components with custom shapes to fit particular requirements of on-air, production and imaging studios.

Contact Omnirax in California at (800) 332-3393 or at www.omnirax.com.

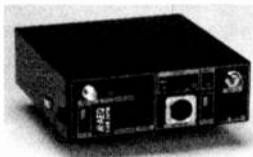
Kintronic Debuts High-Power Contactors

Kintronic Laboratories debuted three RF Linear Drive Contactors intended for high-power AM/MW applications. The model RFC-150L-55 is capable of handling 150 amps at 55 kv and is available in single-pole single-throw or SPDT configurations. The model RFC-200L-30 is capable of handling 200 amps at 30 kv and available in SPDT or DPDT. The model RFC-200L-80 is capable of handling 200 amps at 80 kv and is available in SPST or SPDT. Each of these models switch in less than one second with no shock or vibration, utilize an operational 110-240 VAC voltage, and have dry closures for position sensing and an actuator driver board with contactor position selector switches.

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

AEQ Adds Remote Tx/Rx

AEQ demonstrated three new portable remote transmitter and receiver units at NAB.



The Live 10T transmitter is a three-watt transmitter for remote portable use. The 10R receiver complements the 10T with 16-frequency agility.

The Live 20 system adds duplex talkback capability, with the company's Live 20TR transmitter/receiver for reporters. The Live 20R is a diversity receiver usually installed at the audio control point of a remote broadcast. The Live 20T

is a talkback transmitter that complements the Live 20R at the remote site, so a reporter or talent could hear cues in the Live 20TR's return channel.

The portable Arrow Mixer 50 T adds a three-channel mixer to a 30-watt transmitter. Other Arrow series (50T Transmitter and 50R Receiver) units are rack-mounted and operating frequencies can be programmed through a PC.

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

Burli Systems Enables Podcasts

Burli Systems showed the Radio Newsroom System, which allows newsrooms to manage gather, edit, organize, network and deliver news product.

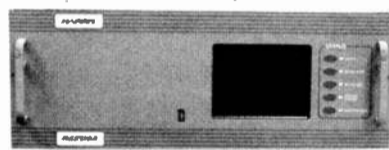
The company also showed its XML Podcast creation feed feature, which allows Burli users to create, format and upload a podcast without exiting their newsroom management program. The system allows users to edit single and multitrack audio, and record audio on demand. Burli's system has a prompter and play in place audio for live broadcast, and the ability to send audio automatically by FTP to Web sites and other delivery systems, such as mobile phones.

Contact the company in Vancouver at (604) 684-3140 or www.burli.com.



Harris Showcases 'End-to-End' Approach

The Broadcast Communications Division of Harris showcased an end-to-end approach to digital and analog radio. The company described itself as the only supplier to support the three major digital radio standards, meaning HD Radio, DRM and DAB.



Harris said the migration to Generation 3 or "Exgine" multicasting technology has placed crucial components at the studio rather than the transmitter. The company emphasized its technology that splits the exporter from the exciter and moves it back to the studio.

New offerings include the Flexstar HDX-FM exciter, with advanced real-time adaptive correction technology. It was shown with the Flexstar HDI-100 importer, HDE-100 exporter and Z-Series FM transmitter as part of an HD Radio Exgine multicasting demo. The Flexstar BoostPro allows stations to operate multiple transmitters from one HDX-FM exciter.

Also on display was the ZX low-power FM transmitter, based on Harris' Z-Series. It is intended as a cost-effective model and is available in 500-, 1,000- and 2,000-watt power levels for analog broadcasting, with an upgrade path to HD.

For IP-based STLs, the company showed Intraplex NetXpress, a managed networking platform that can send multiple services including audio, data and PBX phone communications over an IP connection. New features include echo cancellation, PBX phone system links, T1/E1 circuit emulation and forward error correction.

A line of value-priced consoles is new; the company showed the Harris PR&E VistaMax Envoy and NetWave on-air consoles. NetWave is available as a standalone console or with VistaMax connectivity.

Also shown: VistaMax Audio Networking products for medium-to-large market facilities; 3DXT "Direct Digital Drive" high-power AM

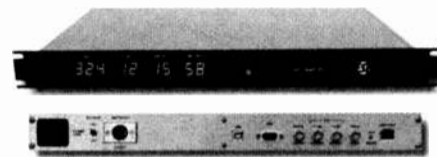
transmission products; a live digital audio demonstration of the DAXIT AM transmitter with a DRM modulator and content server; the company's DAB transmitter range, which also supports the Digital Mobile Broadcasting standard; and MasterLink IP, an IP-based monitoring system for broadcasters with a large network of distant stations or translators that can also be used as a cost-efficient RPU or STL.

The company showed the ManDLS Display Test System, which allows broadcasters to increase revenue through creative advertising and other advanced text display formats that go beyond the artist/title capability of RDS.

Contact the company in Ohio at (513) 459-3597 or www.broadcast.harris.com.

ESE Focuses on NTP

ESE noted its 35th anniversary with a display of GPS-controlled master clock products.



For radio installations that need a Network Time Protocol (NTP) server, the company debuted the ES-185U/NTP. This device uses a 12-channel GPS receiver with an indoor/outdoor antenna. It has a four-hour battery backup and allows users to synchronize time across a network.

The ES-188, shown, is an NTP-referenced master clock and time code generator. The ES-188 helps users offset local clocks from an NTP server so local events such as switching of a signal can occur at an exact time. The company also showed 700 Series event controllers, which allows users to automate events with simple programming.

Contact ESE in California at (310) 322-2136 or www.e-se-web.com.

Mayah Upgrades Centauri Line

Mayah's new generation of Centauri II codecs was featured in Vegas. The device functions as an ISDN codec but can also transmit live audio by DSL, S-DSL and UMTS (3G cellular) format, with 6 ms latency. It can act as a point-to-multipoint system, transmitting a MPEG-4 64 kb stereo signal via ISDN. The Centauri II also



streams different formats at different bandwidths simultaneously, and its 3300/3301 series has the ability to transmit 5.1 surround sound.

The MERK II Portable Audio Codec/Mixer for Events/Reporting also was on display.

Contact distributor Lamar Systems in Oklahoma at (918) 770-0941 or visit www.mayah.com.

RCS GSelector: Schedule Programming Over Web

RCS debuted the GSelector multichannel music scheduling system, which the company says lets users see in real time the natural demand of each song, artist or attribute such as tempo, theme or sound code. Tools include an automatic audio analyzer that identifies multiple intros, opening and closing musical key, and BPM of each song.

Research scores can be uploaded directly into GSelector so the next time it schedules, it takes

into consideration the new test data. GSelector also is Web-ready so users can schedule or make programming changes over the Internet and hear the results on the air shortly thereafter.

Features include cross-channel protection to automatically identify and adjust music schedules across a group of stations so they don't play songs simultaneously. Each song's audio can be accessed and auditioned through GSelector as well.

GSelector was created with Microsoft's .NET 2.0 platform and SQL Server 2005, both of which RCS says increase software stability while shortening development time. The product is available by barter to U.S. radio stations.

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

RDL Hunts Down Hum

The AV HK-1 Hum Killer is designed to eliminate ground loops and allow isolation of audio signals in an unbalanced line. The unit can be used to interface consumer grade inputs to professional systems.



Also on display from Radio Design Labs, the ST-CL2 Compressor Limiter is used to process either balanced or unbalanced line-level inputs. The company also introduced a new mini mixer, the RU-MX4L Pro Audio Mixer. The MX-4L has XLR microphone and phono jack unbalanced inputs, and an XLR output that switches between mic and line level.

Contact RDL Sales in Arizona at (800) 281-2693 or visit www.rdlnet.com.

Wheatstone Connects Via Audio Over IP

Wheatstone promoted its Audio Over IP Automation Interface, which enables a connection with a single wire between the Bridge networked audio system and a station automation system. The interface eliminates the need for sound cards



Also new is the Wheatstone 5200 D News Mixer, which provides front- and rear-panel mic input connectors along with a front headphone jack. An in Ethernet Bridge X-Y controller is standard, as well as cue speaker and headphone, cue level control, monitor selector and headphone volume control.

The company showed the G6e Control Surface (shown), which ships with an EQ software package. The console brings the feature set of the larger Generation Series surfaces into a studio-friendly footprint, and includes an expanded number of Aux sends and increased Preset options and expanded MXM bus assignment functionality.

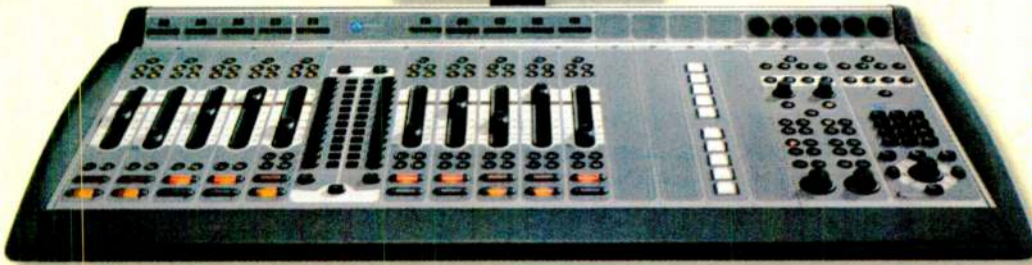
The Audioarts division showed the AE-NET Router, touted as a low-cost audio networking system that connects up to eight studios. It operates with no external PC required other than for setup and source naming. Installation is eight CAT-5 cables to interconnect eight studios. The router is capable of 44.1 kHz, 48 kHz or external sync operation.

The Audioarts IOC-16 Audio Input/Output Center acts as a networked intermediate link between a D-75N digital audio console and the central Audioarts NET router. It may be located in the TOC center or in the local studio. Also new is the Audioarts D-75 N Audio Mixing Console, which can be modified with the Net-75 panel to provide an integrated network system with the option of autonomous console operation when needed. Four output busses along with eight digital inputs and outputs are provided within each panel. Six faders within the D-75N

Axia Element Consoles Surfaces



NEW!!



20-position mainframe with modules shown

Build Your Studio with the Axia Ethernet Audio System

The Axia Element Console Surface meets your most demanding air and production applications. Four Program buses, four Aux Send buses, dedicated talk and preview functions on each channel, one-touch record and monitor sections and up to 32 mix-minus outputs combine to give you a small-footprint control surface with BIG-CONTROL capabilities. A standard SVGA LCD monitor displays all metering, clock timer, status and options info. Its modular design means that it can be configured in just about any manner. A variety of fader modules are available for the Element Mainframes (choose from 8 to 28 positions), all with long-life 100 mm conductive-plastic faders and heavy-duty switches with finger-friendly button-guards. Modules and the Mix Engine (required) are sold separately. An 8-position mainframe and mix engine package begins at a manufacturer list price of only \$4,390 (not pictured above). Then just add the modules you require. Call for BSW's low sales price on whichever size mainframe you need and all Axia Cat-6 routing equipment. Find out more about Axia today!!

LowestPrice@bswusa.com
OR CALL: 1-800-426-8434

The Ultimate Pop Filter For Your RE20!!

RE20 Pop Filter

The BSW RePop is the ultimate pop filter—made specifically for the Electro-Voice RE20 microphone. The fine mesh metal screen diminishes undesirable P-Popping while keeping the integrity of the hi-end frequency response. The RePop clamps easily and securely to the microphone and will also work in conjunction with the EV 309 shockmount. The RePop is a BSW innovation!



REPOP List \$59.95 **LowestPrice only \$39.95!**

Electro-Voice RE20

Do we really have to sell you on the RE20? A favorite of broadcasters worldwide, it's simply built to last forever and sounds great on the air. Patented Variable-D design reduces proximity effect.

RE20 List \$798.00 **LowestPrice only \$399!**

The Electro-Voice 309/A is the custom suspension shockmount.

309A **LowestPrice only \$99!**



NEW!!



New Soundcraft Production Mixers

These new Soundcraft EPM mixers provide an easy-to-understand control surface uncluttered by unnecessary facilities. The highly-transparent GB30 mic amp (designed by Graham Blyth for the company's 30th anniversary, and also used on the larger LX7ii and GB Series consoles) features high-resolution adjustment over a wide gain range of 55 dB, and provides a stunning +22 dB headroom through the console. True professional 48-volt phantom power caters for condenser microphones of all types.

A unique feature of the signal monitoring is the Peak LED. This uses multipoint signal take-offs to watch for overload in several parts of the channel strip, and the LED lights more brightly as the signal approaches the peak point. For smooth and accurate channel control, the EPM has 60 mm faders. Available in 6, 8 or 12 mono inputs, with 2 stereo channels standard. Order online at www.bswusa.com and get FREE shipping on these mixers!

RW5734 EPM6 - 6 mono/2 stereo List \$309.99 **\$249.00**
RW5735 EPM8 - 8 mono/2 stereo List \$359.99 **\$289.00**
RW5736 EPM12 - 12 mono/2 stereo List \$459.99 **\$369.00**

LowestPrice from \$249!

Two AT Headphones For Less Than The List Price Of One!



The Audio-Technica ATH-M40 headphone offers bullet-proof durability in a sealed-ear format. It offers an amazing wide frequency response of 5 Hz-28 kHz with large 40 mm drivers with neodymium magnets for maximum sound. In addition, its adjustable cushioned headband, 180° rotating earpads, lightweight design and a hard-wired 1/4" connector make it excellent for long days in the studio. 60 ohms impedance. Get BSW's 2-pack and save!!

ATHM40FS-2PK List \$300.00 **LowestPrice 2 for only \$119!!**

Furman Series II Power Conditioners

Protect your valuable audio gear. Furman's PL8II 15-amp power conditioner provides eight switched AC outlets on the rear panel with two front-panel, slide-out light fixtures. The PL-PLUS II adds a front-panel line voltage indicator. The PL-PLUS D II model adds a front-panel digital voltmeter. Finally, the PM8 II has all the features of the above models (except pull-out lights) and adds a second digital LED meter showing current draw. Or call BSW for 20-amp models.

PL8II	Power conditioner/light module	List \$168.00	\$130.00
PLPLUSII	Power/lights with voltmeter	List \$242.00	\$190.00
PLPLUSDII	Power/lights with LED voltmeter	List \$263.00	\$200.00
PM8II	Power only with LED voltmeter/current draw	List \$263.00	\$200.00

LowestPrice from \$130!

Sale Price!! Crown D-75A Power Amplifier

The Crown D-75A has been serving broadcast professionals since the 1970s. This amplifier is excellent for any kind of critical listening and it's built to last...there's nearly 30 years of proven performance behind this workhorse. The D-75A features level controls; power and distortion indicators; active balanced inputs with XLR-1/4" combination



connectors; barrier strip output connectors; and <.001% harmonic distortion at full power. Get 'ol' reliable' at our low summer sale price!!

D75A List \$889.00 **LowestPrice only \$399!**

Price Reduction!! Now Only \$7,399 at BSW!!

Audioarts D-16 Digital Console

Save like never before on your new digital console!! Now only \$7,399 at BSW!!! The Audioarts D-16 16-channel console combines the benefits of a router and audio console into one cost-effective digital package, letting you route any analog or digital input to any fader or monitor feed with inputs clearly shown in bright LED dot matrix displays right above the faders and monitor controls. With 24-bit A/D-D/A I/O and sample rate converters on every AES digital input, the D-16 will work with virtually any digital source gear. Its DSP digital metering simultaneously displays VU columns and peak hold. Powerful caller tools generate mix-minuses automatically. Dim: 30"W x 20"D x 7"H.

FEATURES:

- Bright LED dot matrix displays show inputs
- Analog/digital Program and Audition stereo outs
- 2 mono analog outs and 4 generated mix-minus outputs

- 4 mic preamps, 8 stereo analog & 8 stereo digital ins
- 14 input faders plus two caller faders
- Control room and studio monitoring; 2 cue speakers
- ESE-compatible clock and programmable timer

D16 List \$8,395.00 **LowestPrice only \$7,399!**

Optional Accessories:

- D16FSD Dual fail safe power supply List \$1,683.00
- D16CPSD Sliding copy stand List \$383.00



New Product Alert #4081

Imagine a broadcast-quality headphone that is always with you now matter where you are! TIPPERS make the dream come true! Once they're surgically installed in your fingertips, all you have to do is put your fingers in your ears to enjoy GREAT AUDIO!

Lowest Prices on everything at: www.bswusa.com



BSW

1-800-426-8434

World Radio History

Same Day Shipping

BSW stocks a huge warehouse of products. If we have it in stock, we'll ship it the same day. Just order by 7:00 PM Eastern Time.

Free Shipping on Most Web orders over \$189

Most web orders over \$189 get FREE ground service delivery to the contiguous 48 states. Excludes heavy or oversized items.

Knowledgeable Staff

Our sales professionals have real-world broadcast and studio experience to offer expert help with your equipment purchase. RW_07/06

LowestPrice@bswusa.com

For the best prices on all of your gear visit us on the web at www.bswusa.com or email us for a quote at LowestPrice@bswusa.com

will have access to thousands of both analog and digital system resources.

The company also showed its expanded line of Vorsi Signal Processors including the AP1000, which earned a Radio World "Cool Stuff" Award, the HD P-3 for HD Radio applications and the M-1, a low-cost mic processor.

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

Portanet Is Portable IP Codec From ATA

The Portanet is a portable IP codec by ATA that includes ISDN as a backup. The unit has four mic/line inputs, three headphone outputs and two audio aux outputs. Audio compression algorithms include MPEG 1,2 Layer II, MPEG 1,2 Layer III, MPEG 2 AAC LC, MPEG 4 AAC LC and apt-X. S and U ISDN interface supported; battery backup is an option.



Also shown was the Prononet multiformat audio codec with capabilities as dual codec (two independent encoders and decoders) supporting G.711, G.722, MPEG 1/2 Layer II, MPEG1/2 Layer III, MPEG2/4 AAC LC and MPEG4 LD as well as apt-X among its standard coding algorithms, and bi-directional uncompressed linear audio transmission over IP through its Ethernet 10/100 port.

The Prononet can establish a backup link using ISDN at 64 or 128 kbps under communication loss of either X21 or IP links. It is also available in a decoder-only format.

Contact ATA in New Jersey at (973) 659-0555 or www.ataaudio.com.

Shively Sees HD Radio In High Gear

Shively Labs said this year has seen "real-world" implementation of HD Radio.

The company makes broadcast antennas and related gear. According to David Allen, director of broadcast sales, the action at the NAB booth reflected a major turning point in the advance of HD Radio.

"This year, we spoke with broadcasters about their implementation strategies with real projects. This isn't like past years where we were dealing with a lot of hypotheticals."

Allen said the company is realizing the benefits of a long-term investment in digital technologies dating to the early 1990s. In addition to seeing the growth in sales to stations, the development of the technology has brought about new ideas and new thinking.

Contact the company in Maine at (888) 744-8359 or www.shively.com.

Crown Has FM10K & Translators

Crown Broadcast said it received excellent interest and feedback on the new FM10K, 10,000-watt transmitter. The company touts it for its compact size, design, ease of installation and reliability.

The FM10K is available for order with an average delivery turnaround time of 4 to 6 weeks with quick-turn emergency delivery available if possible.

Crown also launched a product line for HD and analog translators. Working in a strategic alliance with Fanfare, Crown introduced the LA series of amplifiers to work with the Fanfare TRO-1 pass-through receiver.

"Since this product does not demodulate the receive signal but merely passes through the entire FM envelope of HD and analog, no Ibiqity site license is needed for your translator site," the company said.

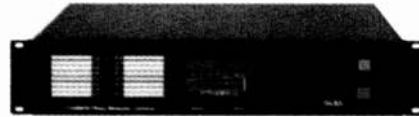
Crown's linear amplifiers are available for combined power levels of up to 600 watts combined or 300 watts all-digital.

Contact the company in Indiana at (866) 262-8972 or visit www.crownbroadcast.com.

Burk Demo's ARC Plus

Burk Technology demoed the ARC Plus facility control system. With a TCP/IP platform, the ARC Plus can connect to more than 1,000 sites, each with up to 256 channels of metering, status and control. The built-in Web interface allows site management using a browser, and dial-out alarm reporting is available. Notifications for two

different alarm priorities can be communicated via email, SMS and telephone dial-out.



Backwards compatibility reduces deployment costs at existing ARC-16 operations, the company says. The ARC Plus can report ARC-16 alarms, and users can take readings and issue ARC-16 commands from the ARC Plus. Serial modem connectivity permits access to the ARC Plus where a TCP/IP connection is unavailable.

For PC-based facility management, AutoPilot Plus software provides on-screen monitoring and control with integrated SNMP management. This allows operators to manage facilities from a network operations center, or distribute responsibility to multiple control points.

The ARC Plus is due to ship in the third quarter. Contact the company in Massachusetts at (800) 736-9165 or visit www.burk.com/arcplus.

OMT's HDNow Is Turnkey for Multicasters

OMT Inc. introduced HDNow, described as an affordable turnkey programming and content solution service for HD multicasts.



With one workstation, stations can create multicast programs by accessing a library of 150,000 music titles or 100 programmed channels in various music formats. Multiple HD channels can be managed from a central location to include customizable music, liner and commercial content relevant to each market.

"Since we are in the early years of this new technology, stations are looking for an affordable turnkey solution that can provide quality programming content, scheduling and promo spots on one single workstation," Ron Paley, founder and senior business developer stated.

OMT also added features to iMediaTouch. For on-air, iMediaTouch 2.6 includes a new graphical user interface, third level of redundancy, expanded search options in the audio library and enhancements to on-air teaming, including audio file playback resume. For production, it adds Stretch and Compress in the waveform editor, Auto Trim cuts on import and a new multi-cut project editor. For voice-tracking, there's a new GUI and added keyboard commands.

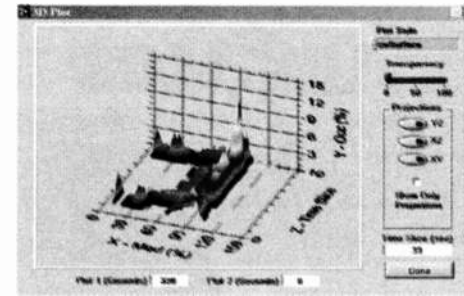
The company also showed V2.6 of its iMediaLogger system; and it told attendees about microCasting, to help broadcasters reach listeners via nontraditional channels, with more than 1 million audio titles and personal logs of any genres delivered to cell phones, Blackberry, iPod and MP3 players.

Contact the company in Winnipeg at (204) 786-3994 or visit www.imediatouch.com/hdnow.

ModSci Remote Software for ModMinder Runs on PC

Modulation Sciences is offering a Windows-based software package for use with its FM ModMinder digital mod monitor. The software runs on any Windows PC and connects the FM ModMinder serially, via a COM port, or remotely.

It features ModAnalysis Version 2.00 that allows the user to monitor, capture and analyze modulation data in real time or off-line.



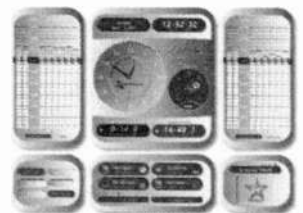
The Monitor utility can be used in Basic or Advanced Mode. Basic Mode provides real-time displays of peak modulation, overmodulation status alarms and a one-minute rolling count of overmodulation occurrences. Advanced provides a continuous bar graph display of average, peak and minimum modulation; a cumulative histogram display shows peak modulation or all values of modulation on an X-Y graph. The Time Chart displays peak modulation over real time, and the data can be logged into a time-stamped file for review and analysis using the statistical analysis tools. Traditional histogram or 3-D or "waterfall" plots can be created to visualize modulation trends or spot disturbances. Additionally, the threshold settings for the FM ModMinder can be changed remotely.

Analysis tools include Macro Analysis, to analyze, log and alarm RMS modulation processing index and rolling minute over-modulation; and Micro Analysis, to examine the modulation of a station in more detail.

Contact the company in New Jersey at (800) 826-2603 or e-mail to sales@modsci.com.

Axia Expands, Signs Partners; Omnia ONE and Telos Nx12 Are New

Visitors to Telos/Omnia/Axia Audio learned about new drop-in modules and studio accessory panels for the Axia Element control surface.



Accessories include interface modules for Telos phone systems; a Production Module; and Motor-Fader modules that work with Element's Show Profiles feature to recall preset audio levels.

Six Studio Control panels interface with Element to give on-air hosts, guests and producers remote control of headphone selection, mic channels and other functions.

Also new, Axia showed iProFiler, a multi-channel audio archiving/logging program. The product earned a Radio World "Cool Stuff" Award. The company also announced partnerships with Broadcast Electronics, D.A.V.I.D. Systems, International Datacasting Corp., Netia and Satcom Resources. It has a partnership to add Livewire IP-Audio networking technology to Radio Systems Millennium audio consoles; and it announced a recent sale of 13 rooms of IP-Audio networking equipment to Clear Channel for installation in Asheville, N.C.

Omnia Audio exhibited the Omnia ONE FM processor. The supplier touts it for its "large, warm and open sound, with a natural, smooth high end" and proprietary architecture using advanced processing algorithms. A Livewire audio interface facilitates integration with an Axia IP-Audio network. The processor offers multiband AGC and limiting, Omnia bass management controls and final clipper.

Telos Systems unveiled the Nx12 talkshow system. It provides support for POTS and ISDN, and incorporates new hybrid technology and Livewire audio-over-IP compatibility.

The self-contained, 12-line system includes four hybrids. Available with analog or AES

Announcer's Consoles for Live Events

Whether used in radio, television, production, or stadium announce applications, the Model 200-series of announcer's consoles provide uniformly excellent performance.

With five models to choose from, everything on your "wish list" can easily be handled. And while each unit provides a unique mix of features, all share a common core: great audio quality, a simple user interface, and reliable operation.

To see which Model 200-series product is right for your application, please visit our website.



Model 212
Digital Announcer's Console
Now Available

STUDIO
TECHNOLOGIES
INC.

Skokie, IL USA | Ph 847-676-9177 | www.studio-tech.com

Broadcast Software

1-888-274-8721
www.bsiusa.com

Radio Automation



Simian - radio automation and digital playout system.

Instant Audio



Stinger - Instant Access to 288 'rapid-fire' audio files.

Digital Cart Player



WaveCart - the original on-screen cart machine replacement.

Audio Logging



SkimmerPlus - skimming and audio logging with web playback.

Complete Systems



Systems - fully configured with hardware, software and music.

Music Library



MusicStore - select from over 48,000 ready-to-play songs.

CD Ripping



Speedy - fast CD ripping with automatic file tagging.

Sound Cards



AudioScience - professional sound cards built for broadcast.

Remote Control



Trigger & Relay Kits - for GPIO and satellite operation.

Broadcast Software International
503 E. 11th Avenue
Eugene, Oregon 97401 USA
Direct: 541-338-8588
Fax: 541-338-8656
www.bsiusa.com sales@bsiusa.com



inputs and outputs, the Nx12 mixes callers to two separate analog or AES feeds when the built-in outputs are used. In such cases, four hybrids remain present, for improved performance and excellent trans-hybrid loss, the company says. Each hybrid incorporates Omnia AGC and noise gate. The system also includes echo cancellation for troublesome VoIP and cellular callers.

The Nx12 is compatible with Telos third-generation control surfaces.

Telos and CBS Radio also announced that WZLX(FM) in Boston would be the first 24-hour surround service in the United States (RW, May 24).

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

Continental Airs DRM, Debuts HDe Exporter

Digital Radio Mondiale member Continental Electronics Corp. presented live DRM broad-



casts and reception on multistandard consumer receivers using RadioScape's RS500 module and Texas Instruments' DRM350 digital radio baseband, both of which have DRM/DAB/FM/RDS capabilities in addition to analog shortwave, medium-wave/AM and long-wave.

Additionally, in cooperation with Transradio SenderSysteme Berlin AG, the company had a 10 kW medium-wave transmitter operating in simulcast mode (DRM + analog). In conjunction, CEC had a 26 MHz transmitter operating near Las Vegas, using Fremont, Calif.-based antenna manufacturer TCI's anti-skywave antenna.

CEC also extended the power capabilities of its 816HD transmitter to 25 kW, showing a modified 816HD operating at 25.5 kW at 98.1 MHz; and it introduced the HDe HD Radio exporter/signal generator, shown, featuring a keyboard/mouse in a slide-out drawer vs. a touch-screen for setup and option navigation.

The HDe functions as an HD Radio signal generator located at a station's transmitter site, or as an exporter located at a station's studio complex when used with CEC's Engine Exciter option.

Contact Continental in Texas at (214) 381-7161 or visit www.contelec.com.

Staco Shows FirstLine UPS

Staco Energy Products debuted an updated brochure detailing its product lines of power factor correction, single-phase and three-phase UPS, voltage regulators and power conditioners and variable transformers.

StacoSine harmonic filters dynamically correct harmonic orders, using power electronics to monitor a non-linear load.

The company also introduced the FirstLine three-phase UPS for 10, 15 and 20 kVA applications with input voltage of 208, 220 and 480 VAC and a range of +10/-20 percent (166-229 VAC). Input frequency is 60 Hz +/- 5 percent, and it features full load walk-in from 25 percent to 100 percent of rated load in 10 seconds.

Staco says the online double-conversion UPS provides computer-grade power quality, and has a standard battery run time of more than eight minutes, with optional batteries for expanded run time.

FirstLine's transformerless power offers blackout protection and power conditioning. The company says front-end harmonic correction eliminates the need for additional filtering, and double-conversion technology protects the connected load from sags, swells, harmonics, noise and voltage imbalances without going to battery operation.

The FirstLine UPS is UL1778-listed, and is suitable for broadcast studios. A control panel located on the front of the freestanding NEMA 1

enclosure includes an alarm and remote monitoring through an RS-232 connection.

For information or to download a copy of Staco's new brochure, contact the company at (866) 261-1191 or visit www.stacoenergy.com.

APT Highlights WorldNet Oslo IP Option

APT showed new options for its WorldNet Oslo codec for multi-channel audio applications.

The company says the option to transport audio over IP in addition to E1/T1 links for STL/TSL applications opens up greater bandwidth for the transport of broadcast-quality audio and gives the user greater control and monitoring capabilities. The new IP connection enables broadcasters to provide access to multiple transmitter networks such as STM-1, SDH, XDSL, Point-to-Multipoint and multicast streaming.

APT also released Quad Cards and a 5.1 phase-locking feature for WorldNet Oslo. In addition to the stereo duplex cards available in analog and digital AES/EBU, the new quad encoder and decoder options enables the sending or receiving of up to four simplex channels per card.

The company says such high-density audio transport provides broadcasters with the ability to send up to 24 mono or 12 stereo channels on a single WorldNet Oslo chassis, which is suitable for STL connections and applications such as disaster recovery sites.

Phase matching is offered on multiple channels, which delivers audio fidelity for 5.1 contribution and distribution projects. APT says the ability to match the phase of multi-channel content ensures that the surround sound image remains intact throughout the 5.1 broadcast chain.

APT also displayed WorldNet Chicago Lite, shown, which offers digital audio over IP for bi-directional stereo audio transport. It features Enhanced apt-X for low-delay, and contact closures and opto-couples for remote status and alarms.

Contact Audio Processing Technology in New Jersey at (800) 955-APT-X (2789) or visit www.aptx.com.

Tieline Adds 3G, IP Connections, Intros TLR300B

Tieline Technology exhibited its Commander G3 field codec, which the company says has

been upgraded and offers the following options: audio over IP, LAN, WAN the Internet and 802.11x wireless networks; 3G broadband wireless cellular networks; analog POTS telephone lines, including leased 3 kHz dry pairs; wireless GSM cell phone network; ISDN, BRI, PRI and Inmarsat satellite circuits; and digital leased lines with X.21 interfaces.

The codec also offers a "failover" option, which allows broadcasters to go to a backup network should their main connection fail.

The company says the IP software and the 3G wireless broadband cellular remote software module also have been integrated into its i-Mix G3 codec.

Tieline also debuted the rack-mount TLR300B Commander G3 multi-platform studio audio codec, which offers a choice of sizes — 1 RU and 2 RU — and a choice of analog or digital AES/EBU audio inputs and outputs. Shown: The 2 RU TLR300B sits atop the 1 RU version.

Features include two expansion slots that accept the choice of POTS, ISDN, X.21 and IP; and algorithms such as AAC+, MPEG Layer 2, MPEG Layer 3, G.722, G.711, Tieline Music and



Tieline Voice. Also included are front-panel configurable communications buttons for local and off-air real-time communications.

Contact Tieline America in Indianapolis at (888) 211-6989 or visit www.tieline.com.

FlexRoute IP Suite Features DVB-IP Technology

International Datacasting Corp. says it released its FlexRoute IP Pro Audio Suite for the implementation of professional radio broadcast networks. The suite is based on the company's FlexRoute digital audio product line, and features SuperFlex DVB Internet Protocol technology for open standards, Multiple Channel Per Carrier operation, and IP LAN connectivity and applications, as well



conditional access and encryption options.

IDC's FlexRoute IP Pro Audio Suite offers coding rates and compression standards that include MPEG Layer 2, MPEG Layer 3, MPEG 4 AAC and apt-X. The line is HD Radio-ready, with metadata, RDS, Program-Associated Data and IP connectivity.

The system offers full bit-rate agility capable of operating at DVB carrier speeds selectable from 128 kbps to 45 kbps, which the company says is suitable for dedicated standalone systems as well as shared networks with other DVB services.

IDC also has a line of interoperable and interchangeable SuperFlex DVB satellite receivers as part of the FlexRoute IP suite. Current products in use for the implementation of digital audio networks include the SR2000plus Edge Receiver for background music, and the SFX2100 multimedia server appliance (shown) for hybrid Store and Forward with live streaming to a LAN.

Contact International Datacasting at (613) 596-4120 or visit www.intldata.ca.

Comrex Access Makes Land, Air Debut

Comrex showed its Access portable audio codec, which it says works reliably over most data networks including the public Internet, thanks to BRIC technology. The Access was part of an airborne codec broadcast, which took place immediately prior to NAB2006 aboard a Lufthansa jet traveling from Germany to New York.

BRIC technology enables 7 kHz bi-directional low-delay audio over IP networks using the BRIC-ULB algorithm, which has less than 100 ms coding delay; 15 kHz bi-directional stereo or mono audio over typical networks or a single dial-up phone line using the BRIC HQ1 algorithm; and usage on networks with high packet loss and packet jitter like the Internet.

Access delivers mono or stereo audio over services such as POTS, DSL, cable, Wi-Fi, 3G cellular and satellite. The company says it can be used on high-speed managed networks to deliver linear audio, but also includes coding algorithms that deliver 15 kHz stereo at low bit rates or low delay voice audio at rates as low as 10 kbps.

Optional AAC algorithms are available, including MPEG4 HE-AAC for audio quality at the lowest bit rate, and MPEG4 AAC-LD for minimal delay. These algorithms are licensed by Fraunhofer IIS.

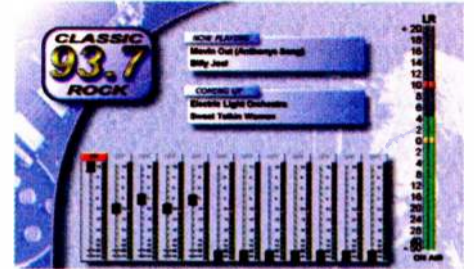
The rackmount version of the Access is shipping; the portable unit will be available later this year.

Contact Comrex Corp. in Massachusetts at (978) 784-1776 or visit www.comrex.com.



Logitek Updates vScreen Meter Display Abilities

Logitek debuted an updated version of its vScreen PC application for its Console Router Systems.



vScreen lets users customize operator interfaces consisting of faders, meters, buttons and graphics in the desired configuration. Applications include air switching controls, individualized control screens for operators, audio meters or lobby displays.

Starting with a blank screen, console and router control elements are pulled onto the screen and placed where desired. User-defined combinations of faders, meters, control buttons and graphics can be placed on the screen.

The company says the updated version is more flexible with regard to image display, backgrounds and labeling, and offers advanced meter display abilities. Additional highlights include "wallpaper" BMP and JPG graphic files; gradient pattern for backgrounds; adjustable height and width on meter displays; and choices of user-defined labels, active device names or active device aliases for meter labeling.

Contact Logitek Electronic Systems in Houston at (713) 664-4470 or visit www.logitekaudio.com.

ERI Shows 1180 Antenna Series, NEO-Hanger

ERI released its 1180 series broadband FM panel antenna, based on its 1080 series panel. The company says the 1180 series offers improved match, isolation and pattern performance in dual-input applications for combining analog and digital IBOC FM signals in a single master FM antenna.

The 1180 Series systems are designed with elements at DC ground, and the screens, transmission lines and power dividers bonded to the support structure. ERI says this eliminates any potential for static build-up and helps protect the system from damage and lightning.

1180 Series systems can be supplied in configurations with omnidirectional or directional azimuth patterns. Required power gains are achieved by stacking layers of the arrangement vertically on the support structure. The company says the number of layers and the vertical spacing between layers are the predominate factors in determining the vertical power gain.

The 1180 Series can be configured for mounting on an existing structure or can be designed and manufactured with an integrated support spine based on individual requirements.

Additionally, ERI debuted the NEO-Hanger vertical spring hanger, which has nylon jaws that provide full contact support around the transmission line outer conductor. The material has a low friction coefficient, minimizing potential for the hanger to bind and damage the transmission line it is supporting.

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

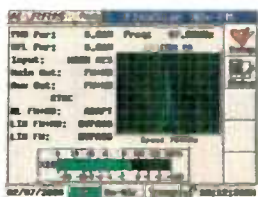


**"I recommend the FlexStar™ Exciter.
It's an extremely reliable way
to launch HD Radio™ broadcasting."**

*Bob Hensler
Vice President of Engineering
Colorado Public Radio*



FlexStar™ HDI-100 Importer HDE-100 Exporter HDX-FM/HD Exciter **Managing Content. Delivering Results.**



*Real Time Spectral Display
This exclusive Harris feature
provides easy verification of
FCC mask compliance.*

"We've found Harris' new Exciter, along with the Importer and Exporter, to be very flexible and reliable. There are more inputs on this Exciter than any other brand, allowing flexibility and minimal downtime. Plus, Harris is the first to include iBiquity's Exgine Architecture which gives us a simplified, more reliable installation. With the help of Harris, we now provide more streams and channels to the Denver population without adding transmission sites. I recommend the Harris FlexStar family to other radio groups. It's as easy as new technology can be to operate and helps us accomplish our goals."



assuredcommunications™

Broadcast • Microwave • RF • Government Systems



www.harris.com

For information call: 800-622-0022

HD Radio is a trademark of iBiquity Digital Corporation 2006.

Audemat-Aztec Adds to IP2Choice, Silver Line

Audemat-Aztec demonstrated new features for its IP2Choice transmitter remote control, two of which the company says give users new connection and control capabilities.



In a 19-inch form, IP2Choice is a modular system for remote management and monitoring. It can be configured to connect to remote site equipment through three serial ports, 128 digital inputs, 40 analog inputs or 64 relay outputs. Peripherals linked to the IP2Choice then become accessible with one telecom line. The IP2Choice

connects peripheral equipment with remote servers or to the Internet.

The Application Programming Interface is a tool for programmers to link an Audemat-Aztec IP2Choice with external equipment via one of the available serial ports. Users can write commands through the serial connection, read responses and configure actions based on the results. The API facilitates communication between the two units, incorporation of data and control functions into ScriptEasy graphical software, and integration of the external equipment into the overall control plan.

The DTMF voice interface feature enables management of the equipment and reception of alarms via phone.

The ScriptEasy viewer is a module that complements the ScriptEasy software, which allows users to see the status of each object of the script in real time. The touchscreen display is available as an option, and enables the user to view I/O status directly and exercise control functions from

the front panel.

Audemat-Aztec also debuted its Silver FM monitor and Silver transmitter remote control, two products added to its Silver line. The remote control features TCP/IP, 16 digital inputs, eight analog inputs, eight relay outputs and one RS-232 interface connection. The monitor is a FM frequency-agile receiver suitable for permanent station monitoring, and includes an embedded Web server and a SMTP server for sending alarms via e-mails.

Contact Audemat-Aztec in Florida at (305) 249-3110 or visit www.audemat-aztec.com.

Broadcast Tools Gets Switched

Broadcast Tools displayed two new audio control switchers. The ACS 8.2 Plus provides matrix audio switching of eight stereo audio inputs (on

Euroblock screw terminals) to two stereo and two mono audio outputs. Every input is available for assignment to any or all outputs. The ACS 8.2 Plus has a switchable audio monitor and optional AGC modules (factory installed) for each input. The ACS 8.2 Plus/RJ adds multiple RJ-45 connectors for all audio connections and fade capabilities for inputs assigned to output one. The ACS 8.2 Plus/RJ also has RJ-21X punchblock connectors for GPIO connections, as well as the ability to be controlled by front-panel switches, 5-volt TTL/CMOS logic and a RS-232 serial port. A USB adapter is available for both units.

Contact Broadcast Tools in Washington state at (360) 854-9559 or www.broadcasttools.com.

Belden Intros Brilliance CatSnake

Belden CDT Electronics Division debuted Brilliance CatSnake tactical field-deployable Cat-5e audio/video cables for use in patching Ethernet or other Cat-5e digital audio/video formats. The Cat-5e unshielded twisted pair cables are AES/EBU-compliant and use the company's Bonded-Pair design, making them suitable for indoor broadcast applications in high-traffic areas, as well as tactical, field-deployable for use outdoors and in broadcast trucks.

The company says the design bonds the insulated conductors together, maintaining consistent conductor-to-conductor spacing along the longitudinal axis, with no gaps to create impedance changes.

CatSnake UTP cables feature 24 AWG stranded bare copper conductors and polyolefin insulation. Belden says it has a heavy jacket wall version for medium-duty use or an "upjacketed" version for harsh applications, to ensure the portability and reuse-ability of the cables.

The cables offer stranded (7x32) conductors and matte-finished Belflex jackets. Both cables pass the -40 degrees Celsius

Belden also offers a line of Brilliance audio/video cable assemblies for the professional broadcast/entertainment market with various assembly types.

Contact the company in Indiana at (800) BELDEN-4 (235-3364) or visit www.belden.com.

Orban, Coding Technologies Release aacPlus Plug-in

Orban/CRL, with partner Coding Technologies, says a public beta for the new Orban/Coding Technologies AAC/aacPlus player plug-in is available. It is a Microsoft DirectShow component that enables MPEG4 aacPlus audio files and streams within version 9 or 10 of Windows Media Player. When installed, the free software enables Microsoft Windows Player users to take advantage of the low-bandwidth aacPlus audio format.

The plug-in supports standard ID3 metadata tags that display real-time stream data such as artist, album and song information. The company says aacPlus streams' compact bit rates virtually eliminate content rebuffering, a process that interrupts source playback and negatively affects the listening experience.

Additionally, Orban debuted the Opticodec 1010 streaming module for Digital Radio Express' FMeXtra digital SCA encoder. The software module permits direct streaming of encoded aacPlus audio from Orban Opticodec-compatible audio servers into the FMeXtra encoder and over-the-air to FMeXtra-enabled receivers. The company says the combined solution eliminates transcoding.

The streaming capture software is now a stan-



"Logitek makes audio distribution a breeze."



"WFLS needed a lot of flexibility in audio routing and mixing, and we wanted it at a reasonable price. Logitek was our answer. With the Audio Engine router and some easy-to-use control heads, it's simple to access audio in six studios for the four radio stations at our site. We can move audio everywhere and it's so much easier than what we were doing before."

"Our Logitek installation included a Mosaic digital console in the WFLS studio. It was amazingly simple to install and all of our jocks loved it right away."

"Logitek's customer support is impeccable—it's the best customer support we have had from any company, bar none."

Chris Wilk
Engineer, WFLS
Fredericksburg, Virginia

Logitek Electronic Systems, Inc.
5622 Edgemoor • Houston, TX 77081

info@logitekaudio.com

© 2006 Logitek Electronic Systems, Inc.

1.800.231.5870
713.664.4470

www.logitekaudio.com


Logitek
Console Router Systems



You'll find
our prices
reasonable,
our reasoning
priceless.

Keeping track of all the satellite and fiber optic communications products out there is a full time job.

That's why so many people come to **DAWN**CO. They count on us for everything from satellite antennas, receivers, LNBS, and position controllers to fiber optic broadband links, satellite links and data links.

We offer the broadcast TV, cable TV, radio and educational fields high quality equipment at down-to-earth prices.

DAWNco formerly known as Dawn Satellite.

But more than equipment, we offer expertise. We can examine your situation and your budget, and recommend exactly what you need. You save both time and money by making the best possible buying decision.

Call a **DAWN**CO expert with your questions by simply dialing **800.866.6969**. Use the same number for our free catalog, or find it all on the web at www.DAWNCO.com.



DAWNCO

Reasonable prices, priceless reasoning.

ard feature of the DRE FMeXtra encoder. The Opticodec 1010 line of streaming AAC/aacPlus encoders is available from Orban.



Also, FM and Internet may be getting most of the attention these days, but Orban/CRL introduced the Optimod-AM 9400, a five-band processor for analog and digital AM, both in one box.

Station analog and digital signals can receive separate treatment with respect to compression, limiting, threshold and time constants, while AGC and stereo enhancer can be shared.

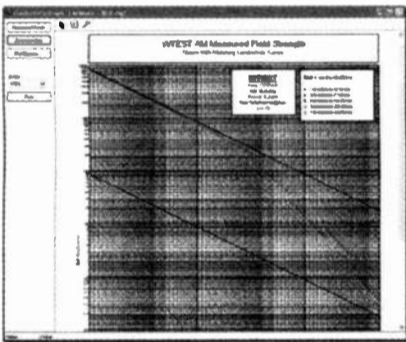
Features include automated gain riding, peak control, LCD and full-time LED metering, a real-time clock that allows automation of events at pre-programmed times and a "bypass test mode" which can be operated by remote control.

Software upgrades can be downloaded via the 9400's Ethernet or serial port, or installed locally by connecting to a Windows-compatible computer.

Contact Orban/CRL in Arizona at (480) 403-8300 or www.orban.com.

V-Soft Unveils 'Conductivity'

V-Soft showed "Conductivity," a computer program that analyzes measured AM field intensity data and creates plots in WYSIWYG format on the screen and printer.



Inverse Distance Fields (IDF) at one kilometer are calculated and conductivities are plotted. In most cases, there are several different conductivity breaks on a single radial. The user may specify the number of modes to plot (non-D and DA), select plot scaling and force a value of conductivity.

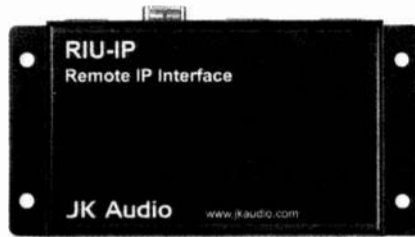
Conductivity is a stand-alone program and integrates with V-Soft's AM-Pro allocations program.

Contact the company in Iowa at (319) 266-

8402 or visit www.v-soft.com

JK Adds Remote Interface

JK Audio announced that its new RIU-IP Remote Interface would be shipping in July.



The unit adds IP remote control to JK Audio's Innkeeper 2 and Innkeeper 4 digital hybrids, with an on-board Web server that allows users to send and receive control data through their respective Web browsers — for example, with hardware in the studio and talent or producer in another. So calls can be screened and their levels can be controlled digitally from the remote location. The control connection is an RJ-45 Ethernet port; it connects to the Innkeepers via RJ-50 connectors. The RIU-IP requires no AC power.

Contact JK Audio in Illinois at (815) 786-2929 or www.jkaudio.com.

Moseley HS 900D Extends LAN to Transmitter Site

Moseley says its LanLink HS 900D LAN extender/data link gives broadcasters an integrated Ethernet/IP/RS-232 data transport system. The IP/Ethernet connection speeds of up to 1 Mbps extend the LAN to the transmitter site. Two RS-232 channels, adjustable from 1,200 bps to 115.2 kbps, provide commands and telemetry return data.

LanLink operates in the 902-928 MHz ISM band; the company says this means it can be deployed without frequency coordination or license filings. Because of its closeness in frequency to the 950 MHz STL band, it can be combined into an existing 950 MHz antenna system using its diplexer.

LanLink's 1 watt output is capable of paths more than 30 miles.

Features include a Webcam for transmitter site

surveillance, transport of song title and artist data to the RBDS generator, and multiple layers of network security such as password protection and 128-bit encryption. LanLink continually updates the off-premises server for backup, and an IP link transmits the IBOC data stream between studio equipment and the transmitter site.

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

Holophone Hears the Sound of Surround

At Holophone, CEO Jonathan Godfrey was espousing the merits of broadcast surround sound with the company's new H3-D 5.1 surround sound mic system (\$1695) and H4 Supermini, (\$2,495) due to ship this summer.

"At this price point, radio broadcasters can finally begin to experiment with Lt, Rt surround matrixing over a standard stereo carrier," he said. "The H3-D mic has six discrete microphones with XLR connectors. Our H4 Supermini has a six microphones and a built-in surround encoder with Lt, Rt matrixed outputs that virtually every surround decoder in every home theater receiver can decode into surround."

Godfrey likes the H2 or H3-D for concerts and sporting events, but prefers the H4 for on-the-go surround.

Contact Holophone in Ontario at (415) 352-7790 or at www.holophone.com

Fraunhofer Advocates 5.1 Surround

Fraunhofer Institute emphasized 5.1 surround for FM HD Radio. Unlike quadrasonic matrix surround of the 1970s, Fraunhofer said, its "Coded Discrete" approach delivers real surround and full separation and passes the original stereo mix to stereo listeners unaltered.

The company said that with 5.1 source material available from artists of all music genre and low-cost PC storage, FM HD stations can implement the Coded Discrete system. A 220 GB hard drive can store 1,200 surround songs with no compression.

Advocates tout surround as a solution for broadcasters who wish to deliver a listening experience that is realistic and an authentic reproduction of the original instrumentation and vocals as they were in the recording studio. WZLX in Boston announced plans to broadcast all of its format in 5.1 by summer.

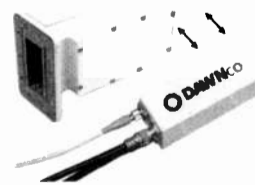
Contact partner company Telos/Omnia in Ohio at (216) 241-7225 or visit www.iis.fraunhofer.de.

DAWNco Shows Splitter/Amplifiers

DAWNco showed several models of amplified LNB power/signal splitters. The DED-774AMPA

is a wall-mounted 1x4 splitter/amplifier. The DIVINSUP-2-1X5A is a rack-mounted splitter/amplifier that can connect to two LNBs and split/amplify those signals five ways. The DIVINSUP-1x16AE is a rack-mounted unit that can split/amplify the signal from a single LNB 16 ways.

The manufacturer also showed premade fiber cable, made to order with connectors and a pulling eye, which can be used with its Fiberlink system to connect dish-mounted LNBs to receivers over long distances while preventing lightning damage. Also shown were C- and Ku-band LNBs with super-high stability (+/- 5 kHz), as well as the Starlook satellite channel identifier and SFS16x1 satellite feed selector switch, which can select from up to 16 LNB inputs.



Contact the company in Michigan at (800) 866-6969 or visit www.dawnco.com.

Shure's KSM9 Is Switchable Handheld

At Shure, the evolution of the KSM line continued with the KSM9 dual-diaphragm, handheld mic. It is switchable from cardioid to supercardioid. The company said the KSM9 is designed to maintain the same polar characteristics across the frequency response curve, resulting in easier dialing in of EQ.

The mic promises reduced proximity effect at either pattern and a two-stage shock mount helps reduce handling noise. The hardwired mic is available in champagne and charcoal gray finishes. It is also available as part of a Shure UHF-R wireless system, as the UR2/KSM9, in champagne or black.

Contact Shure in Illinois at (847) 600-2000 or at www.shure.com.

WireReady Joins Podcast Revolution

Repurposing radio content for podcasting was a major interest at NAB2006 and system developer WireReady said it is ready to meet that need with the new PodCastReady.

PodCastReady automatically records, converts, compresses and pastes together playlists of files and then publishes these online as podcasts with RSS feeds to one or more Web sites. The system can record and podcast existing shows, or schedule files stored in-house to be sent to the station Web site automatically.

The company promoted its other offerings including the NewsReady electronic newsroom as well as the AlertReady automatic alert notification system for EAS receivers and Amber Alerts.

Contact the company in Massachusetts at (800) 833-4459 or www.wireready.com.



Wireready's David Gerstmann

Teracom Has QuickSite System

Teracom Components says QuickSite is a compact, equipped radio station containing FM transmitter, antenna system and other components necessary to commence broadcasting by plugging the unit into a standard power outlet.

The company says it developed the platform as a means of providing flexible stations for various types of broadcasting such as FM, DAB and broadband Internet. Users specify the desired media, frequency and signal strength.

The standard station comes with a 100 W transmitter producing 270 W of ERP, and a two-dipole, vertically polarized antenna system featuring omnidirectional propagation with preferred direction. Other transmitters, antennas and options are available, including a separate Yagi-Uda antenna for receiving feed signals and allowing the unit to be used as a transposer.

QuickSite can be fed by most sources, and can be connected to existing antenna systems as an alternative to the integrated system.

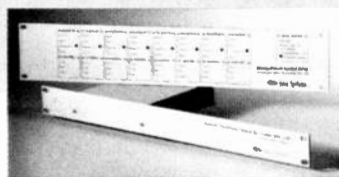
Teracom says it also has DAB/VHF combiners for Terrestrial Digital Multimedia Broadcasting, a new standard based on DAB that, like DVB-H, enables multimedia content to be broadcast to mobile phones, PDAs and in-car TV systems using the Band III radio spectrum. The company recently delivered DAB/VHF combiners to South Korea in connection with the start of the commercial terrestrial DMB network.

The combiners enable consumers to listen to

Control Solutions

Model RFC-1/B Remote Facilities Controller

- control transmitter from any telephone
- 8-64 channels of telemetry and control
- programmable control by date and time
- optional printer and modem adapters
- programmable telemetry alarms
- integrated rack panel



Model RAK-1 Intelligent Rack Adapter

- parallel printer interface
- internal modem for data transfer
- front panel status indicators
- battery backed power supply
- rack mountable chassis
- accessory package for RFC-1/B



End-to-End Solutions From SCMS

AudioArts Engineering D-75 Digital Live Radio Console



**Get Your Studio Solution
from the Dealer That Knows Radio.**



Install an AudioArts Engineering D-75 in your studio and you'll know you've made the right choice as soon as you power it up. You get the benefits of its predecessor, the D-70 plus more functionality.

The modular plug-in design is key for installation and service—making it easy and FAST for you to change configurations.

Even better is the fact that you can get it from the most reputable supplier in radio broadcast—SCMS.



Contact SCMS at any of its offices to discuss your needs.

HQ in Pineville, NC: 1-800-438-6040

Bob, Ernie, Matt Mike

Mid-South: 1-877-391-2650 Bob Mayben

Central: 1-731-695-1717 Bernie O'Brien

West Coast: 1-866-673-9267 Doug Tharp

Mid-West: 1-513-899-3036 Mary Schnelle

South-Atlantic: 1-770-632-1295 Art White

North-East: 1-315-623-7655 Jim Peck

South-West: 1-877-699-9151 Tyler Callis

Pro Audio 1-877-640-8205 Ric Goldstein



www.SCMSinc.com

music and view selected digital TV broadcasts on handheld T-DMB devices.

Contact distributor Acorn-RF in Maine at (207) 627-7474 or visit www.acornrf.com.

Songs to Your Eyes Makes NAB Debut

Songs to Your Eyes made its NAB debut after launching last year. The company's music library is targeted to high-end production. According to founder and CEO Opher Yisraeli, the library consists of a 54 CD collection featuring fine musicians, composers and producers in each musical genre and style.



The company says most well-known acts have a wealth of recorded music beyond what they release on CD. The idea is to license this for use for movies, video and radio productions.

The firm plans to grow the collection an estimated 30 to 35 new CDs per year. The music is tagged with metadata to allow for efficient searching for the right musical style and texture.

Contact the company in California at (323) 988-9725 or www.songstoyoureyes.com.

NPRSS Has Array of Services

NPR Satellite Services was on hand at NAB promoting its range of C-band satellite transmission broadcast capabilities reaching across the 50 United States as well as much of the Caribbean

and Mexico.

Beside providing non-preemptible C-band space segment, the organization helps with equipment and antenna selection including digital receivers, audio, codecs and satellite modems. Other offerings include emergency backhaul and back-up uplink facilities, analog to digital conversion and complete FCC licensing support.

Contact the company in Washington at (202) 513-2600 or www.nprss.org.

Mackie Satellite At Home and Away

Mackie announced the Satellite FireWire Recording System, a device that doesn't easily fit into traditional equipment categories. It's a two-part audio interface that combines traditional in-studio computer recording with live or in-the-field recording capabilities.



The product consists of the Satellite pod, is a two-channel interface with two Onyx preamps and A/D and D/A converters which can be bus or DC powered, and the Satellite Base station, into which the pod snaps for AC power, talkback and monitor switching functions.

By plugging the pod into the base station, the system becomes an eight-source, two-input, six-output audio interface with features including a single volume control for all six outputs to facili-

tate surround monitoring.

The Mackie Satellite FireWire Recording System is both Mac- and PC-compatible and is bundled with Tracktion 2, Mackie's multi-track audio and MIDI production software.

Onyx Satellite has an announced retail price of \$499.

Reach Mackie, a division of Loud Technologies, at (425) 487-4333 in Washington state or www.mackie.com.

Clear-Com Eclipse Converts Ports Into SoftVoICE Connections

Clear-Com, part of Vitec Communications, debuted its Eclipse line of digital matrix intercom platforms, as well as SoftVoICE 1.0 intercom software for use on personal computers running Windows XP, or with a PDA. The company says SoftVoICE enables station operators of a bi-located news bureau to speak with each other over the Internet.

SoftVoICE works with a 1 RU four-way VoIP interface frame that connects remote users over house LANs, private WANs and other communication links using Internet protocols. Each frame enables an Eclipse matrix to convert four of its physical station ports into SoftVoICE connections.

The Eclipse line includes three matrix platforms: Eclipse-PiCo, Eclipse-Median and Eclipse-Omega (shown). The company says the intercom system can be used to speak from one station to another or connect multiple studios.

Contact Vitec Communications in California at (510) 496-6600 or visit www.clearcom.com.

Henry Has a Match

Henry Engineering introduced three products. The USB Matchbox and USB Match Plus allow users to bypass computer sound cards with a higher-quality USB audio interface. The USB Matchbox has line-level balanced inputs and outputs on XLR connectors, and a muting monitor output for broadcast installations. The USB Match Plus adds a peak-reading level meter for accurate monitoring of input and output signals and a reference-grade headphone amplifier for critical aural monitoring of input or output audio. Both units are USB-powered.

The Digital D.A. 2X8 distributes AES/EBU digital audio signals in one-input, eight-output mode or as a pair of two-input, four-output DAs. Inputs and outputs are isolated and transformer-balanced. The unit has a built-in AC power supply.

Contact Henry Engineering in California at (626) 355-3656 or www.henryeng.com.

AudioStar Offers Remote Flexibility

Musicam USA debuted AudioStar, a software IP audio codec for PCs that works over LAN, WAN, DSL and ADSL, and the Internet. It is portable, runs on the user's existing PC or laptop and is suitable for remotes.



AudioStar has an auto-detect algorithm that recognizes the coding algorithm used in the transmission of content over an IP connection; it can then change user settings to match. It comes with a hardware dongle, which is a small USB hardware key required to run AudioStar unrestricted.

It can be used on laptops and PCs equipped with a 10/100 LAN interface and a DirectSound-compatible sound card. It can connect to another PC running AudioStar, and is also compatible with NetStar and RoadStar hardware codecs over IP.

Users can employ the sound card that comes with the laptop/PC, or purchase a professional sound card that provides the same performance as hardware codecs. The sound card in the laptop/PC must support full-duplex audio, or the ability to play and record simultaneously.

AudioStar supports the standard algorithms MPEG 1 and 2 Layer 2, MPEG 2 Layer 3, and G.722. It also supports MPEG 2 and 4 AAC, MPEG 4 AAC low-delay, and uncompressed PCM linear audio.

Additionally, users can multicast content to multiple locations running AudioStar, NetStar or RoadStar hardware codecs.

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

Bext Exhibits DXPT, FD 12000 TXs

Bext showed its DXPT FM transmitter, a 2 RU 100 watt Direct Digital Synthesis transmitter with a numerically controlled oscillator (shown). It is programmable from the front panel on FM frequencies, and includes a low-pass/harmonic filter so it can be used as an exciter or low-power transmitter.



Audio inputs include AES/EBU digital inputs and standard analog composite input. Front-panel USB ports allow computer interface for status reporting capability and remote control.

The company also has the FD 12000 FM transmitter. The 12,000-watt, solid-state self-contained unit is housed in a single rack cabinet. Bext says five 2.5 kW modules ensure continued operation, even in the event of a module failure. Each module is independent of the others, and can be removed for servicing at any time.

A new version of Digital Radio Express' FMeXtra technology was on display, in the form of an over-the-air demo with a signal broadcast in Las Vegas by radio station KXPT(FM). FMeXtra allows transmission of digital signals over the analog carrier. The company says the demo showed broadcasters how to add digital stereo, multiple audio channels and digital data up to 128 kbps to the existing analog broadcast.

Bext also debuted the LogR10 FM antenna, which it says is suitable for translator operators who need narrow-beam antennas.

Contact Bext in San Diego at (619) 239-8462 or www.bext.com.

Jampro Medium-Power Penetrator Is Available

The JMPC-HD antenna, or Penetrator HD, from Jampro is the medium-power version of the company's FM Penetrator. It is available with and without deicers or radomes, and is suitable for HD Radio broadcast. Each bay consists of a Penetrator-style radiating element with a 1-5/8-inch shunt feed line.



JMPC-HDs are factory-tuned to any frequency in the FM band II (87.5-108 MHz) range on a tower structure that best simulates the customer's actual tower. Multiple frequency design also is available. The company says the true circular polarization of the JMPC antenna enables audio performance for HD Radio, stereo and SCA operation. Typical VSWR is 1.1:1 +/- 200 kHz. A higher-power-rated JHPC-HD also is available.

Jampro also offers the RCHA-323-10HD digital FM radio combiner, which provides high levels of isolation and properly sized inputs for analog and digital FM transmitters. The combiner has been created according to HD Radio stan-

Important People. Powerful Radio Stations.

TOTAL HOME RUN

MusicMaster has slid into place at Emmis LA so easily . . . it's totally user friendly, has a great support crew, it's light years beyond our old music scheduling software, and it's considerably less expensive too . . . total home run!" —JIMMY STEAL, VP of Programming, Emmis Communications

WORK SMARTER NOT HARDER

MusicMaster Windows is next level. It allows you to work smarter not harder on constructing your music logs. —JD GONZALEZ, VP of Programming, Univision Radio

MAJOR IMPROVEMENT IN EFFICIENCY

MusicMaster for Windows is a major improvement in efficiency, compatibility, and reliability. . . . Our program directors have given it rave reviews.

—JEFF McCARTHY, VP of Programming, Midwest Communications Radio Group

NOW PLAYING ON:

- | | | | |
|------|------|------|--------------|
| KPWR | WNYC | WHDR | WSTR |
| KLVE | WUSN | KZLA | KKJJ |
| KLUC | KFMB | KLNO | KRST |
| WQHT | KESS | WFMT | KLTN |
| KJJK | KSCS | KUPL | Much Music |
| WIXX | WQCD | WRKS | Radio Disney |
| WMYX | KINK | KRCD | and many |
| WFLC | CJKR | KINK | more! |
| KSTP | CMT | KBBT | |

THE BIG SWITCH IS ON!



THE UNDISPUTED CHAMPION

MusicMaster for Windows is the undisputed champion! I've used MusicMaster since 1991 and it just keeps getting better and better! Thanks! —CRAIG POWERS, PD/MD, KKJJ-FM Las Vegas

THE INNOVATOR IN WINDOWS® BASED MUSIC SCHEDULING SOFTWARE

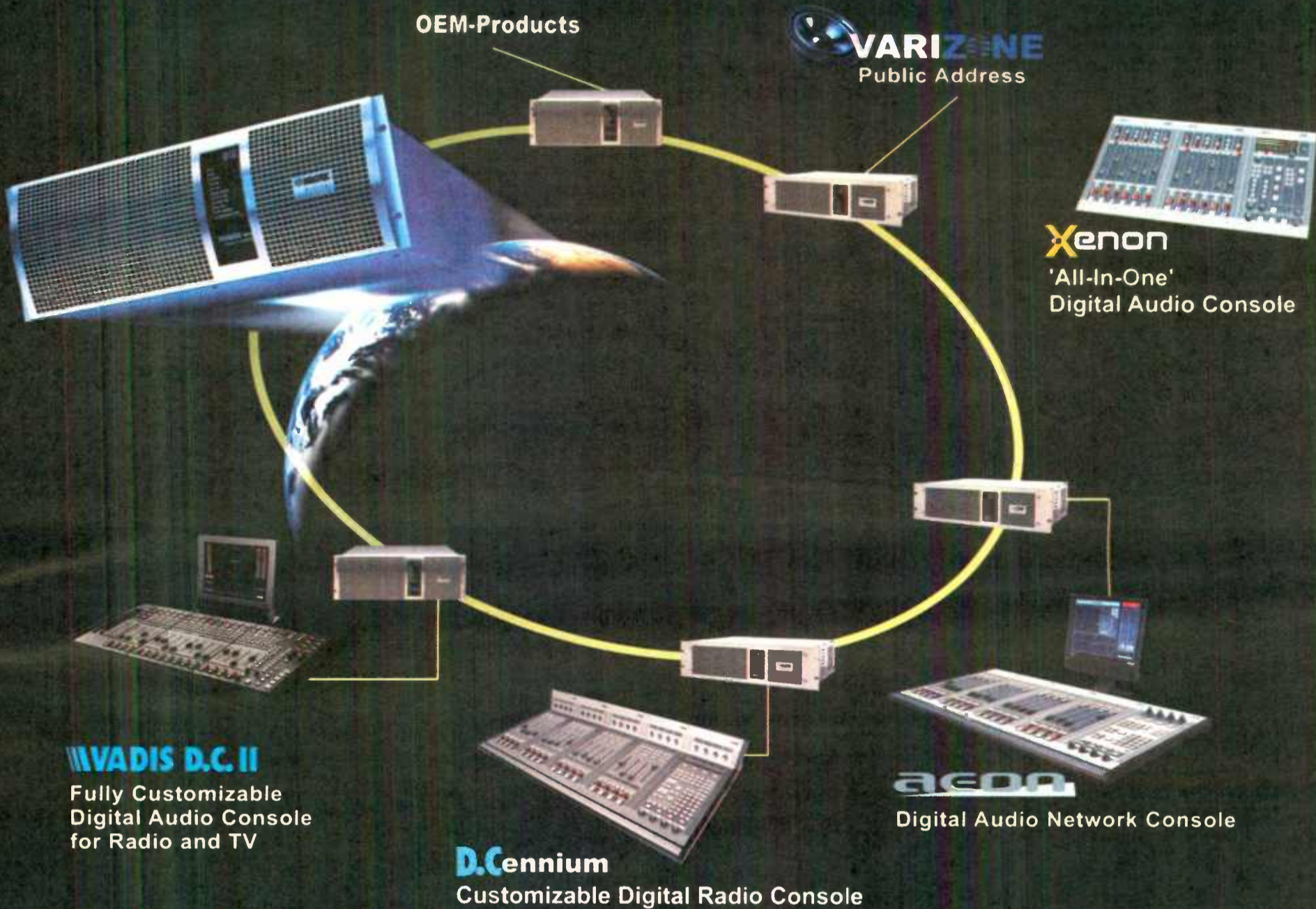
1-800-326-2609 or www.mmwin.com

Windows is a registered trademark of Microsoft Corporation.

VADIS

THE COMPLETE AUDIO/MEDIA PLATFORM AND SOLUTION

Decentralized Audio/Media Network



VADIS D.C. II

Fully Customizable
Digital Audio Console
for Radio and TV

D.Cennium

Customizable Digital Radio Console

aCDN

Digital Audio Network Console

MORE THAN JUST A DIGITAL AUDIO NETWORK

VADIS is the state of the art Audio/Media Platform for the professional audio industry with the versatility to provide solutions for numerous applications.

VADIS, the premier audio solution, integrates audio and control across multiple audio disciplines converging on-air, production, post production, live sound, and sound reinforcement onto one platform.

OUR TECHNOLOGY IS YOUR SUCCESS

- Integrated platform concept
- Fiber optic networking
- Any audio source – anywhere

For more information
visit www.klotzdigital.com
or call 678-966-9900


DIGITAL

dards. Self-cooling techniques provide safe combining without the need for cooling fans.

The combiner is available for use with station-provided coax and reject load, or as a system with these components included. A lower-powered RCHA-222-10HD also is available.

Contact Jampro in California at (916) 383-1177 or visit www.jampro.com.

Axel Exhibits Soundtrack Automation

Axel Technology showed Soundtrack, an entry-level radio automation software package for small stations, Webcasters, in-store music and similar applications.

Also on display was the Falcon 50 FM, a six-band audio processor for FM, DAB and DRM broadcasting. It is now available with front-panel controls and two large LCD displays.

The DML is a 24-hour audio logger software for certification of aired content. On display as well were digital telephone hybrids, the Macrotel Digital 1 and 2 lines.

Contact the company in Italy at 011-39-051-736555 or visit www.axeltechnology.com

DaySequerra M4SE: For Studio, Home

DaySequerra says its M4SE HD Radio tuner was developed in response to HD Radio broadcast engineers who wanted a version of the company's M4 tuner that also could be used at home.



The M4SE has analog, HD Radio MPS and multicast tuners, and is suitable for professional and consumer use. Additionally, it is available

with optional satellite radio and Internet streaming audio modules.

Features include 20 preset stations on each band; low-distortion, Class A-biased audio outputs that deliver +4 dBV on XLR connectors; and a 5.1 surround capable transformer-isolated 110 ohm XLR for AES digital audio output. DaySequerra says Class-M audio output circuitry uses current-feedback dual mono amplifiers to deliver the impact of live and pre-recorded broadcasts.

The M4SE's multifunction vacuum fluorescent display provides HD Radio program-specific data information, including station, title, artist, album, genre and comment for HD Radio MPS and SPS multicast signals.

The anodized aluminum chassis houses dedicated RF, audio and power supply modules that, along with firmware updates via Flash-programmable memory, anticipate the growth of new HD Radio services, the company says. This feature also provides the ability to add an optional satel-

lite radio or Internet streaming audio module after purchase.

Contact DaySequerra in New Jersey at (856) 719-9900 or visit www.daysequerra.com.

Neural Demos NeuStar 4.0 Codec Preconditioning

Neural Audio and Harris Broadcast debuted the NeuStar 4.0 codec preconditioning audio system for HD Radio, Internet, ISDN/POTS and satellite, as well as DRM, DAB, compressed STLs and satellite uplinks.



The companies say NeuStar 4.0 and its new software version, NeuStar SW4.0, enable broadcasters to transmit supplementary digital audio channels on FM at 16 kbps with minimal degradation of quality.

Neural says the NeuStar 4.0 corrects anomalies in audio content before they are encoded through the HDC codec. The company demonstrated codec performance on four multicast streams at bit rates down to 16 kbps.

The 1 RU NeuStar 4.0 offers DSP; user-friendly front panel and TCP/IP Web control; and upgrade capability. It can perform standalone or in tandem with traditional audio processing.

Neural also displayed NeuStar SW4.0, a software version of NeuStar 4.0. The software upgrade has the features and processing algorithms of the NeuStar 4.0 hardware, which the company says allows broadcasters to monitor and process multiple digital radio channels or Internet streams in the same "box." It runs on a Windows XP computer or server including the HD Importer.

NeuStar SW4.0 is available as an embedded pre-installed solution in the Harris Flexstar, or as an upgrade for an HD Importer.

Contact Neural Audio in Washington state at (425) 814-3200 or www.neuralaudio.com; or Harris Broadcast Communications Division in Ohio at (513) 459-3597 or www.broadcast.harris.com.

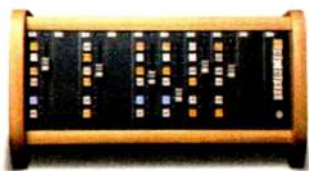


New Rubicon-SL Console Control Surface

A "junior" Rubicon™ for less demanding studio applications. Offering full router source select, four mix buses, an unlimited number of mix-minus, mode, pan/balance, talkback, and more, SL is an ideal replacement for a dated analog console. Rubicon-SL fully integrates into an SAS 32KD Mixer/Router System.

INTRODUCING THE EXPANDING FAMILY OF THE SAS CONNECTED DIGITAL NETWORK.™

New Rubi-T Mini Console Control Surface — Ideal for voice tracking rooms, news booths, edit booths, announce booths, effects mixing, and more. Just 6" high, Rubi-T's input module features a full-length 100mm P&G fader, channel ON/OFF, and 4 programmable source select or bus assignment buttons. Input, monitor, talkback, meter, remote control, and other modules are easily configured.



New RIOGrande Stand-Alone Mixer/Router — RIOLink, the SAS Remote I/O chassis for the 32KD, has grown into a full-featured stand-alone mixer/router, a junior version of the 32KD. Use it with Rubicons, SLs, Rubi-Ts, or simply as a powerful 32x32 analog and digital router. Connect two RIOGrandes with CAT5 or fiber for a great 64x64 mixer/router system.

With Rubicon, Rubicon-SL, Rubi-T, 32KD, and RIOGrande, the SAS Connected Digital Network has evolved to meet a wide range of budgets and requirements. In fact, it is now the "go-to" solution for hundreds of stations across the country moving into router-based networked control systems—providing the industry's most versatile and flexible user-friendly consoles, powerful routing of thousands of channels, integrated IFB/talkback/intercom, serial/GPI/IP control, and so much more.

Whether you're building a Top-10 multi-station facility or a simple single air studio, SAS has the perfect system for any market, any where.

For more information, call 1.818.840.6749, or email radio@sasaudio.com.



**SIERRA
AUTOMATED
SYSTEMS**

www.sasaudio.com

Aeromax-HDFM Offers Multiband Processing, 5.1 Encoding

Linear Acoustic showed its Aeromax-HDFM multichannel digital processor, which uses programmable audio processing for main FM and HD signal paths, and provides separate multiband processing for two supplementary audio channels. Additionally, it provides 5.1 surround sound encoding via the company's compatible matrix system.



Processing functions such as two-band AGC, multiband compression and limiting, stereo enhancement, source noise reduction and multiband look-ahead peak limiting, are provided for FM and HD paths. Signals are split into two paths at this point.

The HD audio is output as an AES-format digital signal, while the FM audio is upsampled, then further processed with the standard 50- or 75-microsecond pre-emphasis, filtering and distortion-minimized clipping before being applied to the digital stereo encoder. After stereo encoding, clipping can be applied to the resulting composite signal.

The composite baseband signal is combined with externally applied SCAs and output via a high-current driver capable of interfacing with an exciter.

Linear Acoustic says standard features are augmented by a separate processing chain for the auxiliary HD audio that is identical to the primary HD path. This structure can be run as two-channel stereo, or two independent mono channels.

Contact Linear Acoustic in Pennsylvania at (888) 292-3117 or visit www.linearacoustic.com.

WinRadio Adds Card 01

WinRadio Software was at NAB. The French company said it has provided systems for radio since 1997 and now has more than 1,300 systems installed. It supports 14 languages.

Functions include editing, scheduling of music and advertisements, data transfer, automatic and live play out, logging, archiving and reconciliation of logs. The system allows the user to split programs in several ways. Programs can be made suitable for local opt-outs up to national network use.

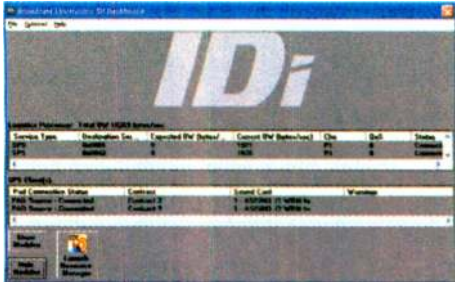
The company uses Digigram sound cards are used for its radio tools, which the supplier says assures stability with the new generation of Windows NT-based operating systems.

WinRadio also has extended its line of control boxes, adding to its INT 103, a secured connection interface, between the PC and the console, and Voice Mix 01 box, used to record voice tracks on-air. WinRadio launched its Card 01 interface, a complement to its on-air cartridger; it comes in a box with 32 user-definable keys. Each key can be assigned a jingle, liner, title or category.

Contact the company in Quebec at (450) 973-6603 or visit www.winradio.ca

BE Talks Data, HD and Multicast

Broadcast Electronics showed a 25 kW transmitter based on its 4MX medium-wave digital transmission technology. The company's 4MX is the second in a line of MW transmitters based on 4M Modulation, a method of modulating the duty cycle of the radio frequency directly to produce a more linear output waveform.



BE also hosted what it called the first public demo of four audio program channels over HD Radio, plus a closed-caption radio service for the hearing-impaired designed by NPR Labs that runs on part of the Advanced Application Services data stream.

BE is providing PAD such as song title and artist text for XPoNential Radio, an NPR HD2 channel featuring a AAA format and produced by WXPB.

BE debuted its Dashboard upgrade for its importer line (shown). The Dashboard, it says, offers intuitive menus as well as automated restart, differentiating the IDi 20 Data Importer. "A common complaint by early HD2 multicasting adopters has been on-air continuity, in particular re-launching importer functions should a power or other transmission failure occur," the company said. The Dashboard includes a click-and-go startup feature that can be remotely accessed through a network or Internet connection.

BE and Dolby Labs conducted a demo of surround for HD Radio to "illustrate the ease of studio integration as well as the quality of Dolby surround sound through the AudioVault environment and the BE transmission chain," the companies stated.

"Total Radio" was a theme. The company

hosted a "Pavilion of New Technologies," featuring NPR Labs, Traffic.com, Mozes and FM411. Among technologies featured were text services for the deaf, audio services for the blind, billboard text broadcasting and personalized radio services such as instant messaging song favorites and traffic navigation text.

Nearby BE talked about expanded offerings from The Radio Experience with studio applications for text generation and management. It showed RDS applications encoded by its RDi 20 generator and picked up by its RMi 10 RDS receiver, both now in production.

The company showed a multi-format, HD2-friendly version 9.5 of the AudioVault media system. Central to the software version is a FlexScreen approach to the user interface, which gives broadcasters various profile options for personalized, on-screen layout of the functions used in their studios.

Contact the company in Illinois at (217) 224-9600 or www.bdcast.com.

Inovonics 261 Is Stereo Utility Processor

In addition to its "Cool Stuff"-winning 532 modulation monitor, Inovonics gave attendees a look at the Model 261 all-digital stereo utility processor, described as an economical and unobtrusive means of normalizing and controlling audio levels in an all-digital or mixed-signal plant.

The unit has gated, gain-riding AGC, program dynamic range compression and final peak control. It can be configured quickly to incorporate a single basic function independently, or to utilize all processing options for comprehensive program audio control.

Also shown was the Model 264 Quad Leveler for loudness normalization. This hosts four separate and independent channels of analog audio gain control. They can be used separately for mic

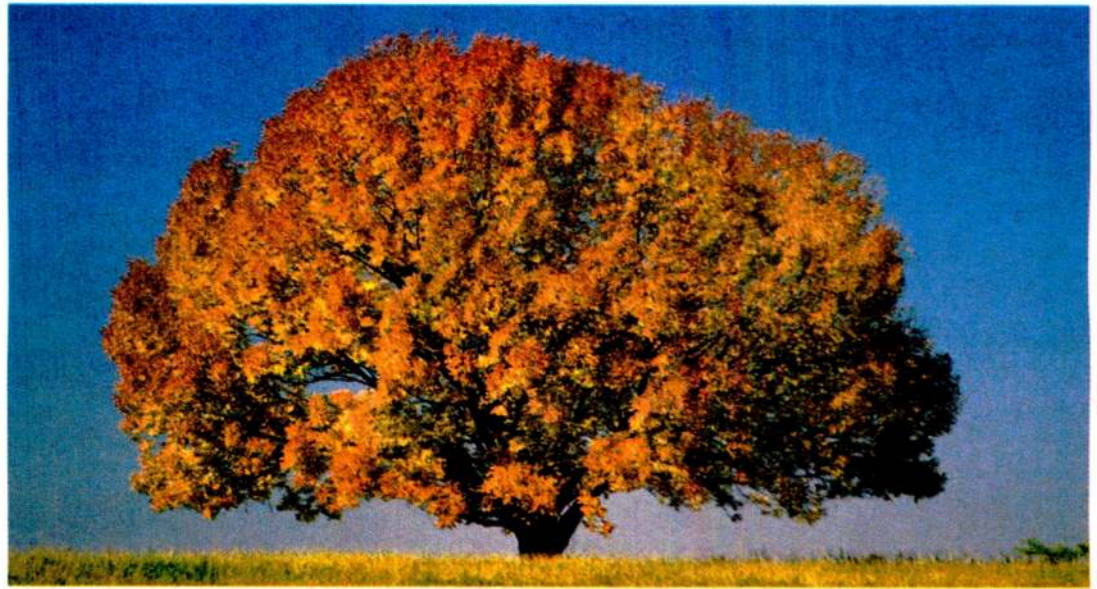
leveling or other monaural uses. They can also be linked selectively for dual-stereo or split mono/stereo program control.

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

TransRadio Shows DRM Exciter

TransRadio SenderSysteme Berlin was at the show with its line of FM and AM transmitters, and talked about the DRM DMOD2, a line of exciters for DRM broadcasting in the AM bands. Wide frequency range from 9 kHz to 27 MHz and a flexible platform make it suitable for most other analog, digital and simulcast modulation modes, the company says.

An included GPS receiver assures applicability for single-frequency networks. The company says tests in medium-wave, done in cooperation



In times of change....

Our commitment stands firm.

With all the news and hoopla over dMarc lately, the news striking home was no doubt our strong commitment to leadership in station automation technology. Not only is that commitment as strong as ever, but it's growing ever stronger.

dMarc spends more money on R&D perfecting our industry-leading digital automation systems than do all the other automation companies combined. For our client stations, that means true peace of mind knowing that not only do you have the best digital solutions in the industry, but the inside track to even better technology in the future.

The best digital systems.
The best broadcasting solutions.
The best service

ALL FROM DMARC. STILL.

1-888-438-7268
www.dMarc.net

Scott Studios Maestro

680 Newport Center Drive, Suite 150, Newport Beach, CA 92660

dMarc
from Google

with T-Systems International Media & Broadcast, and in shortwave by the DRM consortium, showed the system is suitable for SFNs.

Contact the company in Germany at 011-49-30-33978-107 or visit www.tsb-ag.com.

Nautel Ramps Up At Bangor

Nautel Ltd. said shortly after NAB that Edward Iannotti has joined the company as general manager of its U.S. operation, in Bangor, Maine. Iannotti was a long-time employee of Texas Instruments and was GM of its Leadframe division.

Earlier this year, Nautel announced that Peter Conlon had joined the company as president and CEO. He is former CFO of Positron Fiber Systems Corp. where Nautel said he "played an instrumental role in driving the business that resulted in PFS being acquired by RELTEC Corp. in 1998 for \$200 million."

At NAB2006, Conlon signed an agreement with John Uvodich, president of Continental Electronics. The leaders of the two companies said the deal will allow both to offer customers a range of HD Radio digital systems and products, while playing to each company's strengths: Continental will be able to offer solid-state Nautel gear in the United States, while Nautel will be able to offer Continental high-power tube equipment in Canada.

"This gives broadcasters single-point access to Nautel's rich expertise in solid-state and digital adaptive precorrection FM exciter designs in conjunction with Continental's cost-effective high-power tube technology employing innovative linearization techniques," they said in the announcement.

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

MPR Chooses Genelec for Annex

Genelec told attendees about the use of its monitoring at Minnesota Public Radio.

The public radio network is opening an expansion of facilities in St. Paul, more than doubling its headquarters. Nineteen new studios, control rooms and edit suites are outfitted with Genelec monitoring.

Spaces include recording studios, control rooms and edit bays. Four control rooms are fitted with Genelec 8030A monitoring systems and 7050B active subwoofers; two control rooms have Genelec 8040A monitors and 7060A subs.

Two broadcast studios employ Genelec 8040A monitors, while the news booth uses Genelec 8020As. Ten edit suites are equipped with Genelec 8020A monitors and 7050B subs.

Among the company's offerings at NAB, Genelec showed its smallest speaker system to date — the new 8020A, which measures 8-7/8 by 6 by 5-5/8 inches. The system is intended for monitoring in difficult listening environments, particularly those characterized by lack of space.

The 7050B LSE subwoofer is described as a partner to the 8020A for stereo and surround applications.

The 8020A Bi-Amplified Active Monitor retails for \$430, while the 7050B Active Subwoofer lists for \$1,095. A three-piece 8020 TriPak retails price of \$1,825.

Contact the company in Massachusetts at (508) 652-0900 or visit www.genelecusa.com.



Fanfare Does Away With Translator Remod

Fanfare showed the FP-TRO-1 at Crown Broadcast, which it says does away with demodulation and remodulation at a translator.

The TRO-1 will convert any FM in-band signal, including FM analog and HD Radio, to another on-band frequency, with a command through its RS-232 serial data I/O or front-panel control set. The unit is capable of producing a fully quieted signal in areas where other receivers are struggling or have failed, the company says.

It uses NTP technology (for "No Tail Pair"), a process developed by Omega Reception Technologies Inc. "The TRO-1 does this without the usual, lossy demod/remod procedure," the company stated. "Further utilizing its NTP capabilities, the TRO-1 is able to manicure the signal, cleaning it of extraneous artifacts and thereby ensuring that it is always a 99 percent-plus duplicate of the original signal."

Fanfare calls this the first total translator/receiver package that offers "on the fly" frequency conversion.

Contact the company in New York at (800) 268-8637 or www.fanfare.com.

DK Adds Features To MSD Family

DK-Technologies promoted new features for its MSD audio meters.

For example, a PC can now be connected for the transfer of data for logging signal parameters. This, the company says, opens applications for monitoring of signal levels in playout areas and transmission links and by acceptance testing of program material.

Also new is the extended loudness measurement showing the loudness graphical as a function of time. Additionally, the time code may be coupled to the signal, enabling the search for any particular location in the recording. These features are helpful when adjusting loudness to within a given limit without sacrificing the dynamics of the sound, DK says.

MSD600M meters, which include a JellyFish display for visualization of surround, are now delivered with a CD containing utility software DK-Matrix for configuration of the instrument including connecting inputs to the display and the outputs, and for labeling of audio signals.

The software offers the user the possibility of designing PPM scales and the upload of standard scales.

Contact the company in California at (831) 335-5299 or visit www.dk-technologies.com.

Netia Expands Media Logging

Netia launched a line of audio monitoring products. The offering is integrated with the company's flagship Manreo and Radio-Assist media-management solutions and consists of Chronos and Dragster software.

Chronos automatically captures audio and video feeds during a broadcast and offers real-time MPEG-4 encoding for video and MP3 or WAV encoding for audio. Users can retrieve video clips without interrupting the recording; the system automatically archives and purges recorded files stored locally or on the network.


Dragster is a real-time engine that monitors the appearance of specific images among thousands of clips, triggering such actions as recording, switching the grid, playback from a server and notification in a database. It features full-screen image recognition as well as recognition

of parts of images.

The company described the offerings as "automatic, continuous capture of audio and video feeds and deep, comprehensive searching technologies."

Applications of the Media Logging line include compliance with legal requirements, monitoring of competition and retrieval of recorded sound and video.


Contact the company in New Jersey at (888) 207-2480 or visit www.netia.net.



Our June 21 issue contained details on the products that won Radio World's "Cool Stuff" Award. The list:

- AKG Acoustics HSC & HSD Headset Series
- Armstrong Transmitter TRX-HD Series Digital FM Translators
- Audemat-Aztec Goldeneagle HD AM, FM, AM/FM
- Audio-Technica AT2020 Cardioid Condenser Microphone
- Axia Audio iProFiler
- Broadcast Electronics Big Pipe LT
- Broadcast Electronics The Radio Experience Message Manager and Modules
- Broadcast Tools WVRC-8 Eight-Channel Web/Voice Remote Control
- DaySequerra HD Radio Market Area Monitor
- DaySequerra M2.0 HD Radio Modulation Monitor
- Harris Flexstar HDX-FM/HD Exciter
- Harris MasterLink-IP
- Harris NetWave Digital On-Air Console
- Harris NeuStar SW4.0 Codec Pre-Conditioner
- Henry USB Match Plus and USB Matchbox
- HHB Communications FlashMic DRM85
- Holophone H3-D 5.1 Channel Surround Sound Microphone
- Inovonics Model 532 FM/HD Radio Mod Monitor
- JBL Professional LSR4300 Series Studio Monitors
- Kintronic Laboratories High-Power RF Contactors
- Mother USA Inc. FM411
- Orban/CRI. Optimod-AM 9400
- Ricsonix Blue Wireless
- Shively Labs 2900 Series Low-Power FM Notch and Bandpass Filters
- Tieline Technology Commander G3
- V-Soft Communications Probe Version 3
- Wheatstone Vorsis AP-1000 Digital Spectral Processor
- WIT easi-8 Remote Monitoring and Control System

Today's top engineers need a reliable source of deep tech info.



Now they have it.

Radio World

ENGINEERING EXTRA

Published six times a year, this "deep tech" version of Radio World is pure technology, with articles written by engineers for engineers, and edited by a veteran radio broadcast engineer. White Papers, in-depth engineering session coverage, technical op-ed and analysis articles — if it's important to radio engineers, you'll find it in **Radio World Engineering Extra**.

Sign up now for your **FREE** subscription at:
<http://www.rwonline.com/eng-extra>

Even if you are a Radio World subscriber, you must sign up to receive RW-EE.

got tools?

cables & connectors
racks
tools
problem solvers
test gear
& much more

www.systemsstore.com

NHPR Expands Service to Plymouth

New Hampshire Public Radio has improved service to Plymouth, N.H., by adding a 200-watt translator, W247AO, at 97.3 MHz.

The antenna that rebroadcasts WEVO(FM) in Concord sits atop Boyd Hall on the Plymouth State University campus. The network said there are 8,000 residents in the area, which previously received NHPR on a different, less powerful signal.

John C. Huntley is director of engineering for New Hampshire Public Radio; the president and general manager is Betsy Gardella. The translator project cost \$40,000, according to station officials.

Electronics FXi 250 exciter and Inovonics Model 631 receiver. The receive antenna is a Scala CLFMRX-HRM that receives WEVO at 89.1, which is 31 miles distant.

The station is using an EMR 6354/SBD-1 (89.1) 4-inch cavity band-pass filter with 2 dB coupling between the antenna and receiver input; it is also using an Angle Linear model 89GNT preamplifier with 24 dB gain / NF 0.3dB and a 6 dB inline pad for a fade margin of 36 dB, Huntley said.

"As this is a commercial-band translator, it must pick up the translated station off-air," he continued. "WEVO has been using the BE FMi 201 HD transmitter,

in low-level combined mode, as a back-up at 2 kW on the separate and lower antenna used for HD (separate antenna) operation. I want plenty of 'fade margin' on this installation for when the backup is in use."

The translator is served by a Powerware 5125-1000 UPS. PolyPhaser inline lightning protectors — model IS-50NX-C1 — protect the equipment end of the transmission lines.

The network also recently established new service in Nashua at 88.3 MHz and Portsmouth, at 103.9.

Tell *Radio World* about your installation and send photos. E-mail radio.world@imaspub.com.

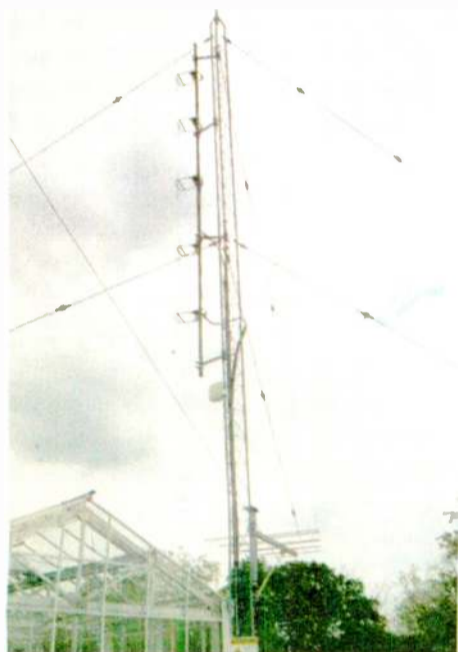
Letters to the Editor

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Letters should be 100 to 300 words long; the shorter the letter, the better chance it will be published in full. We reserve the right to edit material for space. Longer commentaries are welcome but may not reach print as quickly.

Include your name, address and contact information, as well as your job title and company if appropriate.

Send letters via e-mail to radio.world@imaspub.com, with "Letter to the Editor" in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.



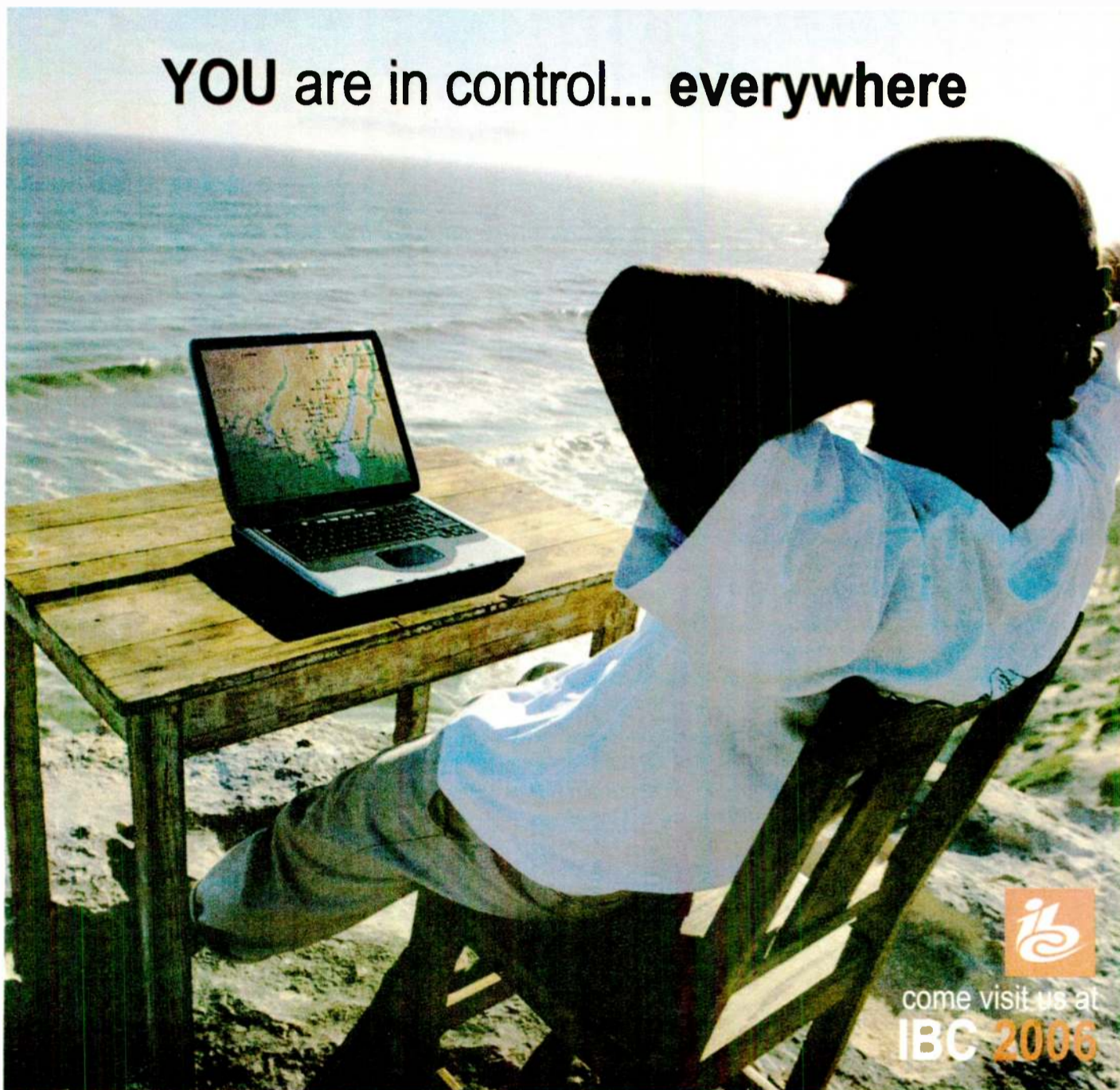
Antenna Atop Boyd Hall



Blue units are Shively 2912 transmitter isolation cavities, gray is the EMR receive bandpass.

The antenna shares the tower and support pipe of WPCR(FM), which is at 91.7. The transmit antennas are Shively 6812B low-power antennas. Huntley said the two bays for the translator are interleaved with the three of WPCR. "The interleaving provides a fair amount of isolation," he said. "However, we have installed a Shively 2912 notch filter on the output of each transmitter. Measured by Shively, after installation, there is 55 dB isolation in one direction and 39 dB in the other."

The translator uses a Broadcast



come visit us at
IBC 2006

ANT Group Remote Control for Broadcasters

 **NetPOD the new ANT version of system management software**

- Easy setup, advanced features
- Client server multi - user environment
- Comprehensive interface
- SNMP compatible
- Map based GUI



ANT Group S.r.l. - Via Giroli, 76 25085 Gavardo Brescia Italy

Tel: +39 0365 34558 Fax: +39 0365 371960 - email: sales@antgroup.it - site: www.antgroup.it





Radio World, July 5, 2006

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

I Don't Like Squirrels and Snakes

by John Bisset

Bob Meister was reading the May 24 column about methods for securing signs to towers and fences. He writes, "I always learn something."

Recall that Mark Ness recommended the aluminum wire that's used to hold chain-link fences to their support poles as a method of attaching signs.

While this wire is fairly robust and won't rust away, it can still be unwrapped with strong hands and relatively simple utensils. But for some reason, it's also attractive to squirrels, which love to run along the top rail of chain-link fences and chew on the aluminum wire.

Figs. 1 and 2 show the damage done to the fence of Bob's neighbor. Several of the wire ties have been replaced already, but 90 percent of them were damaged over the past dozen years.

Insulated "electrical" wire is probably much better, and it needs to be twisted, soldered, welded, whatever, to keep prying hands, screwdrivers and pliers from coming along and undoing all your hard work.

Any type of wire, though, is easy to cut with one of several types of pliers, side cutters and even garden pruning tools. The more secure, the better. Maybe short lengths of plastic-coated stainless steel aircraft cable are worth considering. One long piece of this cable, woven between the fence and the sign, and secured with a bolt clamp should discourage vandals.

Another thought: If there's an outer security/property fence and an inner tower/protective fence, consider putting the signs on the inside of the inner-most fence. This may make the sign less likely a target for theft, and since it's behind



Fig. 1: Teeth marks. Aluminum hookup wire can be damaged by more than sidecutters.



Fig. 2: Squirrels have chewed on aluminum hookup wire.

two fences, it takes that much more effort and time to get to.

Bob brings up a point when working with metal around broadcast sites. Remember that contact made by rusty

metals (bolts, wires, etc.) can also be a source of intermod, mixing and re-radiation, especially with nearby VHF and UHF two-way radio services.

Bob Meister, WAIMIK, can be reached at bmeister11@comcast.net.

Harry Bingaman is engineering manager for Sunbury Broadcast Group in Sunbury, Pa. Commenting on the earlier photo of a dead mouse in a tube carton, he says, "None here!"

Harry recently went for his weekly inspection of the WQKX(FM)/WEGH (FM) site. As he hoofed it back to the power distribution panel he discovered the shed skin of a visitor, seen in Figs. 3

and 4. Harry measured the skin at 6.5 feet, stem to stern.

He'd been wondering why he didn't need to refill the mouse bait canisters. Now he knows. Harry says it's most likely a Black Racer, which are great "mousers," but he adds he'd rather have a cat.

Want to gain some respect? Bring a snakeskin to the station receptionist or salespeople. The skins also will probably guarantee that no one will want to visit your transmitter site.

This is a time of year to use caution not only in but around transmitter sites. Once, as a chief engineer, I decided to use a day of nice weather for cleanup, getting rid of numerous metal poles and leftover fencing materials that had been stored for years at a tower base. There were several 12-foot long, 3-inch diameter poles that had been baking in the sun; they were the first to go.

See SNAKES page 37 ►

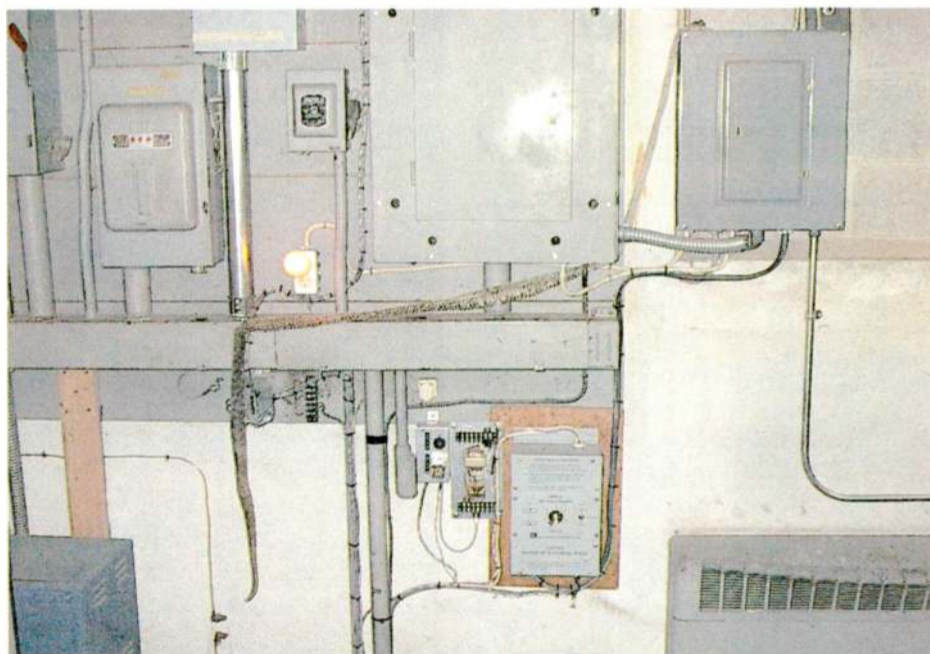


Fig. 3: Woven between the electric conduit is the sign of a visitor.

The Definitive FM Rebroadcast Receiver

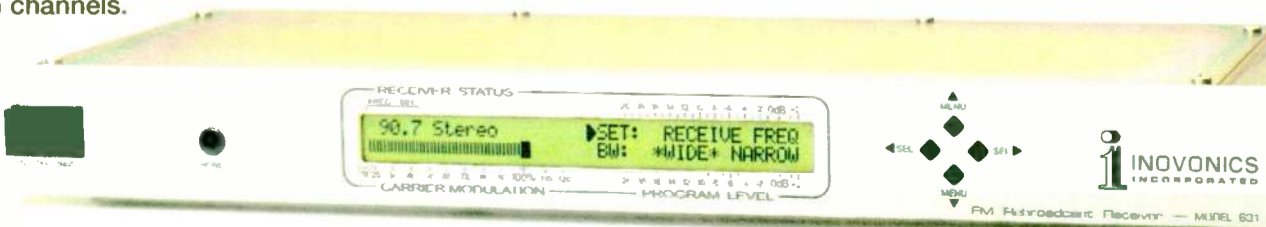
The obvious choice for translator and other critical applications.

The 631 is a truly professional, broadcast-quality FM receiver with unique features and excellent specs. Setup is entirely menu-driven from the front panel, with nonvolatile memory for all settings and a tamper lockout. Outputs include variable composite/MPX and balanced program audio, as well as alarm tallies for carrier loss and loss of audio in either or both channels.

Front-panel metering may be scrolled through RF signal level, multipath distortion, MPX and L/R audio levels. A selectable IF bandwidth tames aggressive adjacents, and carrier-loss muting and an overdeviation limiter protect the rebroadcast signal.

Model 631
\$1390

Inovonics
1305 Fair Ave. • Santa Cruz, CA 95060
TEL: (831) 458-0552 • FAX: (831) 458-0554
www.inovon.com • e-mail: info@inovon.com



Download full spec sheets at www.inovon.com

Conquering the Digital Media World

... One Format at a Time

by Skip Pizzi

Correspondence from a colleague (June 21, page 54) took issue with one of my columns ("Broadcasters, Pick Your Poison," April 20).

The reader — Ira Wilner, CE at Monadnock Radio Group, Keene, N.H. — felt compelled to point out that Webcasting was a costly option for both broadcasters and listeners, arguing that over-the-air (OTA) broadcasting was "the only effective way to reach a truly large audience at minimal cost." He agreed with the column's point that radio broadcasters should participate in popular alternative media, but felt that they should not lose sight of their "primary business, OTA radio," and thus he was "a strong champion of HD Radio multicasting."

Of course, I agree with Ira's premise regarding the undeniable cost-effectiveness of OTA broadcasting, and that it's still broadcasters' primary business. I hope that nothing in that column would lead anyone to believe otherwise. Let me take this opportunity to clarify that these points are unquestioned — probably by everyone.

Nevertheless, when seeing such reactions, I feel even more strongly that this kind of "fundamentalist" view can be used as a form of denial toward the changes that are rapidly affecting all media forms. So I'm devoting this column to detailing further the nuances of this debate, with the hope that a broader

and more appropriately balanced view will result.

Zero-based budgeting

First, don't confuse broadcasting's *fixed-cost* service with *free* service — either to the broadcaster or the listener.

Yes, the marginal cost to the over-the-air broadcaster of each additional listener is zero, but to get to that point, the broadcaster has already invested in capital and maintenance costs for a transmitter and its site, a tower or tower-space rental, STL, engineers, real estate, inclement-weather access to remote hilltop sites, etc. — amounting to considerable upfront and ongoing expense. If a broadcaster's listenership (and thereby, revenue) goes down, these costs remain the same.

Granted the variable-cost business model is a very different environment for broadcasters, but online radio is also a very different service — so it may justifiably warrant unique valuation, both by broadcasters and listeners. Most obviously, it's bidirectional, and thus both more costly and (at least potentially) more interactive.

At the receive end, radio isn't truly "free" either, given that listeners do have to buy radios. Of course, such devices are cheap, and once the receiver is purchased, there are no ongoing usage fees. Internet access costs consumers money continuously, but this access is usually something consumers are already paying for, for many reasons other than listening to Internet radio. So the typical non-sub-

scription online radio service isn't really perceived as pay radio. (This stands in stark contrast to satellite radio, which requires both a dedicated receiver purchase and ongoing subscription fees.)

Meanwhile, broadcasters' online bandwidth costs can be ameliorated by deals with third-party hosts. Broadcasters also pay no maintenance costs to keep the online distribution system running (assuming the third-party service provider's reliability is adequate). Put another way, OTA service is owned by the broadcaster, while online distribution is rented. Financial advisors will always counsel that appreciating assets should be owned, while depreciating assets should be leased — which seems to fit the model well here.

While online radio will probably always involve some variable cost-per-listener factor — and this cost may seem relatively high compared to OTA service — you may get what you pay for with a different type of customer relationship, and one that can be leveraged in ways that OTA audiences cannot.

Broadcasters need to put their content where the listeners are — and where they will be.

Consider here that consumers have already shown their willingness to pay different costs for different levels of service. The same person who listens for "free" to real-time service over broadcast radio in the car may be happy to pay a small fee for similar content downloaded to a handheld device. (TV broadcasters are already exploiting this with \$1.99 downloads of episodic series after their airing on OTA television.)

But the real point of the earlier column was that broadcasters don't need to (and shouldn't) stop providing the traditional broadcast service — they can just *add* online service to their offerings, and cross-promote each service on the other for a real win-win. Moreover, many of the fixed costs required for OTA broadcasting noted above can be leveraged and repurposed with little or no additional expense to provide the means of production for online services. This provides OTA broadcasters with a substantial advantage over their non-broadcast competitors in the online radio marketplace, and they might also help protect the flanks in the ongoing battle with satellite radio.

HD Radio multicasting

An old elephant joke goes:

Q: "How do you get an elephant up in an oak tree?"

A: "Have him sit on an acorn and wait."

While we all would like to see the promise of HD Radio multicasting mature into a vibrant service expansion for terrestrial radio, even under the rosier of growth projections it will be years before HD Radio receiver penetration or usage matches that of Webcasting today. Even as HD Radio grows, online

The Big Picture



Photo: Gary Hoover, BBC

by Skip Pizzi

services may further *accelerate* their penetration, given the number of new broadband access systems, including highly portable wireless systems (which are even more attractive for audio services given their common incorporation with other desirable personal communications and/or digital storage devices). So although HD Radio multicasting shares traditional radio's business model, it may always be in a second-class position as an alternate delivery option for broadcasters.

Consider also that an HD Radio

chipset with powering demands appropriate for portable usage is still years away, so HD listening will be constrained to the home or car for some time to come. This means that HD Radio won't likely benefit from the currently strong mass-market movement toward personal digital devices, nor allow the format to be bundled with portable products offering other compelling features (e.g., 3G phones or digital media/game players).

Therefore, while the HD conversion may pay dividends to broadcasters in the future, investment in online radio is a safer bet, with far more likely short-term benefits. Turning once again to the hymnal of financial advice: Diversify your investments wisely.

Thinking ahead

The bottom line is that broadcasters need to put their content where the listeners are — and where they will be. If this involves new expenditures and different revenue models, so be it; those are the costs of doing (and growing) business. Radio has showed its resilience to new competition in the past, but only because its captains were willing to try new things. Avoiding change because the old ways are cheaper and don't require new investments is not the smartest approach for the long term. Just ask the passenger train industry.

Yes, Ira, it's very cost-effective for broadcasters to send the same content to the entire market, but what if the audience (or at least a good part of it) wants more diverse and personalized services? As that sort of new media style become popular, broadcasters should make sure they are at the party, even if they need some new clothes and a little cab fare to get there.

Skip Pizzi is contributing editor of Radio World. ☺

Snakes

► Continued from page 36

My assistant lifted one, balancing it on his shoulder. As he tilted the pole, out slithered a long black snake, landing at his feet. I had to stifle a laugh as he did a jig while trying to balance the heavy fence pole, all the while trying to avoid the snake.

Reach Harry Bingaman at kc3qhhmb@aol.com.

Wes Boyd with the Cumulus Youngstown cluster saw Grady Moates' "isocoupler" using two STL dishes spaced apart to get across the base of a hot AM tower.

The picture reminded him of a project a dozen years ago, when he wanted to put an STL antenna on a hot 10 kW AM tower. Isocouplers weren't available, so Wes' answer came from radio guru George Marti, who had done something similar at 50 kW WBAP in Fort Worth.

Wes referred to his notes, and per George, at 950 MHz, 4-foot dishes spaced 78 inches dipole to dipole will give 6 dB loss, and plenty of isolation for the 50 kW signal. At 450 MHz, yagi antennas spaced 16-1/2 inches antenna end-to-end will give 4 dB loss, and also worked fine in the 50 kW field.

Thanks, Wes, for the useful information. Wes Boyd can be reached at wboyd@theradiocenter.com.

John Bisset has worked as a chief

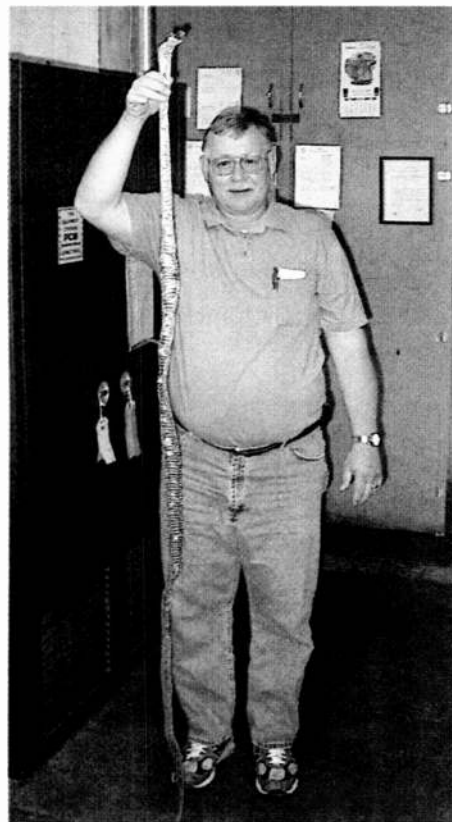


Fig. 4: Harry Bingaman measured the skin at about 6-1/2 feet.

engineer and contract engineer for 37 years. He is the northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386, or jbisset@bdcast.com. Faxed submissions can be sent to (603) 472-4944. Submissions for this column are encouraged, and qualify for SBE recertification credit. ☺

GUEST COMMENTARY

Digital Radios and Your Station

A Look at Receiver Design Elements That Affect Your FM HD Coverage Area

by Mike Bergman

The author is vice president of new digital technologies for Kenwood USA.

IBOC coverage area has been the focus of station engineers and others in the past few years. It has gained more attention recently as more HD Radios are available.

The design of the receiver used in an IBOC coverage test certainly impacts this performance, of course. This article discusses some of these design elements and focuses in on a few points that appear to really impact your FM HD coverage area.

correction decoding. Some other basic OFDM receiver functions are the de-interleaver, OFDM symbol timing and frequency lock, and subcarrier demodulation.

Still, the receiver designer has some choices to make as the licensed firmware only goes so far.

Basic design tradeoffs

All designs start with a list of requirements that must be met for the intended application. In the RF front-end section, this list typically includes automatic gain control tracking factors; linearity; noise figure; phase noise and absolute frequency

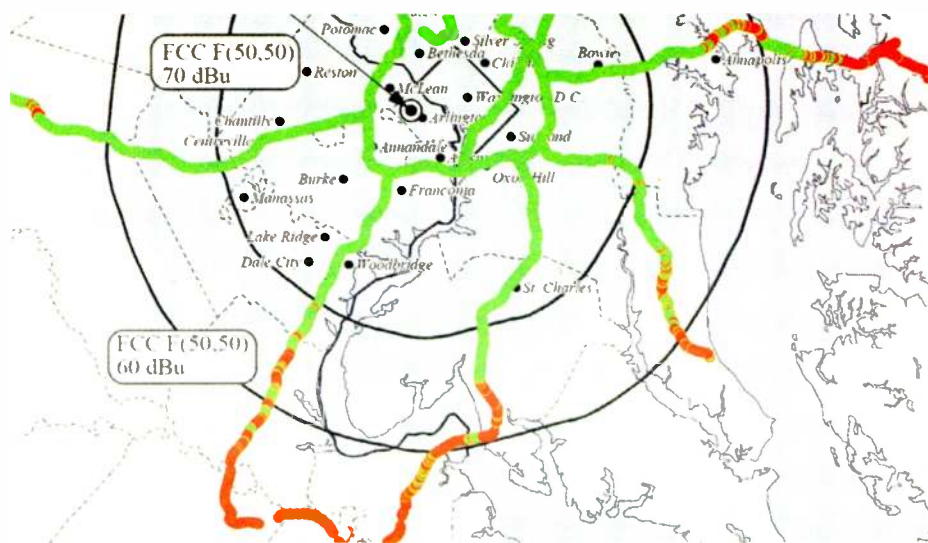
fading due to multipath, but it is a relatively constant effect compared to mobile receivers, which see a much more dynamic environment.

For mobile, the rule of thumb is that multipath fades will occur at about $\lambda/2$ distances; for FM it works out to a few feet from peak to fade.

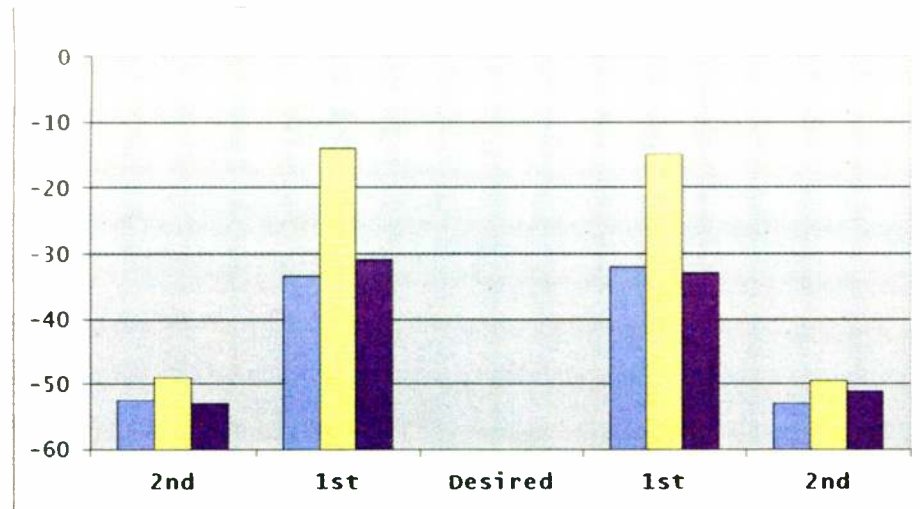
ified as a figure of merit known as G/T, or gain over noise temperature — but phase noise is every bit as challenging. The reason for the latter is that phase noise causes inter-carrier interference between subcarriers in an OFDM receiver.

While we're discussing the tuning section, IBOC has stringent frequency accuracy requirements. This applies to the tuner section, and also the sample clock.

Last in this list, but not least, is rejecting adjacent-channel, in-band and wide-band interference.



IBOC coverage snapshot of WETA(FM), Washington. Green dots indicate digital audio, red indicate no coverage at that point.



Desired-to-undesired (D/U) ratio of three IBOC receivers when the FM IBOC signal is jammed by various analog FM adjacents. The scale on the left is in dB.

An IBOC receiver design engineer can take a few design elements for granted. For example, the Ibiqity firmware, as delivered, takes care of the forward error

accuracy; and interference rejection.

The choice of AGC parameters depends a lot on how and where the receiver will be used. Home receivers are subject to flat

On the other hand, a mobile receiver is likely to have a better signal coming in from the antenna; it is typically outdoors and probably has higher passive gain. These factors affect the AGC design, since AGC must respond dynamic to the signal environment.

Front-end linearity, particularly at high signal strengths, is as important for digital receivers as it is for analog receivers. For an IBOC receiver, the front-end noise figure is not as challenging a design requirement as it is in a satellite receiver.

Satellite signal reception is very dependent on raw sensitivity and is usually spec-

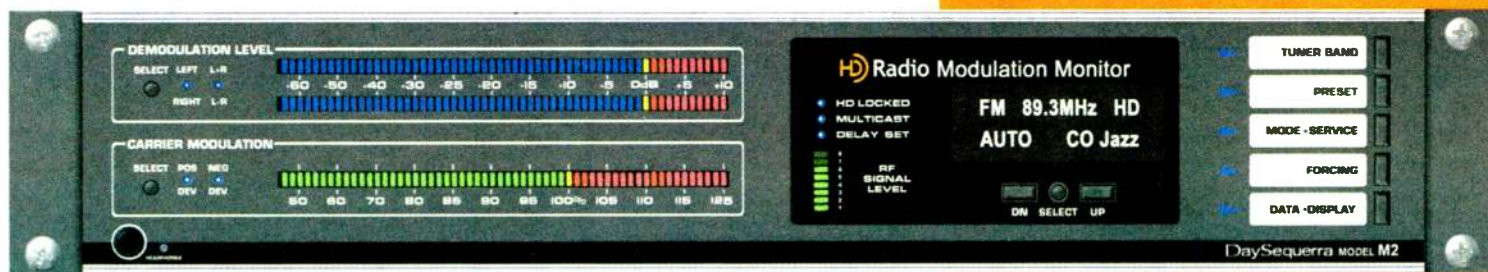
Any single design choice in this inventory is likely to affect several other items on the list, plus the overall cost. Cost drives much of the performance, in the end, since consumers are, unfortunately, more able to discern a slight difference in price than they are able to detect differences in performance.

Performance factors

Discussing all of these design parameters would take too many pages. However, two key performance factors for IBOC are sensitivity and interference rejection.

See RECEIVERS, page 40

M2 HD Radio Modulation Monitor

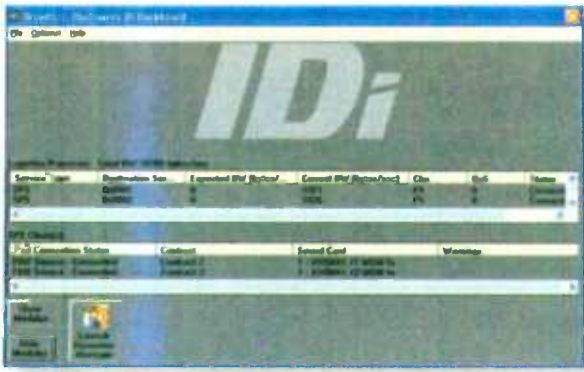


- AM-FM AND HD RADIO™ MULTICAST MODULATION MONITOR IN 2RU SPACE
- INTUITIVE, EASY-TO-USE FRONT PANEL INTERFACE - GET YOUR STATIONS STATUS AT A GLANCE!
- BRIGHT, ACCURATE LEVEL METERS AND FULL-FEATURED DATA DISPLAY
- ANALOG SCA LEVEL (M2.1) AND ETHERNET REMOTE CONTROL-ALARM-LOGGING (M2.2) OPTIONS

Designed and Manufactured in the USA

DaySequerra

For all the facts, visit www.daysequerra.com or call 856-719-9900



Control Freaks Rejoice.

Dashboard lets you control HD2 Multicasting quickly and easily...then get on with your life. Your time is money. Why spend it wading through confusing set-ups just to do what BE's Dashboard will let you do in moments? Dashboard software for BE's IDi 2.0 HD Radio Data Importer uses a graphic interface for setup and control. Plus, it features automated re-start if there's a problem. One more way BE is optimizing HD Radio technology for the way you really work.

Broadcast Electronics Inc.
Tel: (217) 224-9600 • Web: www.bdcast.com • E-Mail: bdcast@bdcast.com



Sponsored by Broadcast Electronics

Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled by Radio World using information supplied by iBiquity Digital Corp. and other sources. The data shown reflect best information as of June 5. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

MULTICASTING IN WASHINGTON

HD2 formats on the air in the nation's capital or coming, according to the HD Digital Radio Alliance and other sources:

Station	Freq.	Licensee	Main Format	HD2 Format
WAMU	88.5	American Univ.	News Talk	Groove Salad
WARW	94.7	CBS	Classic Rock	Adult Alternative
WPGC	95.5	CBS	Rhythmic Hits	Gospel
WASH	97.1	Clear Channel	AC	Ballads and Love Songs
WMZQ	98.7	Clear Channel	Country	Classic Country
WLZL	99.1	CBS	Tropical	Hispanic AC
WIHT	99.5	Clear Channel	Hit Music	New CHR
WBIG	100.3	Clear Channel	Oldies	Oldies '50s and '60s
WWDC	101.1	Clear Channel	Rock & Roll	New Rock
WTOP	103.5	Bonneville	News Talk	News Talk
WGMS	104.1	Bonneville	Classical	Classical Deep Tracks
WJFK	106.7	CBS	Talk	Female Talk
WTWP	107.7	Bonneville	News Talk	Washington Post Radio

The HD Radio Bottom Line

Total Licensed

1,401

On the Air

802

Last Month

Total Licensed

1,264

On the Air

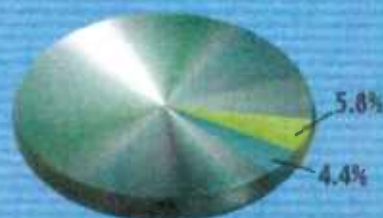
777

Market Penetration United States

13,748 AM & FM Stations
(excludes LPFMs)

Number of
FM Stations
Multicasting:

215



Licensed by iBiquity
and on the air

Licensed by iBiquity
and not on the air

Receivers

► Continued from page 38

These areas have a lot to do with the overall coverage area.

IBOC receivers have been known to pull in digital audio at field strengths down to 35 dBu. However, several studies have established "reliable digital audio" in a variety of ranges.

For FM, the Tomorrow Radio study concluded that the "usable service area would fall within the 60 to 70 dBu service area of a typical FM station." A recent paper by John Kean of NPR Labs showed that NPR member stations that participated in HD Radio coverage measurements had contour-based results which fell in a wide range, from below 60 dBu to above

85 dBu for 97 percent digital coverage (RW June 7, page 26).

This spread in contour levels of more than 25 dB, indicates, as Kean mentioned, that the contour approach to coverage can be improved by looking at other factors, such as environmental noise and adjacent interferers.

So although the field strength at the receive antenna is the most important criteria, there are other factors at work as well. The next most important factor is the strength of other signals in-band, which brings us back to the receiver front-end design.

In a static test, receivers generally perform quite well for adjacent rejection. Fig. 1 shows the static (no fading) performance of several HD Radio receivers. For each receiver, the criterion was "digital audio." The bars on the chart show the strength of

various adjacent signals needed to force the receiver to blend to analog.

One thing to notice here is that there is almost 20 dB difference between the best and the worst receiver for the first-adjacent signal. Clearly, there is going to be some variation in the field from model to model for these critical parameters.

The chart also shows that, for a second adjacent signal, all the receivers were able to handle an undesired signal almost 50 dB stronger than the desired signal.

However, close examination of coverage plots reveals a different story. Note Fig. 2, which is taken from the Tomorrow Radio test report. One of the receivers in Fig. 1 was used in this Tomorrow Radio test project, so we can directly compare the results of the lab test to the field test of the same receiver. The station tested was WETA (90.9 MHz, 75 kW ERP, 186m

HAAT).

Fig. 2 shows that for the westbound route, which is the upper left-hand route, the receiver had digital audio (noted in green) to 54 dBu which runs right through the first red area on the trace. However, in the south-south-west route, performance was limited to 65 dBu. So a single station has a wide spread between two routes when considering received field strength.

This dichotomy shows up time and again in field-testing IBOC receivers. The weaker performance can usually be matched with a strong adjacent signal.

In the WETA case, the difference appears to be due to the presence of a second-adjacent in the south, specifically, WJYJ (90.5 MHz, 38 kW ERP, 164m HAAT). In the area where the premature digital muting occurs, estimated desired-to-undesired ratio (D/U ratio) is on the close order of -10 dB.

From Fig. 1, the receiver should have been able to handle down to -40 dB D/U or even worse. To the west, signal strength limited the receiver; to the south a combination of signal strength and the adjacent interferer limited the receiver.

Other stations have second adjacents, and get better performance. Still others get worse performance.

There isn't a definitive answer yet. However, one factor could be terrain-correlated slow fading. Fast fading is due to multipath; slow fading comes from morphology.

When the receiver is in such a fading channel, the two signals — desired and undesired — fade, but the fading is not independent or entirely random.

Imagine traveling away from WETA, toward WJYJ, and going over a hill. As you go over the hill, WJYJ is getting stronger, but WETA is getting weaker.

Clearly, the slow fade statistics are not independent. Imagine the sharp swing in D/U ratio under these conditions — the desired signal is dropping, but the undesired is rising. This tendency to correlate the strength of one to the weakness of the other leads to a reduction in the performance in the face of an interfering adjacent.

This doesn't explain the whole picture, but work is ongoing to understand it better and find ways to make sure the digital coverage area is everything it should be. This task falls to both the broadcaster and the receiver maker.

FM coverage

What are the implications for FM digital broadcast coverage? For a broadcaster, knowing the location of an adjacent interferer is important.

Field test results indicate that you can expect performance down to 50 dBu (or better) in a clear area, as WETA demonstrates directly west of the transmitter. However, where the contour of an adjacent signal impinges on your contour, recognize that coverage will be reduced. A short-spaced first adjacent, a moderate second, a strong third or fourth, or a wide-band (fifth or higher in-band) adjacent will all potentially impact the coverage.

So map your adjacents, if you haven't already, and drive around a bit. Keep in mind the current HD-R receiver designs use either first- or second-generation tuners, and receivers will get better.

Is it just the receivers? Well, let's face it — your transmitted signal may not be perfect, either. As engineers in both industries get better at working with IBOC, overall coverage area will improve.

RW welcomes other points of view. ☺

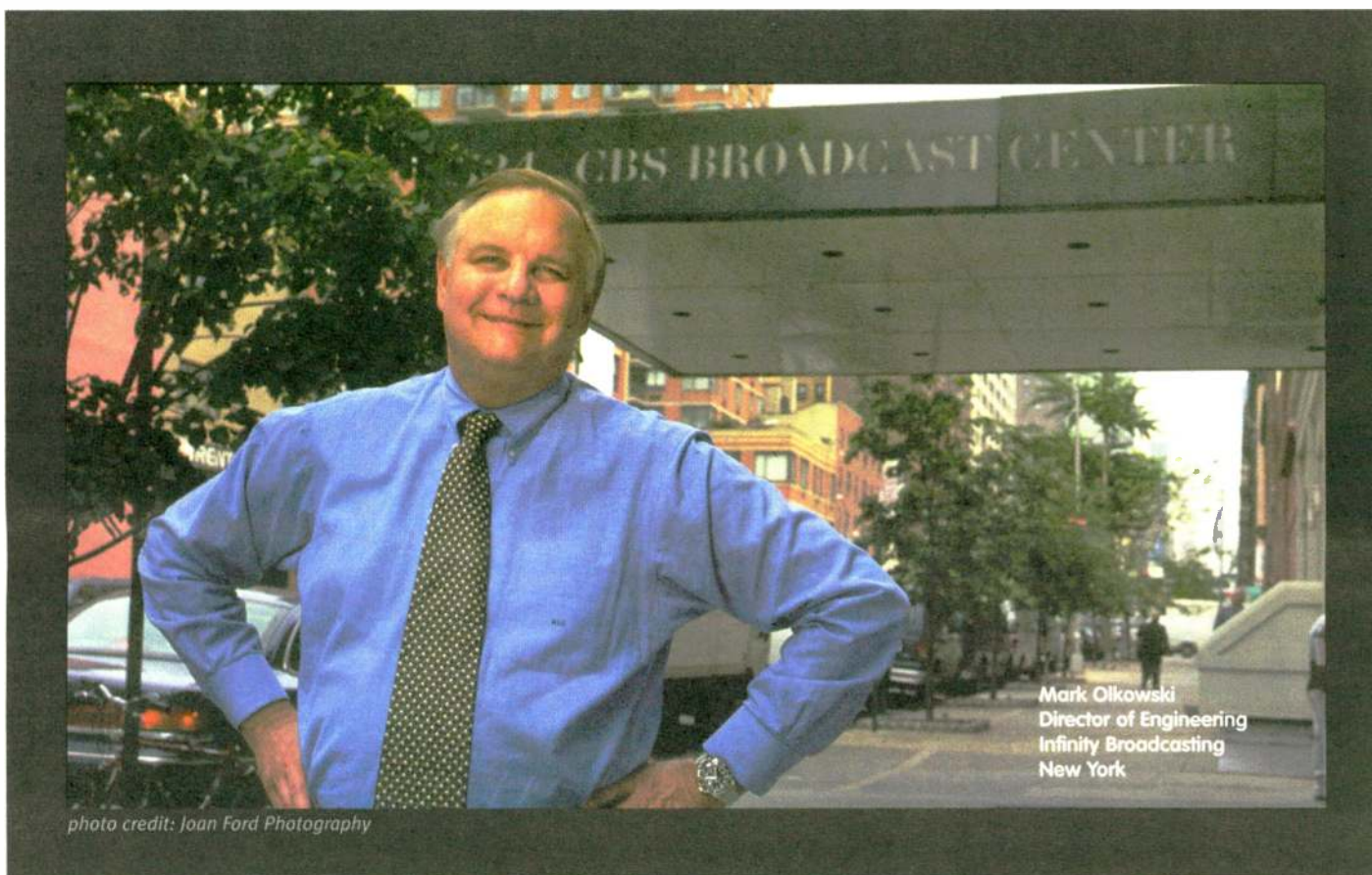


photo credit: Joan Ford Photography

Mark Olkowski
Director of Engineering
Infinity Broadcasting
New York

STUDIOHUB+ CASTING CALL

"Back in the winter of '99, when I first knew we were going to relocate WCBS from Blackrock to West 57th Street Broadcast Center, we began our search for new digital technologies."

"I first saw StudioHub down at the Radio Show and was really intrigued by it. It appeared that it would save us a lot of time in construction and building and then again in the future with troubleshooting and station upgrades."

"Back in the old days we would build conventional analog radio stations that were hardwired—and you never had the ability to make any changes. And of course in our business, there are always changes. StudioHub is the product that allows you to make changes on the fly."

"One of the important new things we've done here at WCBS, is audio streaming. Millions of people log into our audio stream and we were able to do that very easily with StudioHub. If we had to do this wiring by hand, it would have taken a lot longer."

CONNECT EVERYTHING
THE CAT-5 STUDIO WIRING SOLUTION
StudioHub+[®]

Join a cast of thousands who now count on StudioHub+,
THE broadcast wiring solution.

StudioHub+ is the CAT-5 wiring system that lets you plug
and play all your studio and rack-room equipment with an
elegant system of pre-made cables and adapters.

StudioHub+ is the universal analog and digital approach to
wiring all your broadcast gear.



See the Movie!

Log on to www.studiohub.com/themovie
to view scenes of WCBS and hear the
whole WCBS/ StudioHub+ story from
Mark Olkowski, Director of Engineering
and the sequel from 8 other StudioHub+
sites around the US.

Radio Systems, Inc. • 601 Heron Drive • Logan Township, NJ 08085
Phone: 856-467-8000 • Fax: 856-467-3044 • www.studiohub.com



Studio Sessions



Radio World

Resource for Radio On-Air, Production and Recording

July 5, 2006

PRODUCT EVALUATION

Samsung Helix Doubles as MP3 Player

The Portable Satellite Receiver Offers Improved Reception, MP3 Functionality, But Lacks Battery Life

by Frank Beacham

It was late at night on the Fourth of July, 2004, when I knew I was seriously hooked on satellite radio.

In the early afternoon of that holiday, I was due at a friend's home. A few minutes before time to leave, I tuned in to catch a snippet of the live broadcast of Willie Nelson's annual picnic on my new XM satellite home receiver.

That's all it took. I immediately came under the influence of a powerful new drug. I was so addicted to the music that day I couldn't pull away from the broadcast.

I called the friend to say I'd be a bit late. Then I called again with another delay. Finally, out of any real excuses, I gave in to the XM seduction. I never left home that day, staying glued to Willie's live show until it ended sometime in the wee hours of the next morning.

With Samsung's new Helix XM2go portable satellite receiver, such bizarre conduct is no longer necessary. Now, I can be obsessed anywhere with Willie's show this July 4 on perhaps the coolest portable satellite radio ever made.

Travelin' light

Weighing in at only 4.5 ounces and smaller than most iPods, this gadget means the days of being stuck near a fixed home or car satellite receiver are history. Also behind us are the bulky first-generation XM2go portables, whose size, weight and cumbersome complement of accessories meant it was often left at home.

The Helix is a genuine leap forward in portable satellite radio technology.



Unfortunately, it comes with flaws. The second-generation XM2go offers improved reception, an intuitive interface on a gorgeous color display, streamlined accessories and the dual capability of using it as an MP3 player. For a portable device, however, it has miserable battery life.

A review unit, after the recommended eight-hour initial charging period, gave us only about four hours of intermittent XM reception before shutting down. And this was with the color screen set to turn off after 30 seconds.

Fortunately, the Helix features a removable 3.7 volt, 1750 mAh lithium ion battery cartridge. Batteries can be easily swapped in the field. But having to take an extra battery with you for less

than a day's use is a real hassle.

Not satisfied at just being a great portable XM receiver, the Helix gets into trouble when it tries to be a generic portable music player. The Helix is no challenge to Apple's iPod, and it will only make iPod users wish Apple and Samsung had gotten together beyond their current Flash memory deal to integrate the Helix XM receiver circuitry into the existing iPod.

Such flaws are unfortunate, because as a standalone portable XM receiver, the Helix is a killer product. It includes the ability to record and playback 50 hours of XM programming in its 1 GB of internal Flash memory. Having a stash of favorites on board when you're out of range of satellite reception is a good idea.

The Helix has the ability to store XM content by song, channel or scheduled session. A feature I especially like is the capability to record an individual song in its entirety after it starts playing on XM. This is due to a memory buffer that stores the beginning of each song.

A feature I especially like is the capability to record an individual song in its entirety after it starts playing on XM. This is due to a memory buffer that stores the beginning of each song.

A feature called TuneSelect alerts the listener to a favorite artist or song whenever it is played on any XM channel. Also, there is an integrated, wireless FM transmitter for beaming XM programs to any FM radio frequency. That's useful for auto travel.

Product Capsule:
Samsung Helix XM2go Portable Satellite Receiver

Thumbs Up

- ✓ Compact, lightweight
- ✓ Great reception
- ✓ Color display
- ✓ Dual capability as MP3 player
- ✓ Records and plays back 50 hours of XM programming
- ✓ 1 GB of internal Flash memory

Thumbs Down

- ✓ Low battery life
- ✓ Scant storage capacity
- ✓ Not compatible with iPods
- ✓ Not compatible with Macs

PRICE: \$399.99

CONTACT: Sold through consumer electronics retailers

The Flash memory in the Helix can be split in half to store — beyond XM content — both MP3 and WMA audio files. That sounds like a nice feature, but in reality it's limited.

Not only is that scant storage capacity, but in use the music player functionality of the Helix lacks the elegance and easiness of, and compatibility with, Apple's iPod — the gold standard for portable music technology.

See SAMSUNG, page 42 ▶



Pristine Systems
www.pristinesys.com
www.summittraffic.com
 1•800•795•7234

BLACKBOX
Audio Logger

- Record up to 16 Channels
- Off Air & Dead Air Alerts
- Compliance & Verification
- Web Browser Access
- Talent & Market Monitor
- PodCast Recorder
- Available in Spanish
- Extended Support for AM/FM/TV Tuner Boards
- Mic & Time Skimming

CDS³²
Radio Automation

- Music on Hard Drive
- Satellite Operations
- AutoPromo Builder
- "Wet" Voice-Tracking
- WEB/ADS Radio Text
- HD Radio Ready
- CobraNet & LiveWire
- LAN/WAN Operations
- Content Depot Ready
- Easy to Use!

SUMMIT TRAFFIC

- Optimized Scheduling
- Real Time Avails (\$\$\$)
- User Defined Reports & Logs
- Multi-User/Multi-Station
- Open Item A/R
- Fast & Accurate Billings
- 20 Years: Radio, TV & Cable
- Windows, Linux & Novell
- Compatible With all Major Automation Systems

World Radio History

PRODUCT EVALUATION

FlashMic Focused on Field Recording

by Carl Lindemann

Over the past few years, I've witnessed the odd sight of reporters holding out recorders with integrated mics trying to grab sound. Unfortunately, those mics are designed more for catching quotes for transcription rather than for broadcast use. Why not start with the mic and add the recorder?

That's pretty much what HHB has done to create the DRM85 FlashMic. It is a digital recorder integrated into the end of a standard-sized handheld condenser field mic 9.6 inches long and weighing in at 13 ounces. The idea here is that the integrated design removes the clutter inherent to the separate recorder/mic combo.

The FlashMic is built around a special omnidirectional version of Sennheiser's K-Series condenser capsule. A recorder with a gigabyte of static RAM memory is built into the base of the handle, with a pair of AA batteries hidden in the body.

Three buttons at the base of the handle control basic stop-record-play functions. A backlit LCD screen next to the controls show levels, recording time and battery levels. The basic I/O is at the bottom with a 1/8-inch jack for headphones, a USB 2.0 interface connector and a menu wheel to manually access the various controls and settings for audio quality, and recording and headphone levels.

Recording quality runs from 48 kHz uncompressed PCM yielding just over three hours recording time to 32 kHz MPEG 2 128 kbps that will record for over 18 hours. Settings also can be set via the FlashMic Manager software and loaded into the unit. Up to nine presets can be programmed to match the needs of individual reporters working out of the same newsroom.

Setting up the DRM85 with the built-in controls is easy enough. I found it easy to navigate, even though I am not a big fan of menu-driven quasi-computer devices. The FlashMic Manager software is easy to figure. Most will simply set these once and just use the Start and Stop buttons.

The small LCD screen makes keeping track of time remaining and levels simple. While recording, an extra tap on the Record button inserts a cue marker that shows up in Adobe Audition and Sony Sound Forge. As recording time drops

these rumblings, I did notice that when I attached a headphone, the front of the cable and connector could transmit noise that might pollute a recording.

Speaking of headphones, the unit sends sound to them whether or not it is



KUT(FM) political reporter Ben Philpott used the FlashMic to cover a special session of the Texas legislature, when independent gubernatorial candidate Kinky Friedman submitted petitions for a place on the ballot.

below 10 minutes, the backlighting begins to flash on and off to signal an alert.

Another safety feature locks out the manual controls to protect against accidentally stopping a recording. As it turns out, this is key (see below). The six-plus-hour company spec for battery life is conservative for the two alkaline AA cells needed to power the DRM85. A pair of Energizer "Max" batteries lasted seven hours and 20 minutes — more than enough for a full day's work.

There was some question as to handling noise. I found it wasn't an issue, though some colleagues have noted that the FlashMic is susceptible to picking up

recording. It is better to only get audio when you are recording so there is no confusion. There's nothing worse than thinking you're monitoring a good recording only to discover that the recorder is off. This is something that could be an easy fix in future firmware revisions.

Texas-sized test

Ben Philpott, the political reporter for NPR affiliate KUT(FM) in Austin, Texas, gave the FlashMic a field test. KUT's

Product Capsule: HHB DRM85 FlashMic Digital Recording Microphone

Thumbs Up



- ✓ Excellent audio quality
- ✓ Good battery life
- ✓ Simple operation

Thumbs Down



- ✓ No auto-shutdown to save batteries
- ✓ Easy to accidentally stop recordings
- ✓ No additional audio input

PRICE: \$1,200

CONTACT: Sennheiser USA in Connecticut at (860) 434-9190 or visit www.sennheiserusa.com.

48 kHz was a noticeable improvement over their existing setup. Reaching in over the scrum of reporters at the Kinky Friedman event, the audio quality was crisp and clean despite the fact that he was back a few feet from the candidate.

"Since this is an omni, I expected to it pick up a lot of extraneous sound, but it zeroed in quite well here," Philpott said.

He also used it extensively to record his voiceovers through the week. Accessing audio files in the FlashMic was an effective, efficient improvement over working with MiniDisc.

In terms of the unit's primary function, the FlashMic was a hit. There were, however, some rough edges. Initially, Philpott did not know about the control lockout feature and inadvertently stopped a recording while holding the mic. Despite the safety feature, it would be better to place the controls somewhere other than where the hand naturally rests. Also, the unit does not have an auto off switch and so he ate a set of batteries when he forgot to power it down.

The limits of the dedicated mic con-

Three buttons at the base of the handle control basic stop-record-play functions. A backlit LCD screen next to the controls show levels, recording time and battery levels.

Samsung

► Continued from page 41

To manipulate the Helix for non-XM music play, users need to attach the device via USB to a Windows PC (sorry Mac users, there's zero compatibility). Samsung supplies a special Windows application that controls the Helix playlist and ties it to the XM + Napster online music service. Songs bookmarked on the Helix can later be purchased through Napster.

To put it politely, the new legal version of Napster is no iTunes, having a far more limited choice of available music. Users also are required to use the software to rip their own CDs and load the songs to the Helix.

Samsung's failure to give the Helix compatibility with the iPod, the world's dominant portable music format, limits its functionality as a personal music player. However, the Helix shines in its primary function as an XM portable

receiver. Throughout New York City, I found the tiny receiver to work well almost everywhere, either through satellite reception or one of XM terrestrial radio transmitters. Only occasionally — such as in an underground restaurant — did I lose the XM signal entirely.

Its tiny size, elegant interface, internal recording capability and good sonic quality make the Helix a joy to use. I just wish it had reasonable battery life (at least 15 real-world hours) and full integration with my large iPod library.

Until it does, I — like many others — will be forced to carry two portable music devices if I want XM plus my personal music collection while on the go.

The Samsung Helix comes with a home docking station, battery charger, case and ear buds. The car kit is optional. Retail price is \$399.99. The Pioneer Inno uses the same internal electronics as the Helix, and is — beyond differences in cosmetics, software and accessories — an almost identical device.

Frank Beacham is a frequent contributor to Radio World. 📞

news department uses consumer-grade Sony MiniDisc recorders with EV RE50 mics, but is getting ready to upgrade to professional Flash recorders. Digital audio is transferred via USB from the MiniDisc into Windows-based DAWs running Adobe Audition editing software.

As it happened, Philpott tried out the FlashMic during a particularly auspicious news week. A special session of the legislature was in session while Kinky Friedman, the colorful independent candidate for this fall's gubernatorial race, submitted his petitions to earn a place on the ballot.

Philpott found that the quality of the recordings made with the FlashMic at their in-house standard of uncompressed

cept became clear in Philpott's coverage of the legislative session. The FlashMic could not capture the feed from the multibox. The simple solution would be to include a line- or mic-level input to get the full functionality needed. He also found that having a proper stand for the FlashMic was essential to place it on the podium for press conferences and similar events.

The FlashMic does what it is designed to do well. But because it lacks an additional input, it cannot take the place of an all-purpose recorder. However it can play a crucial role in a news department's arsenal. With the unit's \$1,200 price, that added edge comes at a cost.

Carl Lindemann is a frequent contributor to Radio World. 📞

Products & Services SHOWCASE

AM RF Systems...

without the surprises.



LBA Technology is your proven, worldwide supplier of HD radio ready AM antenna systems. Our array of RF products includes directional antenna systems, diplexers and triplexers, ATU's, and components for every power level. LBA systems are designed and custom fabricated to your distinct requirements.

We put our 40 years of AM RF experience into helping you reach farther and sound better! See what we can do for you at www.LBAgroup.com or call us at 252-757-0279



LBA Technology, Inc.
Reach Farther, Sound Better™

252.757.0279 • www.LBAgroup.com • 3400 Tupper Drive • Greenville, NC 27835

**SIX MILLION
THUNDERSTORMS HIT
PLANET EARTH EVERY YEAR!
IT TAKES ONLY ONE TO
PUT YOU OFF THE AIR!**



The STATI-CAT LIGHTNING PREVENTION SYSTEM provides a continuous, low-resistance discharge path for the static electric charge on tall structures. Dissipation points are 1/8" stainless steel rods.

This affordable and rugged system has proven itself in the field for over 20 years.

Cortana
Corporation Inc.

Write or call for a free brochure and design
P.O. Box 2548, Farmington, N.M. 87499-2548
Toll Free: 888-325-5336 • Fax: 505-326-2337 • www.cortana.corporation.com

WEATHER RADIO Model CRW-S



Price \$540.00

Sensitivity .28 microvolts for 12 dB quieting. All 3 frequencies. Alert tone demutes receiver, closes relay and gates audio to 600 ohm rear terminals. Another set of rear terminals has continuous 600 ohm audio output. Double conversion crystal controlled, crystal filter in first I.F., ceramic filter in second I.F. Dual gate MOS FET front end. 50 ohm coaxial input. Adjacent channel (± 25 kHz) down to 70 dB. 19" rack mount, 3.5" H, all metal enclosure. In stock—available for immediate delivery.

GORMAN REDLICH MFG. CO

257 W. Union St. • Athens, Ohio 45701
Phone 740-593-3150 • FAX 740-592-3898

www.gorman-redlich.com/jimg@gormanredlich.com

Affordable Custom Broadcast Furniture

Constructed,
Delivered and
Installed by

**STUDIO
TECHNOLOGY**

Now also serving you
from the West Coast!

Studio Technology West
310B Coney Island Dr.
Sparks, NV 89431
TEL: 775-351-2042
FAX: 775-351-2082



We're Expanding!
Our West coast office is looking for a shop manager. If you have experience in broadcast studio furniture field, please contact Vince Fiola at the numbers listed here.

TEL: 610-925-2785
FAX: 610-925-2787
529 Rosedale Rd, Ste. 103
Kennett PA 19348

e-mail: sales@studiotechology.com
web: www.studiotechology.com

COMPLETE CONTROL WHEREVER YOU ARE RELAX – YOUR SYSTEMS ARE IN GOOD HANDS

System downtime costs you money. But however far you are from your transmitter or studio, you can stay in control with the Davicom MAC telemetry system from Comlab. It remotely monitors and controls your equipment giving you complete confidence in the integrity of your transmissions.

And if things do go wrong, you and your engineers will know about it immediately, meaning reduced costs and maximum efficiency.

- Reduce Costs
- Remotely manage your assets
- Flexible monitoring
- Rapid failure identification
- Alarms via IP/phone fax/email
- Totally Scaleable

In the USA contact:



t: 800/ 438-6040
f: 704/ 889-4540
www.scmsinc.com

In Canada contact:

davicom

t: 418/ 682-3380
f: 418/ 682-8996
www.davicom.com

New
Product
2006



**LCD
DISPLAY
WATTMETER**

Model 81030

www.coaxial.com

**Coaxial
Dynamics**

800-262-9425



Buyer's Guide

Radio World

Consoles, Mixers & Routers

July 5, 2006

USER REPORTS

WRVO Selects G5 Control Surfaces

by Jeff Windsor
Chief Engineer
WRVO Radio

OSWEGO, N.Y. In November 2003, WRVO was awarded a grant from the Public Telecommunications Funding Program. The PTFP grant enabled WRVO to replace two seasoned and reliable Audiotronics consoles that were showing their age. Our main production console, a 110 series unit, had been in service since about 1982, while our on-air console, a 200 series board, had been working hard since 1985.

Our search covered many audio equipment vendors, with solid presentations from each of them, but it was the features and flexibility offered by Wheatstone's Generation Series control surfaces and the Bridge Router system that impressed our staff.

Phil Owens of **Wheatstone** demonstrated a G5 control surface and Bridge Router to us. Here was a system that integrated audio networking into the console for ease of announcer accessibility, while retaining a look and feel with which we were familiar. It was at that point we identified the usefulness that the control surface architecture could offer to our facility. We abandoned the concept of a stand-alone digital console with a separate router and embraced the control surface technology.

Studio-to-studio ease

The new WRVO system comprises two identical G5 control surfaces located in our main studios, Control Rooms 1 and 2. Sandwiched between those rooms are two edit suites, each containing a G3 control surface. This arrangement allows our operators to move from studio to studio without having to learn a different setup. The Generation series control surfaces reinforce this convenience by allowing staff to access any audio source in the plant on any control surface fader.

The X-Y router built into the G5 surfaces puts source-to-destination routing at the fingertips of the operator, eliminating the need to leave the control surface to take care of routing tasks.

The ability to create console presets that allow each announcer to organize the surface to his preference adds further convenience.

Each G5 connects directly to a Bridge Satellite Router Cage that connects back to the main Bridge Router in our Tech Center via Cat-5e cable. Equipment in the control rooms connects to the Satellite Cage in that room. Equipment in the edit rooms connects to the closest Satellite Cage via inter-facility tie lines. Audio and logic connections are made to the router and satellite cages via DB-25 connectors.

We chose to simplify installation by purchasing the system with pre-wired DB-25 to Krone Block harnesses



WRVO Program Director Fred Vigeant demonstrates the G5 surface to Student Producer Brooke Wacha (far left) and Traffic Manager Kate Percival.

built by Wheatstone. Installation from that point was a matter of punching down the wires. The documentation of the pre-wire harnesses was detailed and accurate.

There remains a good deal of analog gear in our equipment inventory. Our system was thusly outfitted with analog I/O cards with balanced inputs and outputs, as well as digital I/O cards. AES is the preferred format; however, S/PDIF can be used if necessary. Wheatstone recommends using a balun or format converter to facili-

tate any connections between the router and equipment utilizing S/PDIF.

Using the system is fairly straightforward and the operational learning curve is small. Anyone who has used a slide-fader broadcast console will find the G5 and G3 surfaces to be familiar territory.

Each fader has a source selection knob that allows the user to dial up whatever audio source is needed. The X-Y router built into the G5 surfaces puts source-to-destination routing at the fingertips of the operator, eliminating the need to leave the control surface to take care of routing tasks. A mix-minus is created by selecting which faders will feed it, then pressing one of the eight mix-minus bus assignment buttons. This is a vast improvement over WRVO's previous method of mix-minus creation, which could never have been described as "user-friendly."

I do wish Wheatstone offered a 24-hour tech support line to handle off-air emergencies. Also, I think adding S/PDIF capability would be beneficial, as a good deal of equipment now uses that interface.

Digital Radio Engineering installed our system and handled the initial setup and configuration. When the reins were turned over to me, I feared being overwhelmed with configuration issues that I wouldn't be able to handle. To the contrary I found the Wheatstone Xpoint configuration software easy to use. When I did need some assistance, I found the Wheatstone tech support team helpful.

For more information, including pricing, contact Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

Klotz Aeon Heads to the Country

KRAZ Selects the Router-Based Console for Digital Conversion; DJs Like Macro Programmability

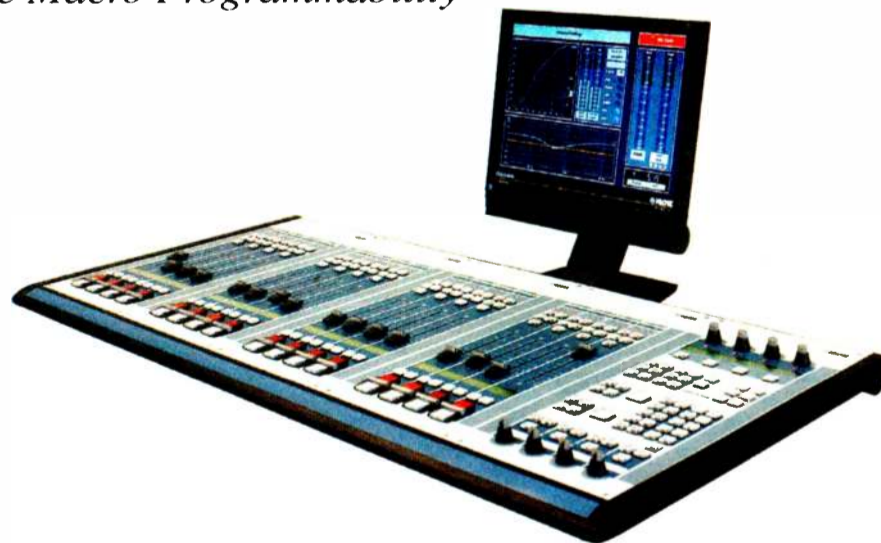
by Shawn Knight
General Manager
Knight Broadcasting Inc.
KRAZ(FM)

SANTA BARBARA/SANTA MONICA, Calif. KRAZ(FM) is a country-formatted private radio station. Addressing the 18-49 market segments, we have a coverage area on the Central Coast from the Ventura River to Pismo Beach and the Five Cities.

To further strengthen our position in this market and offer our listeners the best program quality and new services, it became clear that we had to change our broadcast equipment from analog to digital in order to keep up with our competitors.

The decision to start the project was made in 2004, and from the beginning we agreed upon the idea to have a fashionable and functional digital mixer for our on-air studio. The board should be router-based to help us exploit the advantages digital audio networking provides, such as resource sharing, and ease our DJs' daily work.

Another crucial factor was the budget. There are a lot of great digital consoles in the market, but many of them are functionally super-charged and inappropriate for a company of our size. Therefore we looked for the



mixer with the best price/performance ratio in our budget class.

We chose a **Klotz Digital Aeon** console. It is based on one router, and provides the features we wanted, such as hot-swap technology; integrated signal processing, namely parametric equalization; compression; limiting and expansion.

I/O, Setup

Equipment inputs and outputs connect to the router audio frame, which can be remotely located from the

See KLOTZ, page 45 ▶

USER REPORT

MPR Likes Element Modules, Pathfinder

by **Ethan Torrey**
Chief of Research & Development
Minnesota Public Radio

ST. PAUL, Minn. It's been a few months now since Minnesota Public Radio began broadcasting from our new studios. The centerpiece of the facility is the audio mixing and routing system by **Axia Audio**. Twenty rooms, ranging from small edit/production rooms to large broadcast control rooms, are equipped with Element control surfaces.

Element, Axia's new modular control surface, has been well received by our staff. The user interface is intuitive and uncluttered. Deeper features, including EQ and dynamics control, are accessed via menus. Some of these features also are accessible via dedicated controls on the new Production Module. We have two on order and expect to install them later this summer.

Taking calls

The Show Profile feature eases console configuration, helping smooth transitions from one show to the next. It integrates with the Telos 2101 phone system so phone lines are automatically configured along with the console for each show.

Element is available in a range of frame sizes and configurations. Our edit rooms use small 12-space frames, while the larger control rooms use 28-space frames. A couple of our control rooms dedicated to music broadcasts use pairs of eight-space frames arranged in a split console configuration. The space between the frames is left for paper copy.

There are several modules available for Element and we're using most of them. The basic input module is the 4-Phone Fader module, which adds Set



Ethan Torrey (seated) and Axia's Kirk Harnack

and Hold buttons to each channel for use with phone hybrids. It also integrates nicely with the Call Controller module, which combines two faders and associated controls with a phone line selection panel similar to Telos' Desktop Director.

We do several talk shows, which often feature multiple guests by phone along with listener call-in. The Call Controller module allows one fader to be configured to work with the Next button, selecting the next screened caller.

A phone-in guest can be assigned to the other fader on the caller control. Additional guests are assigned automatically to faders on the 4-Phone Fader modules described above. This allows phone hybrids to be assigned to any fader on the control surface while maintaining full Call Controller module functionality.

Klotz

► Continued from page 44

control surface. In our facility, the rack room is adjacent to the studio, so it made sense to locate the frame in the rack room. We used the typical broadcast I/O of analog and digital cards, and the StudioHub interconnect eased installation. One CAT-5 cable was needed to connect the control surface to the frame. This hot-swap connection carries the control and power for the surface.

The surface does not require furniture cutouts and could be moved to facilitate the different modes of operation our DJs had. For production, the surface could be moved to one side for more detailed PC-type work, and slid back in front of the DJ for on-air.

The intuitive routing surface with snapshots and presets meant that individually named layouts could be recalled by pressing a button.

Our DJs appreciate the macro-programmability of the console, which we originally didn't qualify as crucial to our selection but turned out to be the most useful and helpful. From an engineer's perspective, I was fond of the easy console setup. This was impressive to me,

as I needed more than two days for the setup if the previously used board.

The console came with clearly arranged and extensive documentation and an intuitive setup tool. Even with the task of converting my analog background to think in terms of digital, I was able to do the set up and install in less than four hours.

The setup tool is structured via tabs allowing access to different logical sections, such as "system," where synchronization and sampling rates are adjusted, for instance; "I/O," where channel names are assigned and the choice of interfaces and physical I/Os are defined; or "Fader Modules" to select the functions of the fader scale, bus buttons and cue parameters. By way of the GPI, different multi-layered macros can be programmed such as routing, button pushes and GPI contacts. The programming is solved via a script feature.

One particular function that has been well-received is the ability to bring phone calls on air by pressing a button. Our listeners are actively involved in our programs and this feature lessens work for our DJs.

For more information, including pricing, contact Klotz Digital in Atlanta at (678) 966-9900 or visit www.klotzdigital.com.

There also are programmable button panels available for the creation of custom control functions. We use these to support a preset-and-take system for moving air chains from room to room.

For example, towards the end of a

broadcast on our News and Information Service network, the board operator can preset the air chain to move into the neighboring control room. In the meantime, the neighboring studio is being prepared for the upcoming broadcast. At the top of hour, the operator in the second control room "takes" control of the air chain with a button press.

The back-end of the preset-and-take system is built using scripts that work with PathfinderPC, the routing control application that provides audio routing control independent of control surfaces. Preset-and-take is just one example of Pathfinder's usefulness. We also use Pathfinder to monitor and control the issuance of network ID break commands, and Pathfinder clients running on PCs already in our legacy rooms provide audio routing control there as well.

The Pathfinder Panel Designer is a tool for quickly creating custom soft-button panels to run on a PC. These "soft" panels can be tied to the hardware button panels to mirror their function. We used Panel Designer to create four button panels for use in two rooms, a project that would have taken much longer to do in hardware.

For more information, including pricing, contact Axia Audio in Cleveland at (216) 241-7225 or visit www.axiaaudio.com.

STATION/STUDIO SERVICES

Ever sold a Back-to-School Safety Campaign to a Dentist?

No? Bet you haven't tried, either. Can't sell what you don't pitch. Oh, and dentists aren't the only ones who spend money to sponsor Back-to-School safety messages. So do car dealers. Insurance agents. Local banks. Bike shops. In fact, most local businesspeople are eager to seize the opportunity to be associated with such a worthwhile campaign. But *you* have to initiate. And now you can do so, risk-free. Simply download the FREE DEMOS at our website and make a few trial presentations. The only way you can lose is by doing nothing at all...or letting your competition beat you to it.



GRACE BROADCAST SALES
 Sound Ideas for Building BusinessSM

Questions? Call us toll-free (888) 472-2388.
www.gracebroadcast.com

The Ultimate NTR Machine!

Generate Non-Traditional Revenue for your station with a telephone time & temperature system

- ☛ Easy Installation
- ☛ Affordable Lease — No costly equipment to buy
- ☛ Daily Remote Support



www.timeandtemp.net RTI Inc. 800.860.5701 Demo Line 919.362.1117

ATTENTION PROVIDERS!

Promote your services to **Radio World's** readers. Reach Radio Station owners/managers and engineers with your message.

For information on affordable advertising call **Claudia** at 1-703-998-7600, ext. 154.

Market Exclusive! \$149



"Sold an exclusive ... for \$1755." (OR)
 "Sold" \$8000 ... Good service!" (MI)

The GBS 2006 BACK-TO-SCHOOL SAFETY BLITZ THIRTY 30-sec. FEATURES
 • formatted :22:08
 • ready to tag and air
\$149
 PRE-SELL WITH FREE DEMOS!

easy sell!

www.gracebroadcast.com

USER REPORTS

Rubicon SL Selected for Pamal Cluster

Broadcaster Chooses 'Light' Version of SAS Console for Familiar Platform, Routability

By Paul Howard-Thurst
Director of Engineering
Pamal Broadcasting Ltd.

ALBANY, N.Y. Recently Pamal Broadcasting completed a new studio facility for its Gainesville, Fla., cluster. We own six stations, which were located in two separate studio buildings spread out across town. Much of the equipment from the old facilities was worn out, so complete replacement was our only option.

Building a facility from scratch can be a daunting task. As a company, we want to maximize our technical reliability and flexibility, while keeping costs in line with the available budget. After looking at the console choices, a centralized router-based system seemed to be the best approach.

We looked at several of the major console manufacturers' router-based systems, and decided on the SAS Rubicon SL system with the 32KD mixer/router.

DJ-friendly

The Rubicon SL console was introduced at NAB2005. Pamal Broadcasting was the first company to purchase and install one. I was a little nervous about buying the first manufacturing run of a brand-new console. We had one minor problem, which was taken care of immediately by SAS. The technical support for this product is excellent.

The Rubicon SL can be thought of as the "Rubicon light" version. SAS reduced some of the "nice to have" functions without reducing any of the



The Rubicon SL is shown at Pamal Broadcasting's WKZY(FM), Gainesville, Fla.

mission-critical ones needed in every broadcast console. The result is a simple-to-use platform with which any DJ will be familiar.

The Rubicon SL console is built around SAS's 32KD router. With a 512 x 512 structure, the 32KD has more than enough capability for our facility. It has 16 slots available for any combination of input, output or KRL RIO link interface cards. We provided the basic layout for the studios to SAS, and the router came preconfigured.

The Router Control Software provid-

ed with the 32KD router is logically written and makes configuration changes easy. Once the configuration

tweaking was completed, the configuration database was backed up and is kept in several locations.

The studio interface is the same RIO link used on the "full" version Rubicon consoles. All the studio audio sources and destinations are handled by the RIO links. They communicate with the 32KD router on a single run of either Category-5E cable or fiber. The Rubicon SL then communicates with the RIO link via RS-485 bus. Each RIO link has 32 channels of audio inputs and outputs. They can be configured as 16 stereo

pairs, 32 single-channel mono, or any combination of the two.

The input and output cards come with 16 channels on each card and are available in analog or digital. We chose all-analog inputs and outputs for the studios. The RIO link also has 16 dry contact relay outputs and 16 opto-isolated inputs so interfacing with external equipment such as CD players, automation systems, EAS, warning lights, timers, etc., is a breeze.

We purchased the cabling pre-made from SAS. The audio inputs, outputs, relays, opto-isolators and RS-485 busses were brought out to Krone blocks in the studios and rack room. This eased the installation time and work considerably.

From the user's perspective, the learning curve on the Rubicon SL console is small. The Gainesville cluster's programming people were a bit intimidated by the looks of the console at first, but once they began to use it, they found it was much the same as any other console, with the added feature of routability. Mix-minus functions are handled in the router, so phone mixes are pre-configured.

Remotes are a big part of the Gainesville marketing effort. We have several Comrex Matrix units in the rack room, as well as ISDN and RPU gear. IFB mix-minus feeds to the remotes are routed automatically when that studio selects the remote source equipment. Being able to select any input source in any studio is a great feature. It allows us to use the production studios as news studios during morning drive.

We installed audio feeds into our large conference room. During non-business hours, that room becomes available for a live music show on our alternative rock station featuring local bands.

For more information, including pricing, contact Sierra Automated Systems in California at (818) 840-6749 or visit www.sasaudio.com.

RDP Opts for BC-2000D Functionality

Portuguese Pubcaster Appreciates the AEQ Console's Programmable Keys, Flexibility

by Carlos Gomes
Engineering and Technology
Manager
Assistant Systems and Planning
Manager
Radio e Televisão de Portugal

LISBON, Portugal RDP is a Portuguese public service radio company that was formerly the "Emissora Nacional de Radiodifusão," which began broadcasting regularly in August 1935.

The group currently broadcasts five radio channels: Antenna 1, a general Portuguese music channel with emphasis on national and international news; Antenna 2, specializing in classical music and culture; Antenna 3, a music channel for young people; RDP Internacional, a general station targeting the global expatriate Portuguese community; and RDP Africa, targeting Portuguese-speaking African countries.

RDP Africa is broadcast in Lisbon on FM, and rebroadcast via satellite on FM in various African countries. RDP also has two regional channels in self-governing regions of Madeira and the Azores. Additionally, it broadcasts on medium-

wave, shortwave and FM, as well as a nationwide DAB network.

RDP has production centers in Oporto, Coimbra, Faro, Funchal, Ponta Delgada, Angra and Horta. The main production center is a roughly 13,000-square-foot facility located in Lisbon, where nearly 600 people work. Opened in March 2004, the Lisbon base comprises 21 studios, 19 of which are self-operated. There also is a suite of post-production studios.

Antenna 1 programs are produced from a conventional setup that has a continually staffed technical control room and studio, with other broadcasts made from self-operated studios.

From music to elections

When the new installation was designed in 2004, we were concerned about maintaining the equipment in the two main conventional studios, from which Antenna 1 programming is broadcast 24 hours a day. Antenna 1's working practice has the reporter/producer sitting next to the on-air presenter. The producer contributes to the control of the program in that s/he controls the microphones and also operates the audio hard-disk system.

Thus we had to search the market for a modern digital control console that would enable us to operate as required. With this

characteristics we required, and offered the enormous advantages of not being supported by a PC, not having a hard disk and working with resident software that provides reliability and availability. Moreover, the financial proposal was



Carlos Gomes uses the AEQ BC-2000D.

setup we have a studio that is both conventional during the news blocks, and self-operated during normal broadcasting.

After analyzing the proposals we received, we selected AEQ's BC-2000D console. This had the functional charac-

teristics we required, and offered the enormous advantages of not being supported by a PC, not having a hard disk and working with resident software that provides reliability and availability. Moreover, the financial proposal was

This equipment can be configured to See AEQ, page 47

USER REPORT

Harris Outfits Bonneville Facility

Broadcaster Selects Harris VistaMax Network, RMXdigital, BMXdigital for Consolidation

by **Dave Garner**
Vice President of Technical
Operations
Bonneville Broadcasting

WASHINGTON Bonneville Broadcasting has been in the midst of a consolidation project in Washington, D.C., for the past two years. The overall plan calls for the relocation of four stations — WTOP(AM/FM), WTWP(AM/FM), WGMS(FM) and WFED(AM) — into a multi-studio facility that accommodates the entire group operation.

Beyond the basic benefits of station consolidation, the centralized facility would also improve source sharing and overall communications among the four stations. A Harris VistaMax networked audio management system with Harris BMXdigital and RMXdigital consoles was selected following a thorough evaluation of most competitive systems on the market.

Additionally, the Harris Smoothline series was selected for furniture and cabinetry in this buildout, and customized for all studios.

Washington Post Radio (WTWP), a long-form news operation, launched its new four-studio operation in April 2006. The studios previously were used by Bonneville-owned WWZZ(FM), a CHR radio station that used the facilities from the summer of 2004 until a format change at the beginning of 2006.

The WTWP system features four BMXdigital consoles (two 22-channel and two 14-channel) connected to a VistaMax network. The BMX architec-

ture was especially attractive at the time because it retained an analog feel while providing an excellent introduction to digital console technology.

Most competitive consoles we researched required computer assistance; the BMX could operate without computers. This was a big selling point at the time due to its reliability, and its transitional analog-to-digital feel proved familiar to the on-air staff.

Similarly, the BMXdigital could operate on its own if the VistaMax connection failed. This ensured that consoles in separate studios could share resources without a VistaMax connection, providing redundancy to the on-air operation.

Online, offline mixes

The BMXdigital offers many benefits on a technical level, with numerous busses and mix-minuses. The under-the-hood mix-minus architecture is great for offline mixes, where we could record a voice off-air while playing music. This could be accomplished without turning on a microphone — a pre-fader, pre-channel on/off would automatically route the voice to a recorder.

The minute the channel is turned on, the offline mix reverts to an on-air scenario. This is especially useful in remote situations, allowing all parties to hear each other when a mix-minus channel is turned on. The BMXdigital eliminates the need to reconfigure the mix between on- and off-air periods. Reconfiguration of online/offline mixes was a requirement with competitive consoles.

ally under the broadcast presenter's control can also be monitored by the control technician, thus allowing simultaneous control of some audio sources. The module installed inside the studio mirrors the modules in the control room.

As the world of radio is continually evolving, the equipment used must be modular; in the case of the BC-2000D, this modularity refers not only to hardware but also to the ease with which the configuration of the console can be modified to respond, for example, to the needs of a new program.

It also is important to point out that this console introduced not only a new technology into RDP, but also a new way of working. In order to minimize the impact on daily operation, we worked hard to make the configuration used match as closely as possible to the analog console we had been using.

The training of our sound technicians barely took a day, and the electronics technicians responsible for maintenance and configuration completed training in three days.

We have been on-air with the BC-2000D for more than a year, and are now installing the AEQ system in the second studio. This time, however, we are using the AEQ Arena console with the same configuration as before.

For more information, including pricing, contact AEQ in Florida at (954) 581-7999 or visit www.aeqbroadcast.com.

The WTWP studio space is large enough to comfortably accommodate the BMXdigital, a physically massive console. Classical station WGMS had far less real estate and could not accommodate the depth of this console.

Fortunately, when it came time to equip the WGMS studios in the summer/fall of 2005, Harris had introduced



Dave Garner of Bonneville Broadcasting, Washington D.C., seated at one of several Harris consoles in the multistation facility. Pictured here is a Harris RMXdigital console in a production/backup on-air studio for WTWP and WGMS.

the smaller, less expensive but still feature-rich RMXdigital console. The RMXdigital offers most of the functions of the larger BMX, with a much smaller footprint and a more comprehensive software package.

The RMXdigital was the next logical step in digital on-air radio, with few hardware settings. Most configurations were accomplished using the console software. Modules are grouped in twos, and there is no requirement to specify whether we need a mic module, phone module or line-level module.

Every module is the same, and any module can perform any function: The talkback module also can serve as a mic or line-level fader, providing maximum flexibility in live sessions. Every POT on the RMX console is routable, allowing operators to pick up any source on the network and make changes on the fly.

Both consoles also maximize flexibility to work in different studios. Consoles are programmable for certain shows called sessions and may be recalled for later reuse. Some of our studios are set up as standard on-air studios, while others are diversified for Washington Nationals baseball, backup air and interview studios.

An operator unfamiliar with a different studio and console setting can punch up specific settings (the "session"), and the console will map itself to accommodate a specific show. This allows us to be flexible studio to studio, where different personalities and sessions are accommodated without the time-consuming process of manually changing the settings.

While the BMX and RMX consoles are the heart of our studios, the VistaMax Networked Audio Manage-

ment System is the heart of the facility. Our VistaMax configuration features digital, analog and logic cards to handle routing of multiple digital, analog sources along with GPI/GPO control.

Our ENCO digital audio system, which stores our commercials, news cuts and other spots, is remoted through VistaMax from our central equipment room. Similarly, VistaMax routes our CBS network and AP bureau feeds to various studios after satellite downlink. Other sources into VistaMax are landline

and ISDN feeds for news/weather/sports from various sources.

We also can route our program feeds through the VistaMax network to any location on the board, as opposed to conventional boards where a mountable selector with one or two mixers accepts all routable sources. VistaMax can designate certain sources to specific destinations and keep those settings static, or they can be changed in the session setting. The same flexibility is afforded for local feeds from remote sources.

Facility integration projects require a careful amount of planning for wiring and cabling. The bulk of this wiring has been reduced considerably, along with the amount of time required to install the system — from about two and a half weeks to two days. Most of the network audio is sent over CAT-5 links to the various studios. The Harris system has reduced the typical 60 audio pairs and 60 control wires needed in and out of a studio to between six and 12 CAT-5 wires.

We are looking at additional RMXdigital consoles as we continue to finalize construction of the Bonneville Washington facility, including a five-to-six-studio rebuild for WTOP. We expect construction to begin this fall, with a target completion date of summer 2007.

For more information, including pricing, contact Harris Radio Broadcasting Systems in Ohio at (513) 459-3597 or visit www.broadcast.harris.com.

got racks? cables & connectors
racks
tools
problem solvers
test gear
& much more
www.systemsstore.com

AEQ

► Continued from page 46

suit the user's needs, so a preliminary configuration was defined at RDP, and during the subsequent installation phase the initial configuration was revised so we could make better use of the available functions.

The console setup includes two 10-way modules and a master module installed in the technical control booth. The third 10-way module is installed in the studio shared by the presenter, the producer and guests. We thus have a single console divided between two physically separate spaces.

The fact that the studio is used for all Antenna 1 programs — from the normal broadcasting of music, news, debates and interviews to special football or election programs — led us to configure the BC-2000D so it would be suited to the characteristics of each broadcast. For this purpose, we took advantage of the Command Page feature.

Another important characteristic of the configuration is the use of programmable keys. Through these keys, users control two dual audio codecs and four ISDN B-channels with off-hook, hold and on-air functions. The console matrix enables these lines to be used as n1, and to therefore operate as a multiplex console.

Furthermore, commands that are usu-

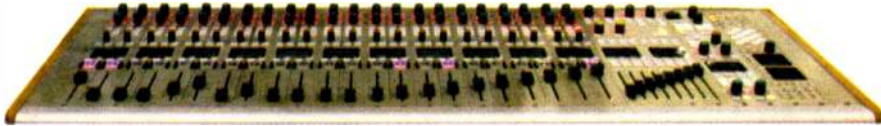
TECH UPDATES

Logitek Artisan Can Be Configured With Four Modules

Logitek debuted its Artisan digital console, a control surface for the Logitek Audio Engine, a router accommodating analog and digital I/O. The Artisan uses a series of drop-in modules that permit users to purchase console configurations that meet their needs.

Features include multiple frame sizes, allowing console configurations ranging from small work areas to large production studios; 5.1 compatible operation; direct access to two master mix busses and four sub mix busses from each fader module; monitor controls, including selection of mix minus outputs and talkback destinations; and a five-function dynamics processor and four-band equalizer.

Artisan consoles can be configured with four modules: Fader, Monitor, Master and Effects.



The Fader module comprises two Penny & Giles faders with color-changeable on/off switches, a color screen that indicates input, effects and metering for each fader; controls for four aux mix busses; and selection of master mix and sub mix busses.

The Monitor module includes headphone and monitor speaker gain controls, as well as input/gain controls for guest headphones or an auxiliary studio's monitor; two five-button input selectors; headphone mix controls; monitor dim and mute switches; and a color LCD screen. Also included is a "Last" button, which will restore the last source selection or will toggle between two sources.

The Master module has eight Penny & Giles faders, aux bus gain controls, selection of pre- and post-input channel fader levels; and talkback controls to aux bus outputs. The Effects module has controls for a four-band equalizer, including high-shelf, low-shelf and two parametric sections with coarse and fine adjustment levels; and a five-function dynamics processor.

The company says pricing of an Artisan console including the Audio Engine router will be \$70,000 or less, depending on the configuration.

For more information, including pricing, contact Logitek Electronic Systems in Houston at (800) 231-5870 or visit www.logitekaudio.com.

Klotz Has 6-, 12-Fader Xenon For Small Studios

Klotz Digital debuted the Xenon standalone digital radio console, which it says is suitable for remote broadcasts as well as smaller radio stations and studios that are part of large radio facilities.

The digital broadcast console offers audio inputs and outputs in analog and digital format, routing capabilities and free assignment to faders, DSP functions for audio treatment and processing, and free configurable GPIs for optimum integration capabilities.

Xenon is available as a six- or 12-fader console. Each six-fader module is in its own housing, enabling Xenon to be either a compact or split console. Each channel strip is equipped with a professional 104 mm fader assignable with any kind of signal thought the GUI-configurable input router. Large on/off buttons, a Cue button for pre-fade listening, alternate source selection and an individual bus assignment to the three main busses, PGM, REC and UTL, complete the fader modules.

The Monitor-DSP-Master Control module offers two console snapshots and free access to seven DSP presets including EQ and DYN, which are available in an MIC and TEL channel. It comprises a 40-LED stereo level meter (VU or PPM), as well as control room and studio monitoring, including check of all busses and predefined external monitoring sources.

It also is equipped with a reporter input for connection of portable or temporary audio devices, and headphone sockets, powering low-impedance headphones. Talkback buttons and four free macro-programmable function buttons complete the Monitor module.

For more information, including pricing, contact Klotz Digital in Atlanta at (678) 966-9900 or visit www.klotzdigital.com.



Studer Offers Networkable Version of OnAir 3000

Studer's OnAir 3000Net is an option for its OnAir 3000 console. The company says it migrates the desk from a stand-alone operation to an open and networked part of the overall infrastructure of a broadcast center.

SCORE is the company's digital signal processing engine, used by OnAir 3000 and related versions such as OnAir 3000Net and OnAir 3000 Modulo. By interconnecting several Studer SCOREs, the local and decentralized audio resources in each SCORE can be shared by the other SCOREs in the network.

This means that a user working on SCORE A can access a microphone in another physical location and connected to SCORE B, route it on a fader on his desk surface and use it as if it was connected virtually to his SCORE. The user can then control the mic gain in the other SCORE remotely, and if the fader is opened, the loudspeakers in the remote location are dimmed or cut and a red light will go on.

Interconnected audio sources are visible in the input routing page on the OnAir 3000Net user GUI, and can be patched to faders in the same way as local sources. Routines, including remote sources from other SCOREs, can be stored and recalled with snapshots.

Existing OnAir 3000 consoles are upgradeable to the OnAir 3000Net version, and require a software update and small hardware change.

For more information, including pricing, contact Studer USA/Harman Pro North America at (866) 406-2349 or visit www.studer.ch.



Studer OnAir 3000Net

Henry Upgrades StudioDrive with USB Plug-in

The StudioDrive USB from Henry Engineering is an updated version of the company's original StudioDrive PC audio system. The USB version is a plug-in upgrade that gives StudioDrive USB connectivity to interface to a PC or laptop, which the company says eliminates the need for a soundcard in the computer.

Henry Engineering says the heart of the USB interface is the latest Burr-Brown 8X ADC/DAC and advanced analog filter design that produces audio without the "digital harshness" that is common in many sound cards.

StudioDrive is a broadcast audio mixer that mounts in the drive bay of a PC. It turns a PC into a studio suitable for radio automation, PC-based edit suites, voiceover studios and LPFM, in addition to emergency studios, remotes and Webcasting.

StudioDrive accommodates five inputs (one mic and four stereo line), via four mixing channels. There also is a telephone coupler for recording from a POTS line. The mix-minus output can be used with a telephone hybrid. It has a monitor system, which includes automatic mic-on muting and a Mic Tally output to control "On the Air" warning lights.

By adding peripherals such as a mic and CD player, a PC or laptop can be used for live broadcasting or for audio production tasks. StudioDrive adds the source selection, mixing, monitoring and control functions of a broadcast console to the PC, while the USB upgrade eases connection to the PC.

The StudioDrive USB retails for \$840. The StudioDrive is \$675; the USB option adds \$165.

For more information, contact Henry Engineering in California at (626) 355-3656 or visit www.henryeng.com.



TECH UPDATES

AEQ Touts Arena's Routing Capability

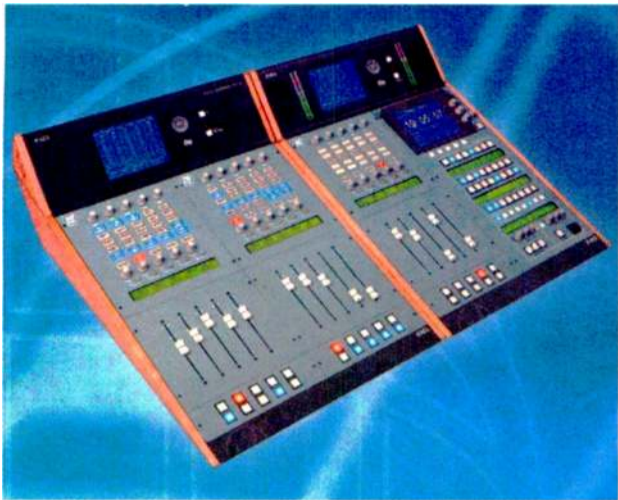
AEQ says the Arena control surface is suitable for radio broadcasting applications such as controlling on-air transmissions. It includes features such as intercom, automatic monitor cut-off, cough muting, fader start, control signaling and control signals for the automation of external equipment.

Additionally, Arena adapts to configurations including auto-control, control room-studio, control associated with several studios, mixed configurations and integration into large facilities.

The company says Arena's most important feature is its routing capability, as its routing power makes it possible for all the system outputs to be summable and re-routable to other outputs. It enables as many n-1 busses or clean feeds to be created as there are outputs.

Other highlights of the Arena include motorized faders; single-button routing; gain control in each channel; page-change buttons and display; and a display for VU meters, routing and signal adjustment.

For more information, including pricing, contact AEQ in Florida at (954) 581-7999 or visit www.aeqbroadcast.com.



Arrakis Offers 10-, 14-Channel X-Mixer

The Xtreme-mixer digital audio console from Arrakis Systems supports analog and digital sources, and features LED illumination for switches and Penny & Giles slide faders. Additionally, it has three mixing busses, stereo cue, monitoring for a control room and studio, and a telephone interface for on-air talk shows and off-line recording and communication.

The X-Mixer comes in 10- and 14-channel models. Highlights include LED digital timer and digital timer control, metering for the three output busses, and monitor and headphone volume control using conductive plastic elements with stainless steel shafts. The chassis features two-part epoxy finish for scratch resistance. There are six-position remote selector switches for input selection, and a telephone mix-minus selector.

The X-Mixer retails for \$5,495.

For more information, contact Arrakis Systems in Colorado at (970) 461-0730 or visit www.arrakis-systems.com.



Millenium Has Livewire IP-Audio Connectivity

Radio Systems says its Millenium consoles offer standalone functionality in addition to Livewire IP-Audio network connectivity, enabling them to communicate with Livewire-enabled products. The Livewire versions of the company's RS-12d and RS-18d offer six channels of Axia Livewire built into the board.

Local channels feature two inputs each of stereo analog inputs with mic- through line-level sensitivity. Digital inputs are AES/EBU or S/PDIF with sample rate conversion. Livewire channels feature a rotary encoder and LCD two-line read-out for the display and selection of system-wide Livewire sources.

Outputs include two stereo and one mono bus, 10 programmable mix-minus busses, all in analog and digital formats. Busses also create Livewire streams accessible throughout the Livewire network. Two additional local Livewire inputs and outputs are provided for auxiliary applications.

The RS-12d Livewire retails for \$13,495. The RS-18d Livewire retails for \$15,995.

For more information, including pricing, contact Radio Systems in New Jersey at (856) 467-8000 or visit www.radiosystems.com.



Products & Services SHOWCASE

STEREO HEADPHONE AMPLIFIER



THE ALL NEW AF-SH1 FEATURES:

- Integral Long-Life VCA Stereo Level Control
- Balanced or Unbalanced Inputs
- Switch-Selectable Input Sensitivity
- Switch-Selectable Mono (Left) or Stereo Operation
- Amplifier To Drive High or Low Impedance Headsets
- Convenience of APPFLEX™ Mounting Possibilities

Shown in AFM-DC1N tabletop chassis

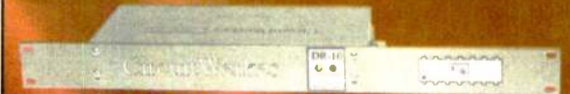
The AF-SH1 is part of the group of versatile APPFLEX products from Radio Design Labs. These modules combine advanced circuitry, durable all-metal construction, attractive RDL ULTRASTYLE™ colors and versatile mounting possibilities. APPFLEX modules are ready to drop in a cabinet, chassis or panel cutout. Numerous ULTRASTYLE wall mounting accessories and tabletop chassis are optionally available to facilitate system design.



www.rdl.net.com
RDL • 659 N. 6th Street • Prescott, AZ • 86301



Do Unattended Live Remotes



DR-10 Dial Up Controller & Remote Broadcast Interface

- ▶ The DR-10 is a Dial-Up remote control with telephone audio input and output for remote broadcasting.
- ▶ If your automation works with satellite networks, you can use the DR-10's relay outputs to fire commercials, liners, etc. Save \$\$ with no staff needed at the studio!
- ▶ Use the DPDT relays to insert the phone audio directly into the program path when necessary, especially for emergencies or to bypass your automation system.
- ▶ When used with our Silencer Option, the DR-10 is the **ONLY** product available that completely removes DTMF control tones from the audio path for clean remotes.

Get the DR-10 & start saving money now!
www.circuitwerkes.com



CircuitWerkes, Inc. - 352-335-6555

BROADCAST

Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

ACOUSTICS

WANT TO SELL



Full product line for sound control & noise elimination.

www.acousticsfirst.com

ANTENNAS/TOWERS/CABLES

WANT TO SELL

AM Ground Systems

Reliable, On-time Installation
Quality Workmanship
Ground System Evaluation
and Repair

www.amgroundsystems.com

1-877-766-2999

100-300 feet of 1 5/8 in Andrew foam cable. Make offer. Contact Ken Diebel 318-728-2370

DANGER

NO ENTRY FOR ANY PURPOSE
RF TRAINED PERSONNEL ONLY
DO NOT TOUCH TOWER
HIGH RF VOLTAGES
ASR or Phone Number

FCC Signs for AM and FM towers
Guy Wire Protectors-Antenna Tags
Antenna ID Products
610-458-8418
antennaID@msn.com
www.antennaID.com

Dielectric DCR-M1, one bay, non-directional antenna for sale. Tuned to frequency 101.5. 6 kw horizontal, 6 kw vertical. \$6,000 or best offer. Used for just 1 year. Call Willis 414-527-4365, or email wglb@wglbam1560.com.

Three Bay Cablewave Medium Power Antenna tuned to 92.1 MHz. Designed for 1 5/8" cable connector. Make offer. Contact Ken Diebel 318-728-2370

AUTOMATION EQUIPMENT

WANT TO SELL

Station Audio Vault system, vintage 2001 - Two AV-2 Servers, 3 On Air Workstation, 3 Production Studios. All hardware supplied by BE and is rack mount. Three Broadcast Tools 8x2 Switcher, 2 Bext UPS to float all systems. System includes AV Sat, NewsBoss and Cybex Entenders. Best offer. Email Dirk dnadon@nassaubroadcasting.com

DIGITAL AUTOMATION SYSTEM FOR HD RADIO, Internet, Podcast, or terrestrial radio stations. Smarts Linux-based system less than two years old. Can run up to 4 stations independently using satellite automation, live-assist, voice-tracking, music on hard drive, or all of the above. Includes input switchers, all documentation, rack-mountable deluxe cases, and peripherals. Excellent condition-ready to ship or deliver. Best offer. Contact Mike@radioworksforme.com, or call 812-236-2657.

Seven-foot equipment racks. Various manufacturers. Some with accessories. All used in good condition. Five available. New ones average \$750 each. We're selling at one hundred dollars each plus shipping/freight. Located in Palm Springs California. Any questions, please call Bob. 760-320-4550 or bobrivkin@dc.rr.com.

Three RDS Rack-Mount Phantom Automation Systems. Each system records and plays in the following formats: MPEG, CDI-C 4:1, ADPCMe 4:1, ADPCM1 4:1, PCM 16-bit (WAV). Each system includes keyboard, monitor, and Broadcast Tools SS8.2 dual stereo crosspoint switcher. \$2500 or best offer per system. Contact Greg Garrett @ (864) 414-4140.

Now available, radio automation for the Linux operating system. Schedule music, voice track, create shells, auto or announcer assist mode, set intro and ending cues, hit the vocal every time with your voice tracks, execute exact time events, join networks, and more. Visit digitaldevelopment.net and click on RADIO AUTOMATION for screen shots. The software is free, there is a small duplication fee. For more info, call 406.665.1832.

WANT TO BUY

25hz sensor for Christian radio station WPEE in Michigan. bajack004@yahoo.com

COMPLETE FACILITIES

WANT TO SELL

NEW OR USED COMPLETE PACKAGES

STUDIO/STL/TRANSMITTER /ANTENNA OR ANY COMBINATION OF ABOVE.
-LEASE OPTIONS-
-EMERGENCY RENTALS-
-REMOTE BROADCAST RENTALS-

SCMS, Inc. (800) 438-6040
"You Know We Know Radio"

CONSOLES/MIXERS

WANT TO SELL

Autogram Mini-Max 8A, 8 Channel Broadcast Console. Less than 1 Yr. Near Mint Condition. Power Supply and Manual Included. Asking 2,200 OBO. email for pictures, questions, offers. ccarpenter@andersonctc.k12.sc.us

WANT TO BUY

Ampex AM-10 mixer in operating condition. Bill Cook, 719-687-6357.

Sparta A-20, A-20-2, AS-30, or A-15 Mid 1970s "lift-top" Sparta Grey and Silver console. Should be in working condition and complete. Prefer S/N 191 through 303. Prefer you send me information on your unit and your price to my email account- Duane Williams, djwillia@libby.org but you can also call me at 406-293-6234.

LIMITERS/AUDIO PROCESSING

WANT TO SELL

Airtools 6000, Analog Profanity Delay \$1000. Call David Hood 317-684-8128

Symetrix SX 208 Stereo Compressor/Limiter - \$100 - Call John Felz, 310-503-0444

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.

MICROPHONES

WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

MISCELLANEOUS

ROTRON BLOWERS AND PLATE BLOWERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin, Goodrich Ent. 11435 Manderson St. Omaha, NE 68164 402 493 1886 FAX 402 493 6821

WANT TO BUY

Non-profit radio station/organization seeks donations of radio equipment. We specifically need a console, a P3 or higher computer, studio and field microphones, mic processor, studio monitors, CD players, a hard-drive based field recorder and a telephone audio interface. Email: ColinCruz@TheBlast.FM

REMOTE/MICROWAVE

WE RENT FOR LESS

Blueboxes	FM Exciters
Zephyrs	FM Power Amps
POTS Codecs	STL's
RF/Audio Gear	Test Equipment

If we don't have it, we will get it!
SCMS, INC. (800) 438-6040
"You Know We Know Radio"

RF SUPPORT

WANT TO BUY

Super Searcher Watson RF finder and counter - 1 set and Watson Digi-Hunter - 1 set - Please send your quoted price and shipping costs to Ms. Jancy at optoelec@singnet.com.sg or fax to: 65-62-933-3180

SATELLITE EQUIPMENT

WANT TO SELL

Satellite C/KU Reception Parts - www.davefant.com 479-471-0751

WANT TO BUY:

Looking for a used Comstream Sat receiver with tone decoding for Christian radio non-com station WPEE in Michigan. bajack004@yahoo.com

STATIONS

WANT TO SELL

1K FULL TIME AM FOR SALE in central New York with property included. FM translator in Bradenton, FL for sale as well as several translators in central South Carolina. Construction permit for sale covering central Kansas state for sale. Please visit www.bbnradio.org/sale for specifics.

LOW-POWER TELEVISION STATIONS FOR SALE: Roswell, NM, and throughout Texas, including, Fort Stockton, Odessa, Abilene, and others. LPTV Construction Permits: Ukiah, CA, Bozeman, MT. Priced to sell! LPTV station central California reaching 1,200,000+ over-the-air, and on two cable systems. Nevada FM translators. Vernon Snyder, broker 541.956.1295. vernongsnyder@hotmail.com

OWN YOUR OWN!! FM Duopoly within 200 miles of Atlanta, Owner retiring! New Fulltime AM sleeper with real estate and limited competition...great terms! RETIRE DOWN SOUTH-CALL DAVE HEDRICK-256-613-2630

STUDIO-TRANSMITTER LINKS (STL) AND RPU

WANT TO SELL

Moseley PCL 6010 / PCL 6020 950 MHZ composite STL Transmitter and receiver combo \$4000. Call David Hood 317-684-8128

Harris Digital XMTX STL Digital receiver-Excellent condition- has been upgraded, \$7,000.00 - Call Gene Huff - 606-877-1326

Advertise!

Call Claudia at 703-998-7600 ext. 154

TAPES/CARTS/REELS/CDs

WANT TO SELL

Ampex 600, Portable Tube-Mono-7.5 Ips Recorder-Player in Case w/ Handle \$250 + shipping 50 lbs. Call Ken Sands 313-494-6406

Ampex Reel-to-Reel 600 Series SP Speaker Amplifier Combo, Matches 600 Series Recorder in Case w/ Handle. \$250 + shipping 40 lbs Call Ken Sands 313-494-6406

WANT TO BUY

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-687-6357.

TELEPHONE EQUIPMENT/HYBRIDS

WANT TO SELL

Conex Celljack single Channel - Used with analog bag phone \$75 plus shipping - Call John Wilsbach 717-948-9136

VSoft

COMMUNICATIONS
R.F. Communications Software
and Engineering Consulting

The Leader in Broadcast Engineering Software

Professional Software packages for FCC applications and predicting coverage.

- Create stunning "real-world" coverage maps and interference studies using Longley-Rice, PTP, FCC, ITU-R P.1546-1, and Okamura/Hata with Probe 3™.
- Search for FM channels under spacings and contour to contour protection using FMCommander™.
- Prepare AM skywave and groundwave allocation studies and map FCC contours with AM-Pro™.
- Plot STL paths over 3D terrain with Terrain-3D™.

Quality custom mapping and FCC engineering consulting available.
www.v-soft.com (800)743-3684

TEST-METERING-MONITORING

WANT TO SELL

Potomac FIM 41 AM Field Strength Meter. Excellent condition, \$ 3,500. Max Turner 317-848-6912 or mturner1@indy.rr.com

TRANSMITTERS/EXCITERS/TRANSLATORS

WANT TO SELL

20KW Harris FM 20K. Excellent Condition. Operating until May 2006. \$9500.00/offer. 800-678-4762. patrick@amfmv.com

1994 CCA 5000G Transmitter, Presently on Air. Available 6/1/06 \$7500. Call Chuck Tarkenton, 770-412-8700

BEXT

FROM THE TALL TO THE SMALL

www.bext.com
619-239-8462

Transmitters and Antennas

Gates FM 2043, 20 KW FM Transmitter with BE FX-30 Exciter. Now on 93.1 MHz \$4000. Call David Hood 317-684-8128

BE FX-30 FM Exciter, 30 Watt - Excellent Condition - \$1250/offer - Patrick Lopeman 231-845-9666

CCA AM - 10000D, 10 kW AM tuned to 1200 KHz - good condition with tubes. \$5,500.00 - Call Bill Barry 615-889-1960

PROMOTE YOUR BUSINESS!

ADVERTISE!

For more information, call Claudia Van Veen at 703.998.7600, ext. 154.

OFF THE AIR? Emergency Back-up Rentals

FM Exciters - STL's - FM Pwr Amps - Antennas - Studio & Test Equipment

SCMS Inc (800) 438-6040
"You Know We Know Radio"

Harris 23.5 kW Solid State - 3 Phase-including digital Exciter only 5 years old - excellent condition \$20,000.00 - Call Gene Huff - 606-877-1326

Harris/Gates 8C-1G 1 KW AM Transmitter. Very nice condition. Presently tuned to 75 meters easily put back on BC band. \$ 1800.00 Pickup in Bakersfield, CA. Terry Gaiser KUZZ Radio, 661-326-1011 Ext 644.

WANT TO BUY

WANTED AM BROADCAST TRANSMITTERS. Prefer solid-state 500W to 2500W. Contact Vinton 805-379-2743

Consultants

**Consulting Communications Engineers
EMC Test Lab**

- FCC Applications and Field Engineering
- Frequency Searches and Coordination
- AM-FM-CATV-ITFS-LPTV
- EMC Test Lab-FCC and European (IEC)

OWL ENGINEERING, INC.

E-mail: info@owleng.com **651-784-7445** Fax (651) 784-7641

5844 Hamline Ave. N., Shoreview, MN 55126 Member AFCEE

EVANS ASSOCIATES Consulting Communications Engineers

FCC Applications • Design • Field Engineering • Tower Detuning Upgrade & Relocation Studies • AM Directional Array Tuning & Proof

EXPERTS IN
TV • DTV Transition • FM • Directional Antennas • RF Exposure

210 S. Main St., Thiensville, WI 53092, (262) 242-6000, FAX (262) 242-6045
http://www.evansassoc.com Member AFCEE

COMMUNICATIONS TECHNOLOGIES, INC.

- AM, FM, TV coverage & Upgrades
- Broadcast transmission facility design
- FCC applications preparation - construction permit and license engineering

Clarence M. Beverage • Laura M. Mizrahi

P.O. Box 1130 Tel: (856)985-0077
Marlton, NJ 08053 Fax: (856)985-8124

www.commtechrf.com

GRAHAM BROCK, INC.

BROADCAST TECHNICAL CONSULTANTS

Full Service From Allocation to Operation AM/FM/TV/AUX Services. Field Work, Antenna and Facilities Design

Over 45 years engineering and consulting experience

912-638-8028
202-393-5133

www.grahambrock.com

EM Serving Broadcasters Since 1948

9049 Shady Grove Court
Gaithersburg, MD 20877
(301) 921-0115
Fax (301) 590-9757
mullaney@mullengr.com

Mullaney Engineering, Inc.
Member AFCEE

Scientific Broadcast

Technical Consultants
Since 1970

FM Engineering • FCC Applications
Upgrades, Frequency Search

Coverage Maps \$69

812-738-3482
kreising@otherside.com

The Coverage Map Store

REALcoverage.com

High Performance Engineering for Maximum Coverage

Doug Vernier
Telecommunication Consultants

Broadcast Engineering Consulting
AM/FM/TV/LPTV/DTV
Custom mapping service
Frequency searches
Propagation prediction
FCC application preparation

VSoft
Software for your PC

(800) 743-3684
www.v-soft.com

**FASTER...
MORE ACCURATE RADIO COVERAGE**

- Real Time 3-D Displays
- Interference calculations
- Cost effective mapping
- Fully integrated databases
- Used by the FCC
- Latest standards built-in

RADIO SOFT

Visit us on the web at www.radiosoft.com
101 Demorest Sq., #E Demorest GA 30674-2725

Structural Analysis

ERI

Electronics Research, Inc.
7777 Gardner Road
Chandler, IN 47610
(812) 925-6000
www.ERInc.com

REGISTERED PROFESSIONAL ENGINEERS
STRUCTURAL ANALYSIS
ERI Incorporated
TOWER REINFORCING

Reach Broadcast Professionals!

For more information, including rates & deadlines, call Claudia Van Veen at +1-703-998-7600 ext. 154.

Radio World

DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

CORNELL-DUBILIER MICA CAPACITORS

FROM STOCK

JENNINGS VACUUM CAPACITORS

FROM STOCK

JENNINGS VACUUM RELAYS

SURCOM ASSOCIATES

2215 Faraday Ave., Suite A
Carlsbad, California 92008
(760) 438-4420 Fax: (760) 438-4759
e-mail: link@surcom.com web: www.surcom.com

SPACE IS AVAILABLE!

Are You a Distributor?

ADVERTISE HERE!
Space is available
Call 703-998-7600

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations only. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Are you currently a subscriber to Radio World?
 Yes No

Please print and include all information: Signature _____ Date _____

Contact Name _____
Title _____
Company/Station _____
Address _____
City/State _____
Zip Code _____
Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a paid basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS WTB Category: _____ Model: _____
Make: _____
Brief Description: _____
Price: _____

WTS WTB Category: _____ Model: _____
Make: _____
Brief Description: _____
Price: _____

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

Broadcast Equipment Exchange • PO BOX 1214, Falls Church, VA 22041
Tel: 703-998-7600, ext. 154 • Fax: 703-671-7409 • E-mail: cvanveen@lmaspub.com

Radio World

5827 Columbia Pike, 3rd Floor Falls Church, VA 22041
PHONE: 703-998-7600 • FAX: 703-671-7409

Classified Advertising Rates Effective January 1, 2006

	1x	6x	13x	26x
1-9 col inch (per inch)	\$110	105	100	95
10-19 col inch (per inch)	\$95	85	75	65
Distributor Directory	\$135	130	125	120
Professional Card	\$105	100	95	90
Station/Studio Services	\$200	170	145	123
Classified Line Ad	\$2/word			
rwnline.com Line ad	\$2/word			
Blind Box Ad	\$16 additional			

Call Claudia Van Veen, at 703-998-7600 ext. 154, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.

www.rwnline.com



NEW

ECONCO NEW TUBES

New tubes are now manufactured by **ECONCO** at our award winning facility in Woodland California! Of course, we continue our 34 year tradition of high quality power tube rebuilding.

TEL: 800-532-6626
 INTL: +1-530-662-7553
 FAX: +1-530-666-7760
 www.econco.com
 SE HABLA ESPAÑOL



TRANSMITTERS/ EXCITERS/ TRANSLATORS WTS (Cont.)

TRANSCOM CORPORATION

Serving the Broadcast Industry Since 1978
 Transmitters and Broadcast Equipment for Radio & Television

Used FM Transmitters

- 1.5 KW 1983 BE FM 1.5A
- 2.5 KW 1984 Continental 814R-1
- 3.5 KW 1986 Harris HT 3.5
- 6 KW 1995 Henry 6000D
- 7+IBOC 2005 Harris Z16 HD
- 10 KW 1988 BE FM10A
- 10 KW 2001 Henry 10,000D-95
- 20 KW 1985 Harris FM20K
- 25 KW 1982 Harris FM25K
- 25 KW 1980 CSI-T-25-FA (Amp Only)
- 30 KW 1986 BE FM30A
- 50 KW 1982 Harris Combiner w/auto exciter-transmitter switcher

Used AM Transmitters

- 1 KW 1983 Harris MW1A Solid State
- 5 KW 1985 Continental 315R1
- 5 KW 1982 Harris MW5A
- 5 KW 1987 Harris MW5B
- 10 KW 1982 Harris MW10A
- 50 KW 1985 Continental 317 C2

Exciters

Used Continental 802A Exciter
 New 20 w & 30W Synthesized exciters

New TV Transmitters- Analog and Digital
 OMB & Technalogix
 VHF and UHF TV Antennas
 (10 W to 10 KW) TV STL

Used TV Transmitters

- 1 KW UHF Axcerra 832A, CH 28
- 5 KW UHF Harris Diamond CD Solid State
- 55 KW UHF GE TT59B, CH 25
- 55 KW UHF RCA TTU-55B, CH 25

Used Misc. Equipment

- Bird RF ThruLine Wattmeter, 50S
- Patch Panel, 4 Port, 1 5/8"
- Denon 720R cassette NEW
- Potomac Phase Monitor 1901 Digital 2 Trw
- Sola Voltage Reg. 60hz 1 KVA s-phase

Please visit our website for current listings.

800-441-8454 • 215-938-7304 • FAX: +1-215-938-7361

www.fmamtv.com • E-mail: transcom@fmamtv.com
 RETUNING & TESTING AVAILABLE • CALL US FOR A QUOTE!

WORKSTATIONS

WANT TO SELL

Digilink II - Arrakis digital audio workstation: software, keyboard, color monitor \$2000 + shipping, call Craig Mon-Fri 9A-5PM CDT 432-620-9393

Digilink III - Arrakis digital audio workstation: software, keyboard, color monitor \$2500 + shipping, call Craig Mon-Fri 9A-5PM CDT 432-620-9393

Digilink III - Arrakis Systems Operations Manual - \$100, call Craig Mon-Fri 9A-5PM CDT 432-620-9393

To advertise e-mail cvanveen@imaspub.com

TUBES & COMPONENTS

RF PARTS CO.
 From Milliwatts to Kilowatts
 EIMAC • TAYLOR • ECONCO • SVETLANA
 Motorola • Toshiba • SGS • Thomson & Mitsubishi Semiconductors
 Se Habla Español **800-737-2787** We Export
 760-744-0700 Email: rfp@rfparts.com Web: www.rfparts.com

D And C Electronics
 An International Distributor of RF Components
Tubes
 NEW & REBUILT
 TRANSMITTERS, STUDIO EQUIPMENT, STLS, ANTENNAS,
 RADIO DATA SYSTEM (FOR CAR RADIO DISPLAY)
 EXCITERS-TRANSMITTERS, TRANSLATORS, MIXERS-CONSOLES, RADIO LINK
 RPU, MOSFETS, VACUUM CAPACITORS, SOCKETS

BEST PRICES To Order: **1-800-881-2374**
 Outside U.S. (352) 688-2374
 Se Habla Español

3089 Deltona Blvd. Spring Hill, FL 34609
 352-688-2374 Fax 352-683-9595
 Website: www.dandcelectronics.com

FOR THE BEST PRICE
 & 24 Hr service on transmitting tubes & sockets/parts, new & rebuilt call Goodrich Ent. at **402-493-1886** day or night, www.goodrichenterprises.com

ISO 9001 Certified
 The Choice of Successful Broadcasters Since 1934
NEW POWER TUBES
 Triodes
 Tetrodes
 Pentodes
NEW SOCKETS & REPLACEMENT PARTS
 Worldwide Availability
 Made in U.S.A.
 CALL 800-414-8823
 Int'l (650) 592-1221
 Fax (650) 592-9988
 Visit our Web Site at www.eimac.com

EMPLOYMENT

HELP WANTED

SEARCH REOPENED! Rare Opening at Greater Media - Greater Media, a privately held company noted for technical excellence and long term employee loyalty and stability, has two rare openings for station level engineers within its New Jersey station cluster. Candidates should be well versed in all facets of radio station technical operation and have 3-5 years of experience in station related engineering. An associates or bachelors degree in a technical discipline will be given consideration in lieu of a portion of the experience requirement. SBE certification and/or FCC licensure is highly desirable. We are looking for very talented technical people and compensation is consistent with that goal. Full benefits. Please e-mail your resume to Keith Smeal, director of technical operations at engineering@greatermedianj.com. Greater Media is an equal opportunity employer and encourages female and minority applicants to apply for these positions.

BACKYARD BROADCASTING SOUTH DAKOTA, LLC.
 is seeking qualified self-motivated radio broadcast CHIEF ENGINEER. Candidates must possess a minimum of 5 years experience along with a strong knowledge in all technical aspects of the radio-broadcasting field including experience in directional AM and high power FM technology, studio maintenance, remote broadcasting, and computer skills. IF you are not afraid of wearing a pager and you interact well with programming, promotions, news and sales departments, send your resume and salary requirements to: Craig Hodgson, VP /General Manager, Backyard Broadcasting South Dakota, LLC. KELO-AM KELO-FM KRRO-FM KTWB-FM KWSN-AM, 500 South Phillips Avenue, Sioux Falls, SD 57104, Siouxfaliscareers@byradio.com or fax to 605-271-5819. No phone calls please. Backyard Broadcasting-South Dakota LLC. is an equal opportunity employer.

www.RWOnline.com

POSITIONS WANTED

Creative, down-home, funny and easy going personality who loves to talk about anything... especially sports. Audio/Music experience, will travel. Justin Bryce (469) 644-7647 p1jbryce@mac.com

Dependable, Creative, Committed! Strong news background. Pleasant voice, Articulate, happy persona, versatile. Co-host, news, weather, or sports -Juliette Dobbs-Jewellouis@sbcglobal.net 469-222-5949

Enthusiastic, energetic, and reliable Veteran. Great personality, relates to audience. Good prep/writing skills. 'The Bossman In The Bighouse' will relocate. Darrell 817-731-3468 thebossman06@yahoo.com

Friendly, outgoing persona, dependable, bilingual English/Spanish. Good digital, and boards. Extremely creative copy/writing skills. Nely Chavez (469) 951-8426 nely0417@sbcglobal.net

Laid back, funny guy with a pyrotechnics license! Good work ethic, lots of theater/production, creative copy/digital, audio and technical experience too! Jake Farmer 214-535-8006 jakebundy@yahoo.com

Talented news/commercial writer, production, on-air skills. Great Board-op/Producer experience, knows Dallas syndicated environment. Erika Hawkins 972-939-2206. ekabit@aol.com

Mind for Radio. Interest lay in every aspect of the industry. Prepared to make a serious impression. Will travel, Gypsy by heart. Justin Grigson 214-228-5590

Very reliable, energetic, male voice who takes direction well. Have 3 years of radio/promotional experience. Wants on-air/behind scenes. Blake Kellum worshipper3@sbcglobal.net or 817-223-9409

Looking for the chance to represent your station. I have a passion for radio! I bring a brand new personality that will attract listeners. L.J. (405) 550-8289

Dedicated, mature, Music Pro! Passionate, charismatic, objective oriented, fun-loving, good sense of humor. Prolific on-air/copywriting BS'er. John Porter 512-573-6881 jaminip@msn.com

Dependable, Board-Op/Traffic Coordinator for 2 Dallas stations, whatever-it-takes attitude! Experience editing. See Spot Run- more. Shawn Reid 817-808-8962 shawn.reid@sbcglobal.net

Experienced Disc Jockey, with Barry White-like voice! Access and experience in Cool Edit. Very dependable, and trustworthy. Ed Petty 469-360-9023 djedpetty@sbcglobal.net

Versatile, multi-talented Journalism and ABS graduate wants to work! If you need news broadcasting or on-air talent, your search is over! Jeanne (405) 821-2534

Great persona, natural ability to relate to audience, very conversational looking for on-air work. Good show prep and tight boards, hits posts! Blake Watson 469-951-5490 bbw815@aol.com

Hard-working, self-motivated, personable, initiative to get the job! Sports minded, comfortable personality, structured, dependable workaholic! Greg Morris 972-804-5410 morrisgs@gmail.com

Multi-voiced ABS grad available to spice up your production department. Many voices plus vocal effects available. Board ops and recording experience with Cool Edit Pro. Ben (405) 821-2503

Reliable, upbeat, energetic, personable. Creative copywriter, emcee -banter well-can relate to audience. Karlette Jones 817-457-7158 badkaramel@yahoo.com

Naturally conversational and exuberant guy, with roots in Texas. On-air/production skills. Let me bring energy and fun to your station! Navarro Fisher 214-912-9638 navarrofischer@yahoo.com

Not a breathy or whiny female! Pleasant voice and can apply it to any task. Great with directions, industrious, and energetic. Aminah El-Amin 214-418-7465 spring1204@aol.com

ADVERTISER INDEX *Responders*

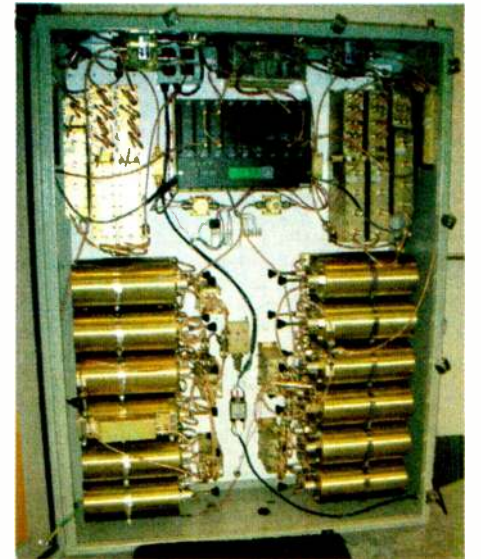
This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEB SITE URL
35	Antenna Nord Telecomunicazioni S.r.l.	www.antgroup.it
38	ATI	www.atiaudio.com
5	Audemat-Aztec Inc	www.audemat-aztec.com
6	AudioScience, Inc.	www.audioscience.com
9	Axia - A Telos Company	www.axiaaudio.com
13	Axia - A Telos Company	www.axiaaudio.com
3	Broadcast Depot	www.broadcastdepot.com
39	Broadcast Electronics	www.bdcast.com
19	Broadcast Electronics	www.bdcast.com
23	BSI	www.bsiusa.com
21	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
49	Circuit Werkes	www.circuitwerkes.com
43	Coaxial	www.coaxial.com
43	Comlab, Inc.	www.davicom.com
7	Comrex Corporation	www.comrex.com
1	Continental Electronics Corp.	www.contelec.com
43	Cortana	www.cortanacorporation.com
27	DAWNco	www.dawnco.com
33	dMarc Networks	www.dmarc.net
3	Dorough Electronics	www.dorough.com
43	Gorman Redlich Mfg	www.gorman-redlich.com
45	Grace Broadcast Sales	www.gracebroadcast.com
25	Harris Corporation	www.broadcast.harris.com
18	HHB Communications U.S.	www.hhbusa.com
36	Inovonics Inc	www.inovon.com
26	JK Audio	www.jkaudio.com
10	Kintronic Labs Inc	www.kintronic.com
31	Klotz Digital Audio Systems Inc	www.klotzdigital.com
43	LBA Technology, Inc.	www.lbagroup.com
8	Logitek	www.logitekaudio.com
30	MusicMaster/A-Ware Software, Inc	www.a-ware.com
17	Omnia - A Telos Company	www.omniaaudio.com
32	Omnirax	www.omnirax.com
41	Pristine Systems	www.pristinesys.com
49	Radio Design Labs	www.rdl.net
40	Radio Systems Inc	www.radiosystems.com
45	RTI	www.timeandtemp.net
29	S.C.M.S.	www.scmsinc.com
12	Sierra Automated Systems	www.sasaudio.com
28	Sine Systems	www.sinesystems.com
22	Studio Technologies	www.studio-tech.com
43	Studio Technology	www.studiotechology.com
15	Telos Systems - TLS Corp.	www.telos-systems.com
11	Tieline Technology	www.tieline.com
16	ViaRadio Corp	www.viaradio.com
55	Vorsis	www.vorsis.com
2	Wheatstone Corporation	www.wheatstone.com
56	Wheatstone Corporation	www.wheatstone.com

► Continued from page 54
audible alarm goes throughout the system as well as the digital ID, indicating a firefighter is in trouble. This system consists of Tait Electronics APCO 25 repeaters (www.taitworld.com/main/index.cfm/1,116.html/minimap) installed on a coaxial cable network throughout the Durst facilities.

These frequencies are tactical frequencies, building-specific as compared to FDNY's citywide frequencies. These frequencies internally cover virtually 100 percent of the Durst facilities. There are two APCO 25 repeaters per channel per building — configured as primary and

NYPD, EMS, FDNY and other agencies can speak with each other directly through this system once accepted by all agencies involved, even though they are not on the same frequencies. In the event of the interoperability feature failure, all radios remain operable within their original service, i.e., FDNY can still communicate with FDNY, EMS with EMS, etc.



Typical TX RX Systems Inc. EMS/NYPD Bi-Directional Amplifier



Typical FDNY and Durst Repeater Rack

In the event of a total breakdown of the system, such as in the case of a building collapse or something as catastrophic, the Durst Organization has provided high-power backup facilities at remote sites under control of FDNY. This new interoperability system is not hard-wired into the communications system, thus eliminating the single point of failure associated with such systems in the past. The interoperability equipment is provided by Lonestar Concepts. (www.lonestar-concepts.com)

NYPD, EMS and FDNY have "city-wide" repeater channels that do cover the streets and some perimeter office space very well, but for all intents and purposes are substantially lacking as far as in-building coverage, especially in egress areas such as stairwells, elevators, the building core and sub-basements.

secondary, installed into combiners and multicouplers — which enable The Durst Organization to run its own radio frequencies as well (using Tait Electronics repeaters) into this cable and antennae infrastructure.

The remote handset system, designed by North American Mobile Systems Inc., patent pending, is installed in the fire-control panels in the lobbies of all buildings in a place specified by FDNY, and the design has been approved by FDNY.

In addition to controlling the repeaters, the fire command location controllers have the ability to override any radio conversation on the system. This feature also was incorporated at the request of FDNY.

Two additional unique features requested by FDNY and supplied by The Durst Organization were the abilities to monitor the systems remotely and use VoIP into the tactical channels. A successful test has been conducted from FDNY HQ to firefighters on scene at 4 Times Square, and they were able to communicate from the Command desk at HQ in Brooklyn to the firefighter anywhere in the building at 4 Times Square, Manhattan. The VoIP system is provided by Avtec Inc. (www.avtecinc.com/Products/dspatchnet/index.html)

Schematically, the typical Durst in-building system is straightforward and works similar to an IT ring network where the nodes are connected in a closed loop configuration. A break in the cable may result in degraded data speed but the data is still flowing from terminal to terminal.

Similarly in our system, we employ this means of connecting the repeaters and BDAs around the individual buildings. Should there be a cable failure near the primary repeaters or BDAs, the secondary repeaters or BDAs will be able to use the cable up to the break point for continuous communications with the distributed antenna system along the path as well as along its own main cables (see Fig. 1).

The BDAs and combiners are supplied by TX RX Systems Inc. (www.trrx.com) The Durst communications system uses Motorola EX600-XLS handheld radios (www.motorola.com/content.jsp?globalObjectId=5365)


We hope this project will launch a concerted effort by the private sector to provide enhanced communications for the first responders in all communities nationwide.

To see more images from this article, visit www.rwonline.com.

John M. Lyons is assistant vice president, and director of broadcast communications, for The Durst Organization.

Interoperability


Another impressive feature the system offers is interoperability for First Responders.




The Newspaper for Radio Managers and Engineers

Our readers have something to say

“Thank you for a great, informative, entertaining paper I have enjoyed for many years.”



Robert Polhamus, KF6OZU
Silver Star Electronics
Owner/Operator
Los Angeles



Shown: Heil PR 30. Large-Diameter Dynamic. With Hum-Bucking Coil and Built-in Shock Mount

GUEST COMMENTARY

Keep First Responders in Constant Contact

Durst Says Its Communications Upgrade Enables Interoperability Between NYPD, FDNY, EMS

by John M. Lyons

On May 31, The Durst Organization announced that it has upgraded communications within its portfolio of Manhattan high-rise buildings to facilitate two-way radio communications for first responders, including the Fire Department of New York, Emergency Medical Services, New York Police Department and others.

Over the last two years, we have upgraded communications within the portfolio to make certain the buildings — covering 7.5 million square feet of commercial real estate — are virtually covered, with no “blind” areas anywhere — from the sub-basements to the rooftop, from the freight elevator lobbies to the elevators to all exit stairs.

We are in the final stages of testing with FDNY and EMS throughout the entire portfolio. We also are working with the NYPD to enhance their citywide radio coverage by providing state-of-the-art radio transmitting facilities. In addition, we are working with NYPD to identify and install new and compatible radio technologies to further enhance NYPD’s in-building radio coverage.

The system was designed with input from FDNY and EMS every step of the way. They were involved with extensive testing and retesting in the buildings before their sign-off. During the development process, they added additional features as we proved that the previous features were operational. (Even though EMS is a division of FDNY, the design and testing is different in structure. For this reason, I address them as separate entities.)

Civil service

There were many challenges in making this work, as the FDNY system is different from the EMS/NYPD system, and the parameters and controls were different. FDNY wanted to have its repeaters under its control so the repeaters would not be operating 24/7 and possibly impeding communications if responding to an incident in an adjacent or near-field building.

The FDNY part of the system is completely under the control of FDNY and activates when FDNY takes control of the repeaters via the FDNY key that also controls the elevator recall to the lobby. Otherwise, the system remains in a stand-by mode, powered-up but inactive. The EMS/NYPD system will be active 24/7 and is fed externally through a donor antenna to a BDA (Bi-directional Amplifier) system within the buildings.

The BDAs have been tested with EMS and are operational. The NYPD BDAs have not yet been tested with NYPD so they are not operational at the time of this article.

FDNY requires an APCO 25 feature. (For more information on APCO 25, visit www.apcointl.org/frequency/project25/information.html.) This feature allows a digital ID to be transmitted using the Push-to-Talk switch. Additionally, FDNY requires a digital “man-down” alarm to be transmitted over the system. An emergency button on the FDNY radio keys this alarm. When pressed, an

See RESPONDERS, page 53 ▶

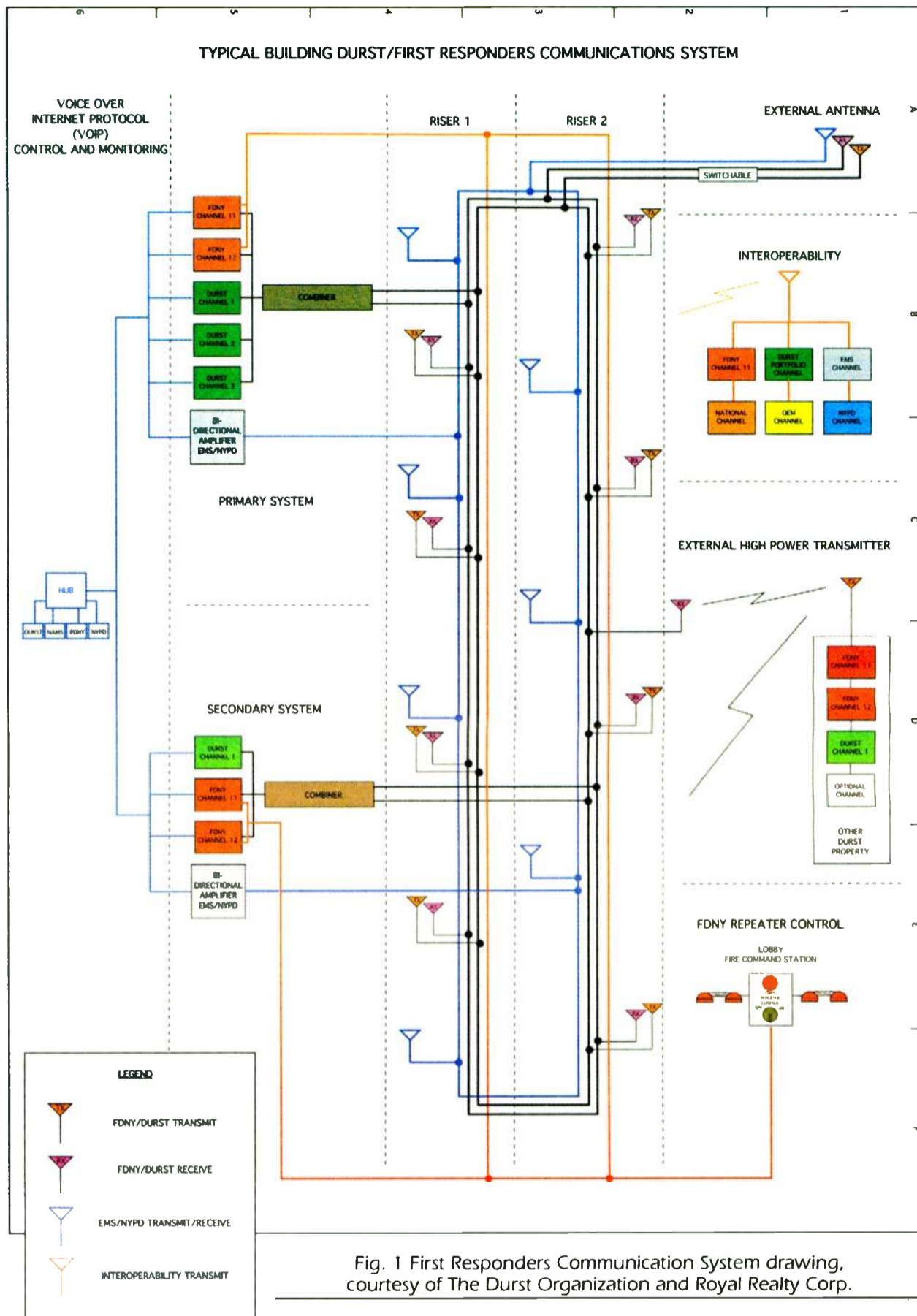


Fig. 1 First Responders Communication System drawing, courtesy of The Durst Organization and Royal Realty Corp.

—EDITORIAL STAFF—

Paul J. McLane	ext. 117	Editor in Chief, U. S.
Leslie Stimson	ext. 129	News Editor/Wash. Bureau Chief
Kelly Brooks	ext. 136	Associate Editor, RW & Production Editor, RWEE
Thomas R. McGinley	—	Technical Adviser
Michael LeClair	—	Technical Editor, RWEE
John Bisset	—	Contributing Editor
Skip Pizzi	—	Contributing Editor
Marguerite Clark	—	Editor (International), Milan
Rogelio Ocampo	ext. 121	Latin America Editor in Chief
Karina Gerardi	ext. 137	Latin America Editor
Anne-Marie Smith	ext. 126	Assistant Editor (International)
Keith Tate	ext. 144	Editorial Assistant
Peter Finch	—	Editorial Assistant, Milan

—EDITORIAL CONTRIBUTORS—

W.C. Alexander, Bruce Bartlett, James Careless, Naina N. Chernoff, Harry Cole, Mark Durenberger, Charles Fitch, Ty Ford, Scott Fybush, Frank Grundstein, Harold Hallikainen, Craig Johnston, Paul Kaminski, Peter King, Mark Lapidus, Sharon Rae Pettigrew, Carl Lundemann, Ted Nahil, Tom Osenkowsky, Ken R., Rich Rarey, Tom Ray, Randy Stine, James G. Withers, Travis the W/O Guy, Barry Umansky, Tom Vernon.

Radio World
 Vol. 30, No. 17 July 5, 2006

Telephone: (703) 998-7600 • Business Fax: (703) 998-2966 • Editorial Fax: (703) 820-3245
 E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

—ADVERTISING SALES REPRESENTATIVES—

US East & Latin America: John Casey	330-342-8361	Fax: 330-342-8362	e-mail: jcasey@imaspub.com
US West & Canada: Dale Tucker	916-721-3410	Fax: 916-729-0810	e-mail: dtucker@imaspub.com
Classified Ads: Claudia Van Veen	703-998-7600 x154	Fax: 703-671-7409	e-mail: cvanveen@imaspub.com
European Sales Mgr., Africa, Middle East: Raffaella Calabrese	+39-02-7030-0310	Fax: +39-02-7030-0211	e-mail: rcalabrese@imaspub.com
Japan: Eiji Yoshikawa	+81-3-3327-2688	Fax: +81-3-3327-3010	e-mail: callem@world.odn.ne.jp
Asia/Pacific: Wengong Wang	+86-755-5785161	Fax: +86-755-5785160	e-mail: wwg@imaschina.com

NEXT ISSUE OF RADIO WORLD JULY 19, 2006
NEXT ISSUE OF ENGINEERING EXTRA AUGUST 23, 2006

For address changes and subscription renewal, please visit www.rwonline.com and click on “Subscribe to RW.” To submit letters or story proposals, to request writer’s guidelines, or for other editorial matters, e-mail the editor at radioworld@imaspub.com.

—ADMINISTRATION & PRODUCTION—

Stevan B. Dana	President
Carmel King	Chief Executive Officer
John Casey	Publisher
Marlene Lane	Chief Operating Officer
Chuck Inderrieden	Chief Financial Officer
Eric Trabb	Vice President, Sales
T. Carter Ross	Editorial Director
Davis White	Production Director
Karen Lee	Production Publication Coordinator
Lori Behr	Ad Traffic Manager
Linda Sultan	Classified/Product Showcase Layout
Robert Green	Circulation Manager

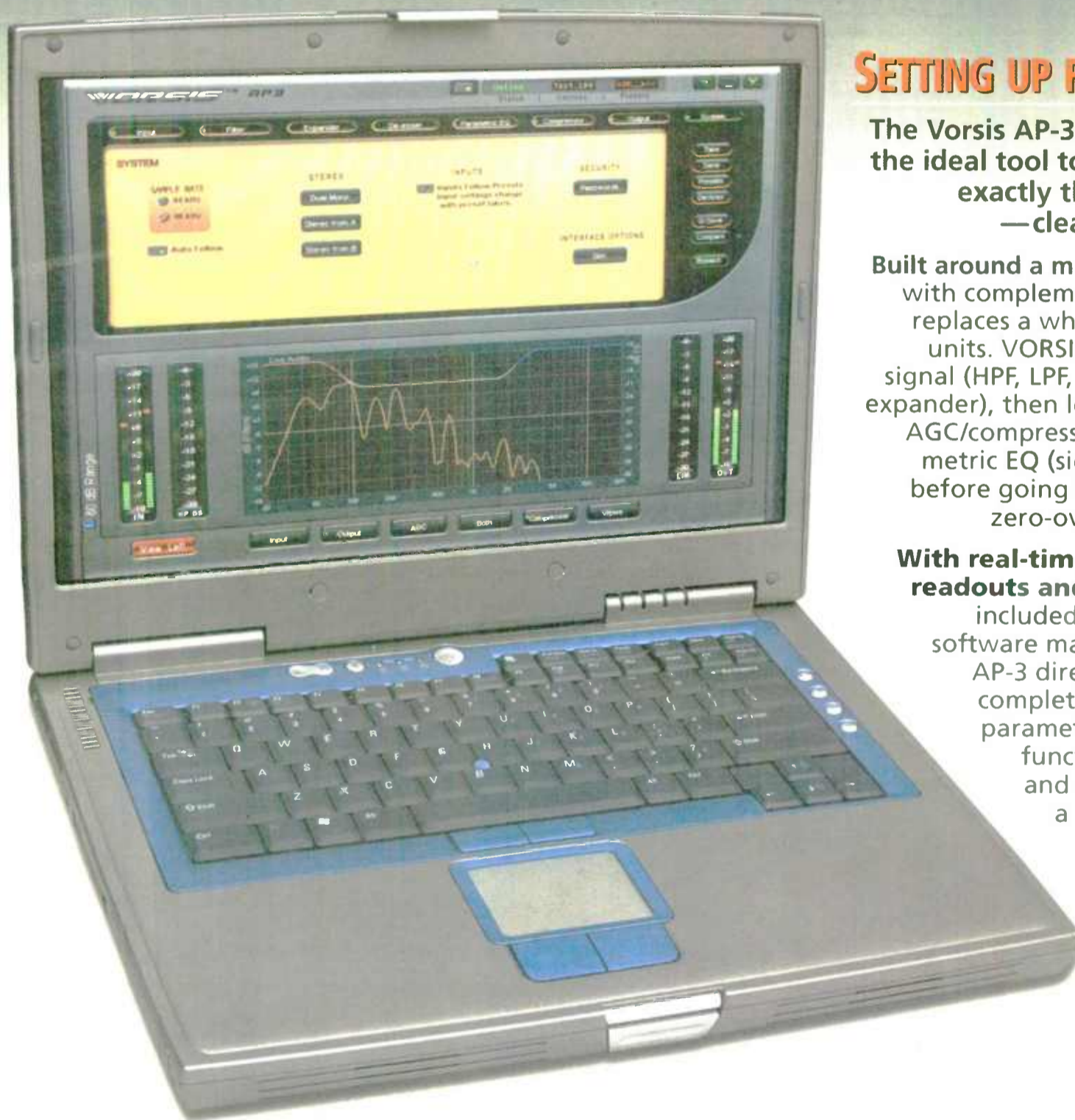
Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church, VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church, VA 22041. REPRINTS: For reprints call or write Emily Wilson, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966. Copyright 2006 by IMAS Publishing (USA), Inc. All rights reserved.

This Little Unit



Can Do BIG Things!

Our new AP-3 is the perfect HD Processor:



SETTING UP FOR HD RADIO?

The VORSIS AP-3 digital processor is the ideal tool to shape your sound exactly the way you want it —cleanly and efficiently.

Built around a multi-band compressor with complementary AGC, the AP-3 replaces a whole *rack* of dedicated units. VORSIS pre-conditions your signal (HPF, LPF, notch filter, de-esser, expander), then let's you apply 3-band AGC/compression *and* 4-band parametric EQ (signal chain reversible) before going through a final stage zero-overshoot peak limiter.

With real-time spectrum density readouts and full metering, our included PC graphic interface software makes operation of the AP-3 direct and easy, offering complete control of all audio parameters, presets, monitor functions, system settings and security—all through a single RJ-45 ethernet connection that lets you control one or many AP-3 units.

TAILOR THAT SOUND

VORSIS™

It's a Whole New WORLD!



AUDIOARTS NET is the *EASY* way to interface your D-75N digital consoles! And because D-75Ns are also standalone designs each studio can operate *INDEPENDENTLY*, relying on the network only to share resources. And by *EASY* interface we *MEAN* it—you don't have to be a software guru or IT professional to get up and running—and *STAY* running! And because it's *AUDIOARTS*, you can rest assured it'll be reliable and preserve your budget. **TAKE ADVANTAGE** of *WHEATSTONE's* extensive expertise in **DIGITAL TECHNOLOGY!**

 **AUDIOARTS ENGINEERING**

sales@wheatstone.com / tel 252-638-7000 / www.audioarts.net

Copyright © 2006 by Wheatstone Corporation

You think we have a lot to say? You should hear our clients.

When we asked our clients which Element features they liked best — well, you see the results. And this is the *edited* version. (Good thing we bought two pages.)

Go (con)figure • The folks at MPR say they really love being able to configure their Elements and keep tabs on their entire Axia network using standard Web browsers. You can set up and administer an entire building full of consoles from the comfort of your own office (where there's plenty of Cheetos and Pepsi). Put an Internet gateway in your Axia network and you can even log into Element remotely, from home or anywhere else there's a Net connection. Great for handling those 6 P.M. Sunday "help me!" phone calls from the new weekend jock.

Screen play • Element lets you use any display screen you choose, to suit your space and décor. Get a space-saving 12" LCD, or go for a big 21" monster. (This is Dave Ramsey's favorite Element feature, by the way. Anyone wanna bet he bought his monitors on sale?) Hook up a VGA projector and make a Meter Wall!

Perfect timing • You can't have too much time. That's why Element's control display contains **four different chronometers** to help keep talent in sync: a digital time-of-day readout that you can slave to an NTP (Network Time Protocol) server, an elapsed-time event timer, a countdown timer talent can set for any interval they choose... and there's also that big, honkin' analog clock right in the center of the screen (Big Ben chimes not included). We wanted to make it even bigger, but our screen designers charge us by the pixel.

Where's Waldo? • Hide-and-seek is a pretty fun game. But not when you're in a hurry, and definitely not when you're on the air. So every Element fader comes with a big, **bold** 10-character LED display right above it to show talent, at a glance, exactly what source is assigned to that fader. If it's music from a digital playout system provided by one of our partners, the display can even show the title or artist of the song that's active. Talent tells us that these displays are at the perfect angle for either sit-down or stand-up studios.

Black velvet • What's 100 mm. long, silky smooth, goes up and down all day and **lasts forever**? Our super-quality conductive-plastic faders, of course. (You have a filthy mind, mister. Shame on you.) We sourced the most durable, reliable, premium faders and switches for Element. And we added extra touches, like the custom-molded plastic bezels that protect on/off switches from accidental activation and impact. Because we know how rough jocks can be on equipment — some of us were (jocks, not rough). And because we also know there's nothing more embarrassing than a sudden case of *broadcastus interruptus*.

Audio cards • Well, *um*, there actually aren't any. Not in Element, or anywhere else in an Axia network. Why not? Think about this: your production guy spends hours crafting exciting, finely-tuned bits of broadcast magic, only to filter them through a card sitting in a noisy, RF-filled PC. It's like washing a wedding dress in the Hudson River. Not only that, broadcast audio cards are *expensive*. And they only work in *PCI slots*... how many of those are you seeing on new PCs? The **Axia IP-Audio Driver** installs on any Windows® PC to send and receive pure digital audio right through the PC's Ethernet port — no sound card required. You get better, cleaner PC audio that's sharable right to the network. And you save tons of cash on sound cards, and on the audio inputs you would have needed for that PC card audio — more than enough to buy that cool new network tester you've been lusting after.

Options • Clients say they love Element's uncluttered worksurface. We kept it clean by placing an "Options" key over each fader to give instant access to all the advanced goodies. It makes customizing settings easier than selling fudge cake to Dom DeLuise.

Great Phones • We wanted the phones on Element to work like an extension of the board-ops themselves. Unfortunately, talent objected to having Ethernet ports implanted in their skulls, so we came up with the next best thing. With Element, jocks never have to take their eyes or hands off the board to use the phones. Element works with any phone system, but it really clicks with the Telos Series 2101, TWOx12, or the new NX-12, which connects four hybrids plus control with a *single Ethernet cable*. Status Symbols™ (those cool little information icons) tell talent at a glance whether a line is in use, busy, pre screened, locked on air, etc. You can even dial the phone right from the board using the integrated keypad.

Who are these guys? • Why buy a console from Axia? Element was designed by Mike Dosch and his team of ex-PR&E renegades (who know a bit about consoles). And Axia is a division of Telos, the DSP experts.



Fried Chicken •

Conductive aluminum bullnose is connected to a 40-kilovolt storage capacitor* that can be activated with a GPIO closure. Set up a hotline remote trigger for the PD to give the jocks a little positive feedback!

Shown: 20-position Element, nicely equipped. \$16,557.00 U.S. MSRP. Not shown but available: 4-, 8-, 12-, 16-, 24- and 28-position Element. Dual exhaust and whitewalls optional at extra cost.