



# RADIO WORLD

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## INSIDE

### NOW HEAR THIS



• Buyer's Guide looks at mics and audio monitors. — Page 36

### NEWS

• Why you should optimize your RadioText send rate. — Page 3

### ENGINEERING

• A sneak peek at the new Omnia.11 processor. — Page 29

### AHH-OOO-GAH!

• Next-gen EAS? Bill Spitzer gets upset when the government gears up for "another unfunded mandate." — Page 46



## Mexico Moves Toward IBOC

Page 12

Photo by John Schneider, iBiquity

## What Will Mobile Broadband Mean?

### For Some in Radio, the Big Data Pipe Is More an Opportunity Than a Threat

BY JAMES CARELESS

Can local radio stand up to mobile broadband competition? Will it profit

from this growing platform?

In anticipation of the FCC's National Broadband Plan, which was released in March, Radio World recently asked several industry observers how the expected ability of consumers to access more and faster Internet-based content through cellular networks — whether in vehicles or on foot, via iPhones, laptops and other wireless devices — will affect our business.

Most sounded upbeat.

It is in the car where much of the focus is drawn, thanks to radio's tra-

(continued on page 8)

## NAB Honors Telos Systems' Steve Church

### Company Founder Is Saluted for His Impact in Telco and Audio Coding

BY RANDY J. STINE

CLEVELAND — "Hello caller, you're on the air."

It's a greeting heard on thousands of radio stations across this country every day. However, without the engineering skill and determination of a young broadcast

### NEWS MAKER



engineer in 1984, the now-simple act of putting a call on the air could have remained a challenge.

Steve Church, founder and chief executive officer of Telos Systems, developed the first broadcast studio product using digital audio technology. The Telos 10 telephone hybrid was a smash success as stations raced to replace clunky analog

Steve Church, shown at the AES Convention in New York.

(continued on page 32)

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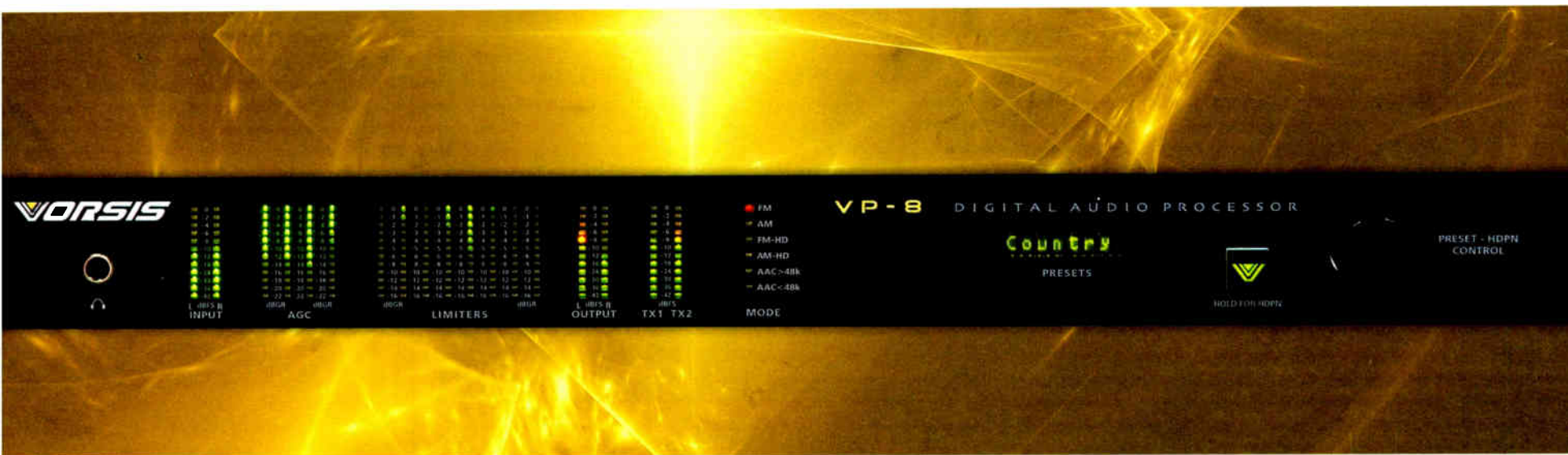


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World Radio History

# RDS: Optimize RadioText Send Rate

Don't Just Rely on the Factory Preset; Consider the Listener's Experience

BY ALAN JURISON

In our first article of a series, in the March 10 issue, I outlined the history of RDS/RBDS and the differences between the 64-character RadioText and eight-character Program Service.

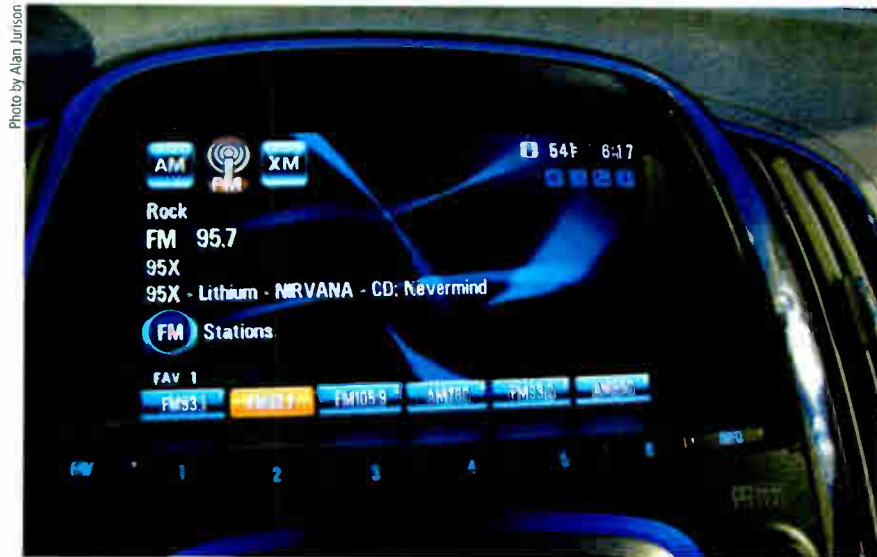
## RADIODATA

Let's go in-depth on how you can optimize them for your stations.

With the renewed importance of RadioText (RT), you should evaluate your RT send rate.

Most RDS encoders allow an engineer to adjust how frequently the RT is sent in comparison to other RDS data groups. The manufacturer's default settings are not necessarily ideal for a good end-user experience, so they require your attention.

When we tune to a station with RDS



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and RT, the receiver looks at the RDS signal and starts decoding. Often, it waits until the RT has been sent twice, to make sure it was received without any errors, before displaying it. If your station isn't sending RT frequently, this process can take too long.

RDS encoders often arrive from the manufacturer with a very slow setting. For example, the default on one popular model is set to send one RT group for every four PS groups. With a default setting such as this, the receiver takes up to 15 seconds to decode the RT under optimal conditions. Add in some signal impairments such as multipath or a weak signal, and this process can take even longer.

This creates a bad user experience. Now add the new RadioText+ tagging standards (to be discussed later in this series) and it's clear that your RT transmission rate is an important component to check and consider adjusting.

I recommend increasing the RT

transmission rate from the defaults to increase how frequently the RT is sent. The more frequently it is sent, the quicker a receiver can decode and display it to your listeners. Using the example above, instead of one RT group for every four PS groups, I'd recommend sending three RT for one PS.

### RT TRANSMISSION RATES

RT transmission rates didn't matter much when the RT was mostly hidden on capable mobile receivers. If it took 15-20 seconds to resolve, it wasn't a big deal.

Now it matters more; and I believe we as an industry need to be more aggressive in our RT transmission rates.

This is even more important when it comes to new portable RDS receivers on the market that display the RT prominently. They also are more likely to be operating at lower signal levels due to antenna design, just like using a headphone cable instead of a better

antenna, and are more likely to be used in areas with multipath or other signal impairments, such as inside buildings.

Before adjusting your RT send rates, understand what you're doing. By increasing the rate you're making a tradeoff on other RDS functions.

The RDS standard is a very slow data stream, under 1,200 bits per second, and there is a limit on how many bits can be sent every second.

When you increase the RT rate, whatever else you are doing with your RDS may suffer because fewer bits will be available for these functions. The PS will be sent less frequently; accordingly, you should make time delay adjustments to the "scrolling" or dynamic PS to maintain a good user experience. I'll have more on that in the next article in the series.

If your station uses other RDS "specialized" features contained in the Open Data Application (ODA) groups such

(continued on page 5)

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# Harris/SCMS: An Adjustment in Plans

The Third-Party Resale Business Continues to Evolve in Radio

**W**ill I see you at the NAB Show? I hope you'll make the time and effort to come, as an extension of the philosophy of lifelong learning we talked about last time.

In this issue we preview Broadcast Management Conference sessions, and contributor James Careless talks to consultant Dan O'Day about whether radio organizations are using Twitter effec-

tively. Also, if you attend the show, stop by the Radio World booth at C1458 or look for me walking around the exhibit floor (no doubt trying to identify which booth has the thickest carpet padding).

I'll be interested to see how radio floor traffic differs now that most radio/audio booths are in the front end of the Central Hall. I suspect this will be a good change and we'll sense a different

feel to traffic as a result.

I raised my eyebrows at news that Harris has appointed SCMS as its exclusive reseller for its line of PR&E studio systems and consoles to the U.S. radio broadcast market. It was a reminder how much has changed in the dealer business since the days of Allied (not to mention the days of Pacific Recorders).

In case you missed our story on Radio World NewsBytes, SCMS becomes the only U.S. dealer of those products. "The agreement also confirms SCMS as the main U.S. dealer for Harris radio transmission sales," the companies stated in the announcement. "Harris will continue to provide the majority of field service and technical support for its radio broadcast customers."

FROM THE  
EDITOR



Paul McLane

will extend its reach into small and medium-sized markets for single-item sales and help it sell systems and packages. Redmond also remarked on the reach of SCMS and the "savvy and skills" of its sales people. "We reflected on our studio sales strategy and decided to seek out a single representative with a nationwide presence that is well-educated, focused and able to support a longer selling cycle."

In reply to my query about the ties between the two companies, SCMS owner Bob Cauthen replied, "The relationship has grown since we purchased the Broadcast Center from them three years ago this July. We continue to provide Harris many vendor items for their

**Harris, SCMS and many other companies have streamlined and adjusted their business plans based on the changes to our industry.**

— Bob Cauthen

A company spokesman emphasized to me that Harris will continue to employ its in-house sales staff to sell Harris products.

This is another step away from the way Harris Broadcast sold gear in the past. In 2007, as we reported then, it sold its third-party product resale business to SCMS, which hired two Harris employees, purchased the dealer inventory and had phone lines transferred to SCMS for non-Harris manufactured items. That ended a long era in which Harris was among dominant U.S. providers of "dealer products." (Its core business building transmitters, consoles and other hardware remained.)

Also that year, Harris named approximately a dozen "channel partners," at least some of which have since been selling PR&E products. Now, any who carried PR&E gear will no longer do so. Director of Strategic Marketing Rich Redmond sought to make clear that the change in arrangements does not reflect poorly on them.

"We are maintaining contractual relationships with a number of these companies for our Intraplex STL business, where we'll continue to have an array of resellers, and SCMS will continue to make Harris PR&E studio products available for them to support their customers as well."

Harris believes the new arrangement

packages and we have been their largest reseller for transmission systems. They have wanted us to market their studio systems for some time."

Knowing that SCMS has invested a lot in the dealer business (in a separate purchase in late 2008, it acquired Bradley Broadcast Sales), I was interested to hear that Cauthen views the radio equipment industry as a "very mature" one.

"Many would say it is actually shrinking, especially with the demise of many major groups. I think a lot of us in the industry predicted this would eventually happen because the purchase prices of many stations just were too high with respect to ad revenues.

"It will get worse if the industry does not embrace IBOC (whether you like the technology or not), because Internet radio and variations of that will pass us by," Cauthen said. "The past station purchase prices could only be justified by stock values and stock sales, and everyone knows what happened on Wall Street.

"I always equated it to 'musical chairs,'" he concluded. "Sooner or later stockholders were going to lose when the music stopped and the stock prices could not be justified with respect to actual profits from ad sales. Harris, SCMS and many other companies have streamlined and adjusted their business plans based on the changes to our industry."

## Need Headphone Amps?

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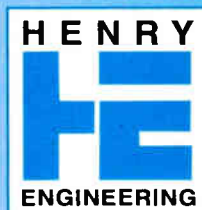
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**THIS ISSUE**

APRIL 7, 2010

**NEWS**

What Will Mobile Broadband Mean? ..... 1  
 NAB Honors Telos Systems' Steve Church ..... 1  
 RDS: Optimize RadioText Send Rate ..... 3  
 Harris/SCMS: An Adjustment in Plans... 4  
 News Roundup ..... 5  
 The FCC Goes Spectrum Hunting ..... 6  
 Innovation Keeps SBS on Edge ..... 10

**DIGITAL RADIO NEWS**

Mexico Is Set to Elect IBOC Receivers Handle IBOC Power Increase and Noise Differently ..... 18  
 SiPort Appoints New CEO ..... 18  
 Digital Radio News ..... 18

**NAB SHOW MANAGER'S PREVIEW**

To Tweet or Not to Tweet ..... 20  
 More Show Highlights ..... 21  
 Show Explores New Radio Models ... 22



**FEATURES**

Workbench: Termites Dine on Cable Cuisine ..... 26  
 Does Your E-Letter Get Opened? ... 28  
 Foti and Omnia Go to 11 ..... 29  
 Who's Buying What ..... 31  
 Marketplace ..... 34



**BUYER'S GUIDE**

National Production House Relies on Heil ..... 36  
 AKG C414-XLII Performs in Belgium ..... 38

**OPINION**

Reader's Forum ..... 45-46

**RDS**

(continued from page 3)

as Traffic Message Channel (TMC), you may want to consult with your corporate engineering staff or the vendor with whom you have an agreement to make sure the settings you change don't affect these services.

You may need to reduce RT sending rates from my recommendations as a compromise between a better RT experience for the listener and making sure you are meeting ODA obligations.

**ENCODER-SPECIFIC RECOMMENDATIONS**

I've developed a recommended RT sending rate based on my own in-field testing with various RDS receivers on the market.

My benchmark for developing these recommended settings was to get the RT to display, in optimal reception conditions, in three to four seconds after you've tuned to the station, or after it has been changed, for example when a new song or program element has come on. See my encoder-specific recommendations in the accompanying chart.

Some may consider these settings too aggressive, but I think the industry needs to make an aggressive improvement overall in its RT sending rates to give a good user experience. Remember, three to four seconds is the optimal experience.

Under bad signal conditions, the radio will take longer to display the RT. Even with these recommended RT settings, under poor reception conditions, RT can

Encoder Type(s)	Recommended Setting
Inovonics 711/Audemat FMB1, FMB10	RT_RATE=1
Inovonics 712/713/720/730	DRTS=9
Audemat FMB80 / Burk RDS Master	GS=0A,2A,2A,2A,4A
Pira32	GRPSEQ=0222

**Recommended RadioText (RT) Send Rates for several popular models of encoder. Note that these settings may interfere with special ODA groups you may be transmitting such as leased traffic or other data. If you transmit such data, consult your corporate engineering staff or the company leasing the data from you to ensure you do not interfere with these services.**

take 10 or more seconds to display.

If you left the RT send rates at the typical factory default, in those conditions your receiver may take 30 or more seconds to display the RT or perhaps never resolve the RT.

To combat display problems on legacy receivers, some RDS encoders give you the option to always send 64 characters in the RT. If you send something under 64 characters, the encoder adds spaces to the RT.

It is my experience that few if any receivers on the market need this option; if your encoder has this ability, I would turn it off. The longer the RT, the longer it takes to transmit to the receivers.

By always transmitting 64 characters, you will always have maximum delay. Most receivers do not display the RT

data until it's been fully received without errors twice. If the RT contains less than 64 characters, you're slowing the process of displaying RT data to the receiver unnecessarily.

Unfortunately, with some legacy encoders, you cannot turn off this option.

I hope you're enjoying this series. Feel free to comment while we go along. My e-mail is [alan.jurison@citcomm.com](mailto:alan.jurison@citcomm.com). Maybe you have settings you like better, or other findings regarding RDS.

In our next article we'll discuss optimizing dynamic PS scrolling displays.

*Alan Jurison is a regional IT manager/broadcast engineer for Citadel Broadcasting in Syracuse, N.Y. He holds several SBE certifications, including CSRE, AMD, DRB and CBNT. Opinions are the author's own.*

**NEWS ROUNDUP**

**SPECTRUM ID TOOL:** The Federal Communications Commission has released a "Spectrum Dashboard" to help users identify spectrum license holders and produce maps of geographical service areas for specific licenses. The initial version released covers 225 MHz to 3.7 GHz, spectrum allocations potentially usable for mobile broadband. Explore the dashboard at: [reboot.fcc.gov/reform/systems/spectrum-dashboard](http://reboot.fcc.gov/reform/systems/spectrum-dashboard).

**HARRIS, SCMS:** Harris appointed SCMS exclusive reseller for its PR&E studio systems and consoles in the U.S. Harris also confirmed SCMS as the main U.S. dealer for Harris radio transmission sales, though Harris will continue to provide the majority of field service and technical support for its radio broadcast customers.

# The FCC Goes Spectrum Hunting

## Reallocation of Broadcast Space Is Part of the Thinking at the Genachowski FCC

*A chapter of the FCC's National Broadband Plan is devoted to spectrum. One goal in that chapter is to make more spectrum available for broadband within 10 years. A recommendation within that goal is to make 500 megahertz available within the next 10 years, of which 300 megahertz between 225 MHz and 3.7 GHz should be freed for mobile use within five years.*

*And one way to accomplish that, the FCC wrote, is to reallocate spectrum from broadcast TV.*

*Any action by regulators toward a strategy of spectrum reallocation — and the thinking behind such action — are likely to be of interest to other broadcasters, even if radio stations are not named in the plan. Here's the relevant section of the FCC's report.*

**Recommendation 5.8.5: The FCC should initiate a rule-making proceeding to reallocate 120 megahertz from the broadcast television (TV) bands ...**

The spectrum occupied by broadcast television stations has excellent propagation characteristics that make it well-suited to the provision of mobile broadband services, in both urban and rural areas. Enabling the reallocation of a portion of this spectrum to broadband use in a way that would not harm consumers overall has the potential to create new economic growth and investment opportunities with limited potential impact on broadcast business models. Consumers would retain access to free, over-the-air television. Reallocation would focus primarily on major markets where the broadcast TV bands are most congested and the need for additional spectrum for broadband use will be greatest.

Moreover, the FCC should study and develop policies to ensure that its long-standing goals of competition, diversity and localism are achieved. Changes to the TV broadcast spectrum need to be carefully considered to weigh the impact on consumers, the public interest and the various services that share this spectrum, including low-power TV,

wireless microphones and prospective TV white space devices. While the FCC has performed initial analyses to consider the viability of various options, further work will be required and all

or cannot receive those services at their homes currently. Over-the-air television also serves numerous public interests, including children's educational programming, coverage of community news and events, reasonable access for federal political candidates, closed captioning and emergency broadcast information.

Band	Key Actions and Timing	Megahertz Made Available for Terrestrial Broadband
WCS	2010—Order	20
AWS 2/3	2010—Order 2011—Auction	60
D Block	2010—Order 2011—Auction	10
Mobile Satellite Services (MSS)	2010—L-Band and Big LEO Orders 2011—S-Band Order	90
Broadcast TV	2011—Order 2012/13—Auction 2015—Band transition/clearing	120
Total		300

**The FCC report laid out actions and a timeline to meet its proposed goal of 300 megahertz for mobile use by 2015.**

options must be examined through rule-making.

Over-the-air television continues to serve important functions in our society. It delivers free access to news, entertainment and local programming, and provides consumers an alternative video service to cable or satellite television. It is the only such service to a segment of the population that either cannot afford paid television or broadband services

Through broadcast television, the FCC has pursued longstanding policy goals in support of the Communications Act, such as localism and diversity of views. Finally, emerging broadcast applications, such as mobile DTV and data casting, may provide an opportunity to take advantage of the relative efficiencies of point-to-multipoint and point-to-point architectures in order to deliver various types of content in the

## Your Story Is Out There. Grab It LIVE with ACCESS!

It isn't every day you can broadcast your morning commute. And as far as we know, it's even more rare to broadcast from a bicycle. But that's just what Radio 3FM DJ Giel Beelen did on his 48-kilometer morning commute from Harlem to Hilversum in the Netherlands. How did he do it AND provide audio that's so good it sounds like he was right in the studio? He used ACCESS from Comrex.

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World Radio History

most spectrum-efficient ways.

Because of the continued importance of over-the-air television, the recommendations in the plan seek to preserve it as a healthy, viable medium going forward, in a way that would not harm consumers overall, while establishing mechanisms to make available additional spectrum for flexible broadband uses.

The need for such mechanisms is illustrated by the relative market values of spectrum for alternative uses. For example, the market value for spectrum used for over-the-air broadcast TV and the market value for spectrum used for mobile broadband currently reveal a substantial gap. In 2008, the FCC held an auction of broadcast TV spectrum in the 700 MHz band recovered as part of the DTV Transition. That auction resulted in an average spectrum valuation for mobile broadband use of \$1.28 per megahertz-pop. The TV bands have propagation characteristics similar to those of the 700 MHz band. However, the market value of these bands in their current use ranges from \$0.11 to \$0.15 per megahertz-pop. Other attempts to size the current economic value of spectrum for over-the-air television using alternative methods have resulted in comparable megahertz-pop valuations. While there are other possible valua-

tion methods that could result in further variations, this analysis illustrates the order of magnitude of the gap.

This gap in economic value between spectrum used for wireless broadband and spectrum used for over-the-air broadcast television reflects in part the long-term market trends in both industries. Demand for mobile broadband services is growing rapidly with the introduction of new devices (e.g., smartphones, netbooks) and with 3G and 4G upgrades of mobile networks. The mobile broadband industry is expected to continue to drive innovation, job growth and investment through the next decade.

Over-the-air broadcast television, on the other hand, faces challenging long-term trends. The percentage of households viewing television solely through over-the-air broadcasts steadily declined over the last decade, from 24 percent in 1999 to 10 percent in 2010. Since 2005, broadcast TV station revenues have declined 26 percent, and overall industry employment has declined as well.

The gap in economic value also reflects two characteristics of broadcast TV licensing constraints. First, since broadcast TV requires channel interference protections, only a fraction of the total spectrum allocated to broadcast TV is currently being used directly by sta-

tions. Second, as a universally available, free over-the-air medium, television broadcasting has long been required to fulfill certain public interest and technical requirements. It is important to allow television broadcasting to continue to fulfill these obligations to local communities, while at the same time utilizing less spectrum, thus freeing up additional airwaves for mobile broadband. This could yield more service to local communities overall — broadcast television that consumers have always received along with more and better mobile broadband connectivity.

The FCC should initiate a rulemaking proceeding to reallocate 120 megahertz from the broadcast TV bands. The proceeding should pursue four sets of actions in parallel to achieve this objective. In addition, the FCC should take a fifth set of actions to increase efficiency of spectrum use in the broadcast TV bands. *[The commission went on to detail those steps, which are summarized here.]*

- Update rules on TV service areas and distance separations and revise the Table of Allotments to ensure the most efficient allotment of 6 megahertz channel assignments as a starting point.

- Establish a licensing framework to

permit two or more stations to share a 6 megahertz channel.

- Determine rules for auctions of broadcast spectrum reclaimed through repacking and voluntary channel sharing

- Explore alternatives — including changes in broadcast technical architecture, an overlay license auction or more extensive channel sharing — in the event the preceding recommendations do not yield a significant amount of spectrum.

- Take additional measures to increase efficiency of spectrum use in the broadcast TV bands.

*Possibilities listed to meet the final item include full-power TV spectrum fees; a deadline to achieve the DTV transition for LPTV stations; technical steps to address VHF reception issues; and creation by Congress of an endowment to fund public interest media from auction proceeds or spectrum fees.*

*Read the National Broadband Plan at [www.broadband.gov](http://www.broadband.gov). "Spectrum" is Chapter 5.*

*Comment on this or any story. Send an e-mail to [radioworld@nbmedia.com](mailto:radioworld@nbmedia.com) with "Letter to the Editor" in the subject line.*

## LIVE & LOCAL



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## MOBILE

(continued from page 1)

ditional strengths in that environment. Right now, in-car mobile broadband listening starts with iPhones and other smart phones. They allow motorists to directly access streamed audio from the wireless Web, using applications that deliver the audio across cellular networks for free.

"This is the easiest way to get Internet radio in your car," said Bob Crane, radio developer and owner of radio retailer C. Crane Co.

"As far as playing the audio through your car stereo, you can hook an FM transmitter up to your phone and send the audio directly to the FM portion of your car stereo, or use a cable from the headphone jack of the phone to a mini audio input jack on the face of the car stereo."

With this somewhat clunky signal path, motorists already have access to thousands of radio/audio sources in their car. For better or worse, if they don't want to listen to local radio (or pay to

listen to satellite), they don't have to.

Now, with the national emphasis on broadband expansion, and with more consumer electronics devices coming that will put the Internet right on the dashboard, things are just getting started.

### STAYING CONNECTED

Logically, anything that gives motorists an alternative to local radio is bad for local broadcasters, at least as those terms are defined currently.

On the other hand, the new medium can be used to deliver local radio to drivers too, and to extend a station's reach and brand into new markets.

This is why Nicole Marie Godburn views mobile broadband as an opportunity. Godburn is program director of Beethoven Radio on WCCC, a small AM in West Hartford, Conn., that has vastly extended its reach and ad sales



At present, for some consumers, 'broadband in the car' means an Apple iPhone attached to a Belkin TuneBase FM, for transmitting iPhone audio to their FM radio.

Photo courtesy Belkin

via [www.beethoven.com](http://www.beethoven.com).

"Our Internet listeners outside of our Connecticut market are using mobile technology to stay connected to us when they are away from their computer," she said.

"They used to be anchored to a desktop as the only way to listen to us. Now they can drive, fly, travel and still stay connected." And make no mistake: Beethoven Radio is getting more listeners thanks to mobile broadband.

"We see more and more e-mails come in from listeners directly from BlackBerries and iPods who have us tuned in."

### THE ADVERTISING EDGE

Listenership is only half of radio's business equation, though. Rick Ducey says the presence of this new big pipe of data into the car doesn't mean radio has lost the battle.

"Even if radio listening is impacted negatively [by mobile broadband], we see local radio as still having a durable value proposition with local advertisers," said Ducey, who is chief strategy officer with BIA/Kelsey.

This is because local radio "can program, promote and package for local advertisers better than non-local media competing for listeners."

Still, the fact that local radio currently is more advertiser-friendly than Internet-based media doesn't make mobile broadband a toothless tiger. Anything that draws a station's audience is bad news, because fewer listeners eventually means lower ad revenue. How can local radio compete?

"The first step to leveling the playing field between Internet-radio stations and broadcast radio is strictly about accessibility," said Daniel Anstandig, president of McVay New Media Consulting. "They need to get real estate on the 'Internet radio dial,' meaning they need to be streaming in the first place. Then they need to be accessible on popular Internet radio portals."

Next you need to give motorists and pedestrians a reason to tune to your sta-

tion first.

"This is really an issue of supplying the right content," said Jennifer Ha, executive director of digital media in New York for WNYC, an NPR affiliate that broadcasts on AM, FM and FM HD Radio. "Listeners will find the programming that they want."

Among broadcasters devoting resources to integrating online and traditional platforms, CBS Corp. is one of the most notable. The goal of CBS Radio's mobile broad-

band strategy is to supply accessible, compelling content, the company says.

"There are CBS Radio apps for the iPhone and BlackBerry [that] you can download and take with you today, as well as apps for AOL Radio and Yahoo! Music," said Karen Mateo, vice president of communications.

Moreover, "All of our stations are streaming, so if and when Internet radio becomes fully available in cars, our stations will be available to that audience as well. And just as a side note, about 50 percent of the listeners to WFAN's online stream come from out of the New York market."

### PROFIT

If there is a moral to this story, it is that broadcast programmers and owners likely will be asking themselves even more questions about how and whether to reinvent their product given the changing nature of the competition, while still retaining the local angle that may be missing from most incoming content delivered via the new pipeline.

"There are clearly programming offerings that local stations can provide that global brands or faraway stations cannot," said consultant Fred Jacobs.

"However, it is paramount that broadcasters start investing once again in research and programming assets. The dominance that local radio has had in the home, workplace and now in cars is becoming a thing of the past."

"Radio from a phone, or a computer for that matter," said Bob Crane, "brings up the question of whether anyone is looking at banner ads on the web site of any radio station. I hope the traditional business model of paid advertising for an audio ad will eventually re-dominate Internet radio. A person listens for the audio content and the ads should be included."

Nicole Marie Godburn concluded: "Radio stations should not just compete but join the advance in technology. Develop a great Internet stream and Web site that is easy to use and provides great content for commuters."

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# Innovation Keeps SBS on Edge

Here's How Seoul Broadcasting System Has Solved Several Technical Challenges

BY MARTYN GREEN

**SEOUL, SOUTH KOREA** — Helping to keep a radio station on-air at all times is not an easy job anywhere, but in Seoul, a city that has developed and expanded dramatically over the past 20 years, there are additional problems to be “thought around.”

## TECHTIPS

Jeon Jong-Ik, a broadcast engineer for Seoul Broadcasting System, explains: “These days we’ve found it’s becoming more difficult to send our signals to the transmitter by microwave link because in Seoul there are a lot of tall apartment buildings, which interfere with the signals. So we’ve had to keep migrating our microwave links to taller buildings.”

SBS operates two radio stations, Love FM and Power FM, along with several TV channels. It has nine regional offices throughout Korea.

To deal with the crowded skylines, SBS recently bought Comrex Access IP codecs, and this has helped solve at least

one problem.

Said Jeon, “Since we have 3G communications in Korea, we can now transfer data to our headquarters using IP protocols, while keeping our old microwave equipment for backup. With IP, it is easy to send the data to, or from, the studios.”

SBS uses both the SK Telecom and KT 3G networks.

“The Comrex 3G equipment is very easy to use and of course the audio quality is significantly better than with a mobile phone. If a reporter needs to do a live report from the street, they simply connect the codec to the 3G interface and the microphone, and they can then transmit their reports in high-quality audio direct to the studio, via the mobile network.”

The equipment supports up to 15 kHz bandwidth links.

“The quality of the audio depends on the quality of the codec’s coding algorithm. The equipment supports a lot of algorithms, including MPEG-4



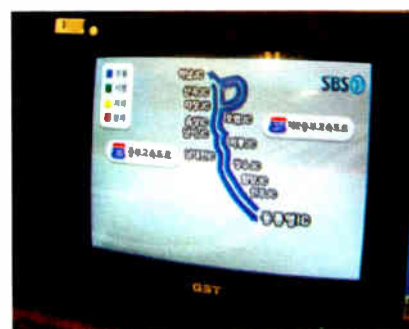
**SBS Engineer Jeon Jong-Ik**

HE-AAC,” Jeon said.

SBS has five sets of codecs and uses two for transmitting mobile data, and the other three for sending broadcast signals to the transmitter site.

## FIELD REPORTING

SBS reporters are also using HHB DRM85 FlashMics, which record MP3/MP2/WAV files to flash memory housed within the microphone body. At the bottom of the mic are a USB and



**MOT Slideshow on DAB is being used by SBS to provide listeners with weather, top, and traffic information.**

a headphone socket with a record and playback switch.

“Of course,” said Jeon, “as it records to flash memory, there is no fast forward — no cue and review. But the fact that the recordings are data files means we can transfer the data very quickly, which is important when you are editing an interview for the news.”

Jeon said the four FlashMics have mostly replaced the MP3 and MiniDisc recorders SBS reporters previously used, although they do still record some events to DAT tape.

“Those [the DAT recorders] record at high quality, but they’re relatively large and need power, so we tend to use them in static situations. The HHB mics are good for going out and about and interviewing busy people.”

In the studio, SBS is revamping its working methods, in part to improve audio quality by shifting from MP2-encoded audio files to uncompressed

WAV files.

“Programs or CDs get recorded onto a central server, with broadcast playout from there. Total storage space currently is 13 TB, which is not very big, actually, but we are changing our current audio file format from MP2 to WAV files. With uncompressed WAV files four to five times the size of MP2, we have to enlarge our storage capabilities,” said Jeon.

“We want to have even better audio quality, because in another couple of years digital radio will be upon us, so we are conducting a review of our capabilities to enhance our audio quality.”

As part of the reencoding process, SBS is going back to its original CDs to rip the music as WAV files and then copying them to the central server.

“It is a very big job,” said Jeon, “and it will cost a lot because there are masses of CDs to copy all over again. But even though some of the CDs may be dusty or scratched, the software can check for any errors, and automatically fix them.”

## VISUAL RADIO

Another new development for SBS lets listeners say, “I saw it on the radio.”

Jeon explained, “In Korea, we have T-DMB for mobile television, but we are doing Visual Radio using DAB.” T-DMB and DAB are both based on the Eureka-147 standard and many receivers can handle both T-DMB video and DAB audio broadcasts.

“We changed the service type because Koreans want to be able to see visual data on their digital radios. DAB can send text data and small picture data, but with Visual Radio, using the MOT Slideshow technique, also based on DAB standards, we have changed the service type to be able to send ‘slide data’ like JPEG pictures. We believe this service has good promise.”

SBS has experimented with other video options, such as always-on cameras in the on-air studios, but with mixed success.

“With a video camera in the studio, listeners could see still pictures of the DJ grabbed from the video feed. It sounded like a good idea — at first — but actually it didn’t turn out to be very successful,” said Jeon.

“As the data rate is low, and also you don’t know when the frame will be grabbed, sometimes the freeze-frame can be of the DJ with his mouth open, for instance, if he is talking. That doesn’t look very good, and many of the DJs didn’t like to have a camera watching them. So we don’t do that any longer.”

Instead, SBS provides text data and news headlines, along with information about pop stars, as part of its stream.

“Sometimes we show traffic information shown on a simple map. That is helpful,” Jeon said. “But webcams in the studio — I don’t think it was a particularly useful service for our listeners.”

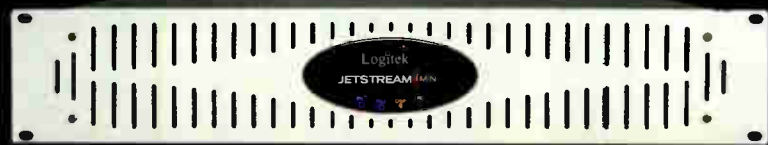
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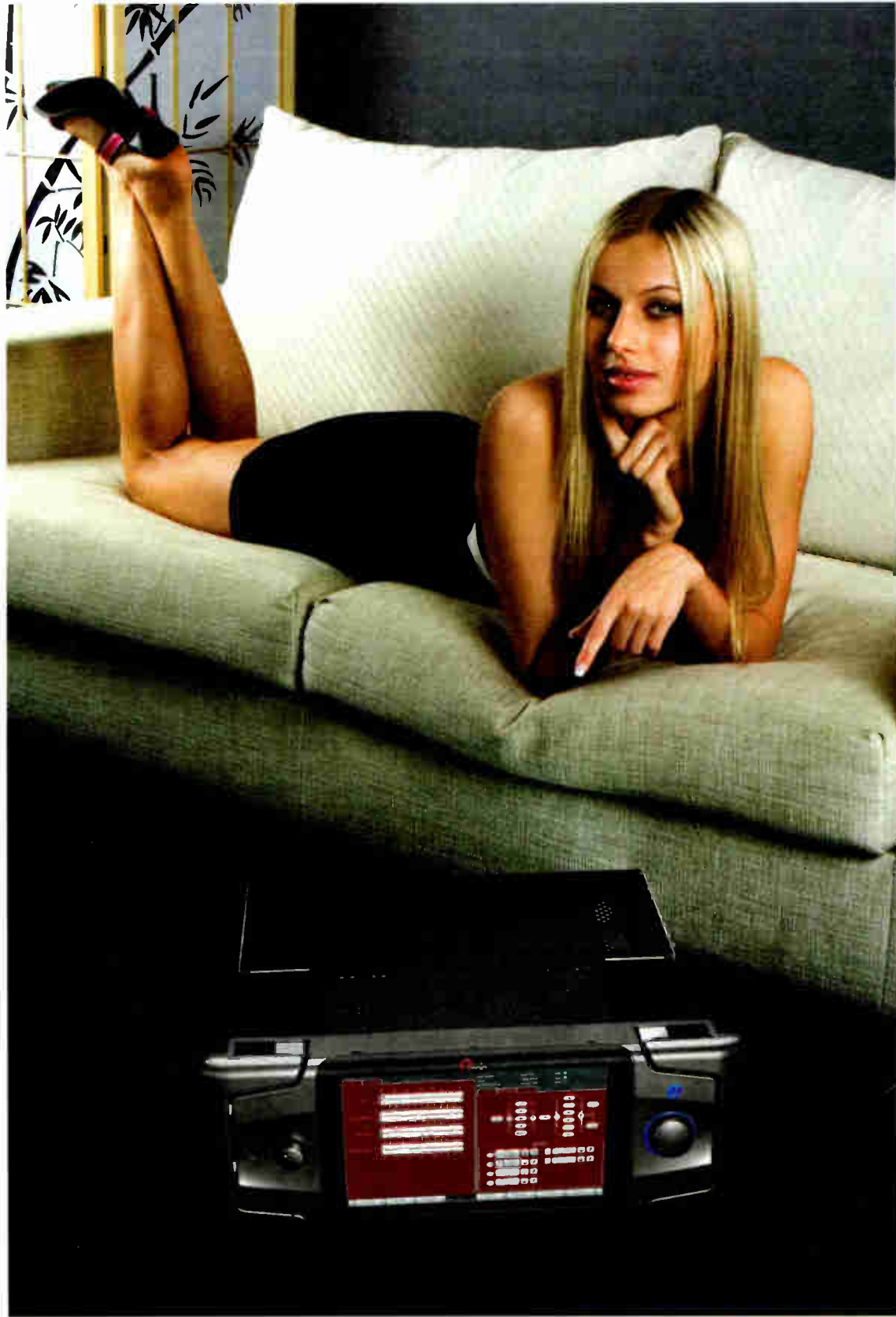
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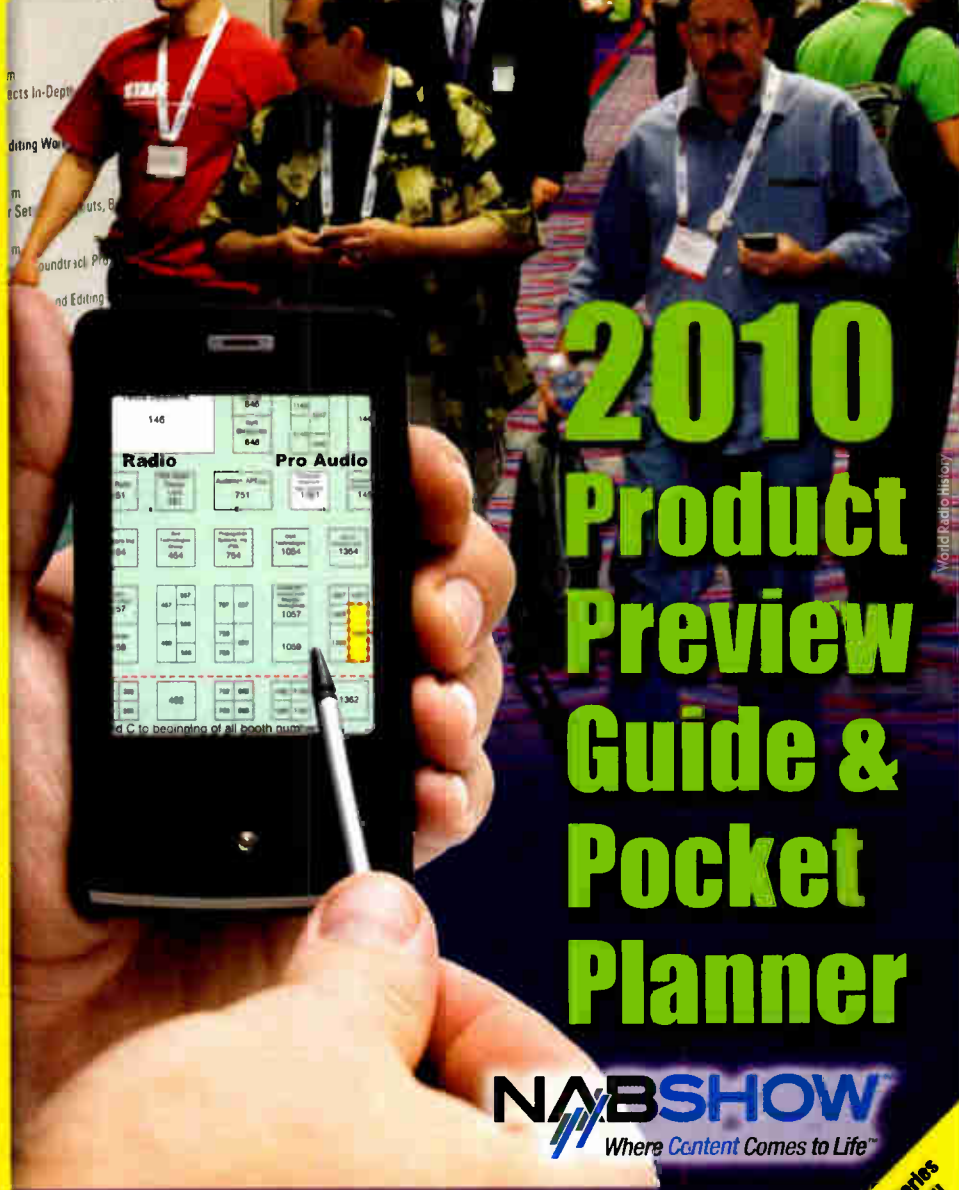
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## Small Screens, Big Plans

It'll be a new feel for the radio/audio exhibits at the NAB Show this year, now that most of the booths are located in the Central Hall of the Las Vegas Convention Center after many years across the big hallway.

It's also a new age for radio, thanks to increasing emphasis on mobile devices and apps, streaming, data services and the integration of traditional and new platforms.

As NAB attendees discuss topics like the impact of broadband, user-generated content, digital marketing and more, Radio World's Product Preview Guide helps you get the most out of the show, now in a new convenient format that you can more readily take with you.

This advertising supplement to Radio World includes:

- Product Previews from top industry suppliers, giving you an early look at their new products;
- Booth and Web site information for each supplier;
- A handy map of the Radio/Audio hall of the LVCC;
- A listing of radio-related company booths.

Thanks for bring us along. We'll see you in Vegas!



# AXIA AUDIO

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## Axia Audio Raises Radio's iQ

iQ, Axia's new IP console/routing system, has integrated mix engine, audio I/O, GPIO and Ethernet switch — perfect for networked or standalone studios.



Console and Core connect with one cable; add audio inputs and do some fast Web-based configuration, and iQ is ready to broadcast. Eight-fader iQ Main Frame connects with additional frames to add faders, phone controls and programmable options keys. Eight to 24

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New Programmable Fader Modules for Element 2.0 consoles feature SoftKnob rotary control that gives instant one-touch access to frequently-used functions like input gain, fader trim, source selection and pan controls. Perfect for production or live-mixing applications.

### NOTES:

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Available spring 2010, AutoPilot 2010 replaces Lynx 5, AutoPilot 3 and AutoPilot Plus. See AutoPilot in action at NAB 2010, Booth C1614.

Burk Technology solutions manage and protect mission critical systems for broadcasters worldwide. Based in Littleton, Mass., Burk is a UL-certified ISO9001:2008 facility.



### NOTES:

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# BROADCAST SOFTWARE INTERNATIONAL

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## BSI Brings the Real World to KNTU

By Christian Vang

*The author is chief engineer of KNTU-FM/RTVF at the University of North Texas.*



When shopping for a car, there isn't one vehicle out there to suit each of our needs as drivers. Shopping for an automation system is similar.

As a 100,000 watt station, KNTU-FM is no exception. The task of selecting a new automation platform was not a simple one. The students deserved a system easy to learn but rich with features, robust and stable. We chose Op-X.

KNTU-FM is unique, with a standard Jazz format and nearly all programs produced in-house. The students needed the ability to operate as a music station, talk station, production warehouse and non-commercial affiliate. Op-X answered the call by providing innovative automation-clock tools, adaptable scheduling and clear, organized interfaces.

Students are working to schedule program logs, voice-track and use live-assist functionality. For the first time, they are becoming personalities and not just disc jockeys.

Op-X provides every interface necessary while providing a fun, user-friendly platform to learn broadcasting. The system is powerful enough to handle commercial radio and easy enough that it serves as an excellent teaching tool. Technical support has also been excellent.

Our students are using real-world tools that will help them to succeed long after they graduate.

### NOTES:

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*-Leslie Whittle, Program Director  
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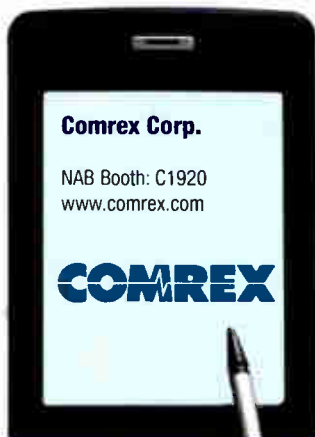


The world's most widely used family of audio over IP codecs continues to provide broadcasters with the ultimate in portability, dependability and versatility.

Comrex IP codecs include the ACCESS Portable and ACCESS Rack Stereo BRIC IP/POTS codecs and the BRIC-Link Stereo BRIC IP codec.

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### NOTES:

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The RX1 and RBRX1 apply BW Broadcast's RF and audio DSP technology know-how to this new range of products to achieve unprecedented RF and audio performance, as well as access to typically hidden RF and audio settings. This allows optimization of the listening experience, whether used for monitoring radio stations to adjust processing, evaluating the competition, rebroadcasting or pure pleasure.



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For re-transmission applications, the RBRX1 adds a DSP-enhanced MPX output that reconstructs a clean peak-level and bandwidth-limited waveform, eliminating worries about studio-transmitter link overshoots.

RDS PI code checking prevents translators and repeaters from being hijacked or jammed.

Plan-B silence detection technology automatically switches to either of the analog and AES/EBU digital inputs, or to the built-in flash memory to keep broadcasting in the event of reception being lost.

**BW Broadcast Ltd.**

NAB Booth: C3034

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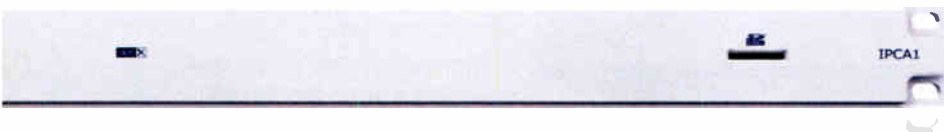
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## Maximum AoIP Quality, Minimum Delay

Using latest-generation IP and audio coding technologies, the IPCA1 audio over IP codec from BW Broadcast was designed from the ground up for stable operation with the lowest latency and best audio performance possible based on network characteristics.

To keep latency as low as possible, the IPCA1 uses a proprietary, dynamically adjustable jitter buffer that adjusts to network conditions, providing 24-bit audio, with up to 48 kHz sampling, at the lowest possible delay at all times. Supporting UDP, UDP Multicast and TCP/IP protocols, the unit includes a range of low-delay codecs operating at bitrates as low as 32 kbps with fewer quality/bitrate trade-offs. Linear, and a selection of loss-less and low-delay, low-bit-rate codecs are all on board including the popular APTX low-bitrate, low-delay algorithm.



If the worst should happen and the data network fails, the built-in "Plan B" silence detection can trigger local audio fail-over to SD card storage.

Convenience features include AES/EBU digital and XLR GPIO and RS-232 ancillary data channel. The graphically rich web and telnet interfaces provide ease of setup and monitoring and the IPCA1 firmware is remotely upgradeable.

### NOTES:

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# ENCO SYSTEMS

Product Preview • Product Preview • Product Preview • Product Preview • Product Preview • Product Preview

## ENCO Raises the Bar



Broadcasters are under enormous pressure to do more with less, but ENCO has a better idea — how about doing more with more ... for less?

In that spirit, ENCO offers Presenter, the affordable, easy-to-use and powerful studio playback system optimized for live-assist. Built on the reliable DAD audio and control engine, Presenter raises the bar on studio audio systems.

ENCO Systems will also feature DAD, our industry-leading studio automation system, and RAMA, the radio metadata appliance for HD Radio, RDS and the web. New for 2010 is iDAD, the ENCO app for the iPhone and iPad that allows remote recording and file transfer plus remote control of a station DAD/Presenter system from the iPhone itself.

ENCO will also show StreamLine, the integrated solution for music, traffic, billing and automation, and NewsBoss, the newsroom management system designed for radio newsrooms.

Don't settle for less ... ENCO does more, it doesn't cost more.

**ENCO Systems Inc.**

NAB Booth: C3036  
Web: [www.enco.com](http://www.enco.com)



**NOTES:**

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# HENRY ENGINEERING

Product Preview • Product Preview • Product Preview • Product Preview • Product Preview • Product Preview

## Henry Announces PowerClamp Series 10



At the 2010 NAB Show, Henry Engineering will introduce the new PowerClamp Series 10 Transient Voltage Surge Suppressor (TVSS) unit.

This new ultra-high capacity surge suppressor is designed for installation at broadcast transmitter sites where electrical spikes and surges can cause serious damage to transmitting equipment. The Series 10 PowerClamp is rated at 200,000 surge-amps and is suitable for locations where there is a severe risk of lightning-induced damage. PowerClamp's multiple surge attenuation circuits will attenuate power line spikes and surges to within a few volts of the AC sine wave, to eliminate or minimize the chance of damage to a transmitter.

PowerClamp Series 10 TVSS units are available for any single- or three-phase electrical service. PowerClamp TVSS units are in use by hundreds of broadcast stations worldwide, and have been distributed by Henry Engineering since 2003. Detailed technical information is available at [www.henryeng.com](http://www.henryeng.com).

### NOTES:

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# INOVONICS

Product Preview • Product Preview • Product Preview • Product Preview • Product Preview • Product Preview

## Sensibly Priced and Feature-Packed

Been wondering why there's so much talk about RDS, RT+ and "Tagging" these days? Wondering what it's all about and how to make sure you're a part of it?

Come by Inovonics booth # C1411 and see why the Inovonics 730 RadioData Encoder is not only the most sensibly priced RT+ enabled RDS Encoder on the market, it's also the most feature-packed and the easiest to use.



With over 4,000 RDS encoders sold in the last 10 years, Inovonics Inc. has taken that knowledge and the feedback we've gained to design a product packed with features and user friendliness. What you see is what you get: the only RT+ enabled encoder with a front-panel LCD screen and jogwheel showing incoming data from automation "on the fly," along with outgoing scrolling messages exactly as they are seen by listeners.

The 730 connects with virtually any playout system, gives you full support for RT+, Tagging and advanced features ensuring your station is ready to take advantage of the exploding mobile device market. 100% designed and manufactured in the USA.

**Inovonics Inc.**

NAB Booth: C1411  
Web: [www.inovon.com](http://www.inovon.com)

 **Inovonics**

**NOTES:**

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# OMNIA AUDIO

Product Preview • Product Preview • Product Preview • Product Preview • Product Preview • Product Preview

## Omnia.11. More Revealing.



What happens when you take the world's leading audio processor and send it to a health club? Audio processing testosterone with no body fat! Audio, lean on distortion, yet of full punch, power and girth, with no nasty side-effects whatsoever. New material, old material, Rock, Urban, Country, Soft A/C, Fine Arts ... you name it, this is GHG (human growth hormone) for processing.

Say hello to Omnia.11.

A completely re-thought approach to processing, Omnia.11 represents years of research and development invested into innovating the firmware platform, GUI and every algorithm.

Omnia.11's AGCs, compressors and limiters are unheard of, literally. They employ Chameleon Technology that transparently analyzes music in real time and adjusts internal parameters for optimum performance across a broad range of material. Listeners hear the music, not the processor.

This results in better performance, ease of use and, most importantly, perceptibly better sounding audio that reveals more detail, clarity and quality, yet maintaining the desired competitive loudness level. That's why you can't use just any processor to do the job of an Omnia.

Omnia.11. More Revealing.

### NOTES:

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# LVCC CE



**LVCC Central  
Hall, C2615**



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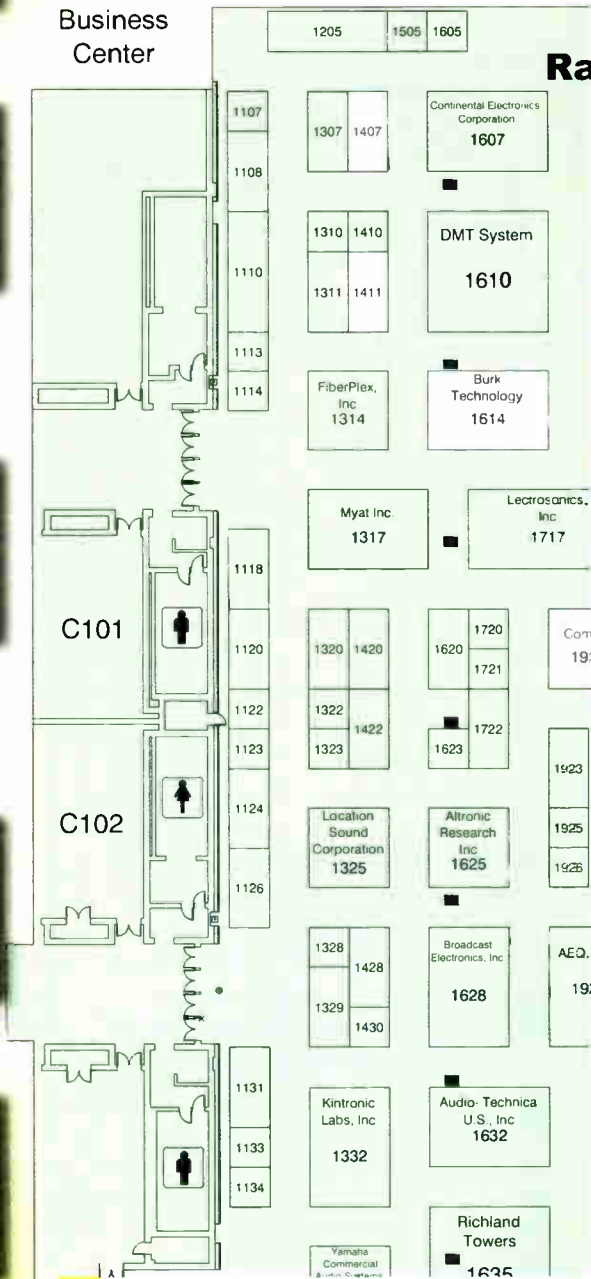
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**bw broadcast**  
LVCC Central Hall, C3034

## Business Center



# CENTRAL HALL

CENTRAL 1

Entrance

Entrance

## Audio

Arrakis Systems  
2007

TFT, Inc.  
2307

JK Audio, Inc.  
2010

Countryman Associates, Inc.  
2310

Shure Corporation  
2013

Micro Communications Inc (MCI)  
2313

Lawo AG  
2217

Dielectric Communications  
2222

Sennheiser Electronic Corporation  
2228

ERI-Electronics Research, Inc.  
2032

036

Neutrak USA

## Pro Audio

Jampro Antennas, Inc.  
2607

Radio Frequency Systems  
2907

Moseley Associates, Inc.  
2610

Sabra Automated Systems & Eng Corp.  
3010

Nautel Limited  
2615

Radio Systems  
3013

Dorrugh Electronics  
3016

STUDER Soundcraft  
2619

Shively Labs  
3019

Wheatstone Corporation  
2623

H.C. Jeffries Tower Company, Inc.  
3123

RCS  
2628

3028 3128  
3029 3129

2632 2732  
2634 2734

3032 3132  
3033 3133  
3034 3134

3205

Elanos  
3207

N Systems, Inc.  
3310

Solid State Logic  
3313

Seratel Technology  
3316

DPA Microphones  
3319

StreamlineWorld  
3328

VCS Engineering  
3332

Logitek Electronic Systeme

ENCO Systems, Inc.

Vislink News & Entertainment  
3707

Panasonic Broadcast  
3712

CONCESSIONS

CONCESSIONS

Continues On Next Page

# Central Hall Map Con

**MEDIA TECH INC.** 704-799-2245  
 j.pierce@mediatechusa.com

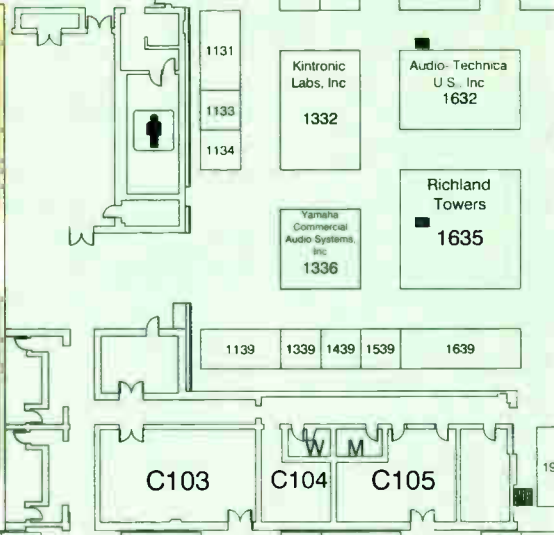
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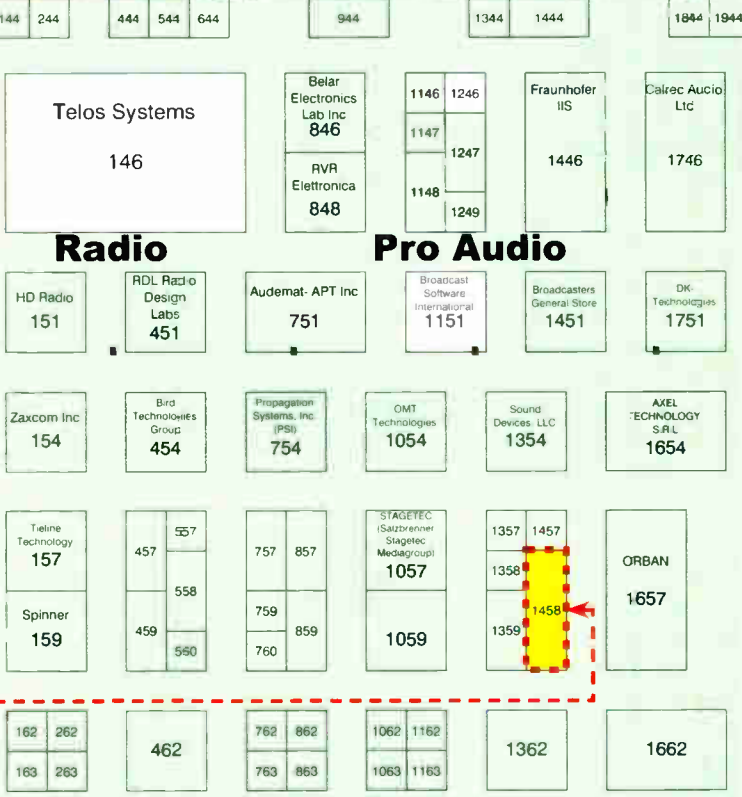
LVCC Central Hall, C-3036



Entrance

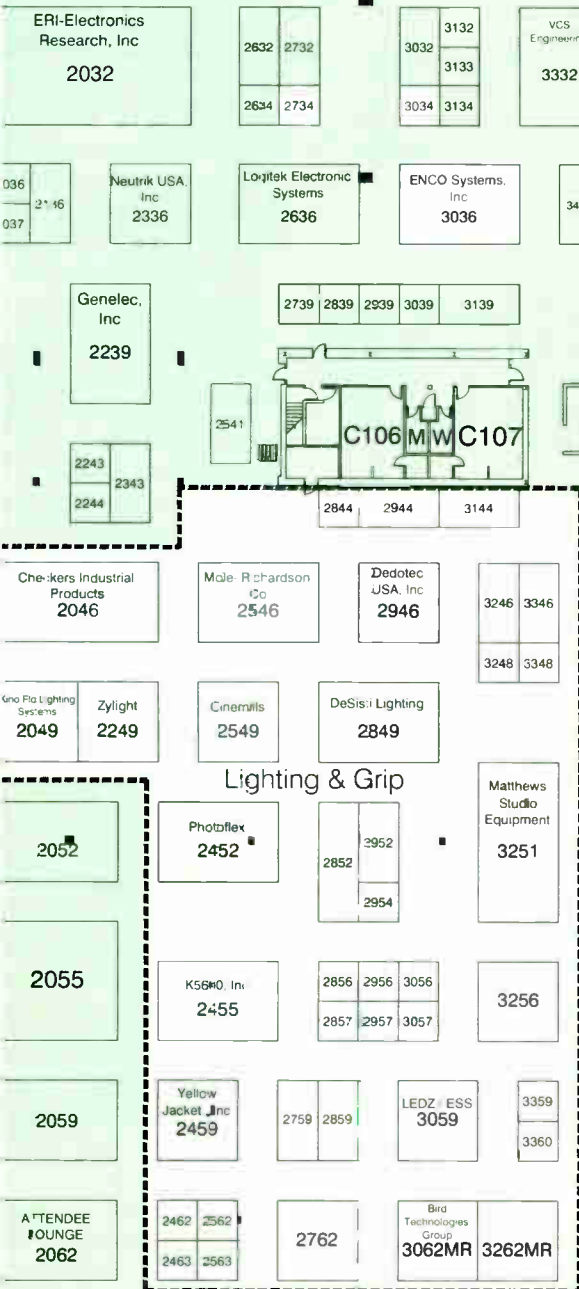
Entrance

To South Halls



Add C to beginning of all booth numbers





**HENRY**  
**HE**  
**ENGINEERING**

**LVCC Central Hall, C1246**

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# TELOS SYSTEMS

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## Telos: Affordable, Scalable, Powerful



The new Telos VX and VX Director handset are an affordable, scalable, multi-studio broadcast phone system that meld the power of VoIP with advanced studio telephone systems.

The VX system uses industry-standard SIP technology, is Livewire-enabled for Axia IP-audio networks, and can be paired with Axia audio nodes for use in facilities without IP-Audio networks. VX is naturally scalable and can grow to support facilities that have large numbers of telco lines and studios.

The Z/IP ONE from Telos is the latest and lowest-cost member of the Zephyr/IP family, offering high-quality trouble-free audio transmission over public IP networks. It is a 1RU studio rackmount model ready to connect to other Z/IPs via Ethernet or wireless using standard USB devices.

The new Nx6 talkshow system from Telos brings the advanced hybrid technology of the popular Nx12 to a six-line phone system. Available conveniently bundled with the Desktop Director control surface and Assistant Producer call screening software, Nx6 gives you complete command of call-in shows.

The new Telos Hx1 telephone hybrid and Hx2 dual hybrid are perfect for production rooms, news desks or radio stations where multi-line systems aren't needed. The latest Telos hybrid technology provides the best caller audio ever, in easy-to-deploy rackmount units.

### NOTES:

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# Ariane

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Traffic Coordinator, Midwest Communications

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# Broadcast Engineering

## SATURDAY, APRIL 10

### SBE Ennes Workshop:

#### Continuing the Digital Transition

8 a.m.–5:30 p.m.

Audio Over IP Tutorial

Next-Generation EAS

Considerations for Adding Mobile DTV  
to a Broadcast Station

SMPTA Update

Management/Media Skills and the Future  
of Broadcast Engineering

HD Radio Update

Wireless Mikes After the DTV Transition

Impacts of 3D Television on Video and  
Broadcasting

Reorganization of Broadcast Workflows

## SUNDAY, APRIL 11

NAB Broadcast Engineering Conference

Opening Session

9 a.m.–9:30 a.m.

### Digital Radio: Advancements in Technology

9:30 a.m.–Noon

AM IBOC Update From iBiquity

When and How Will Radio Go Digital Radio  
in Europe?

Electronic Program Guide Field Trial: How  
HD Radio EPG Works

Laboratory Test Results of Digital Radio  
Technologies, DAB, DAB+, T-DMB Audio  
and HD Radio

Digital Power Enhancement for DRM

### FM Digital Radio

2:30 p.m.–5:30 p.m.

Planning for the Increase in Digital Power for FM  
HD Radio Signals

Extending Your HD Radio Footprint

Practical Tools for HD Radio Including HD Power  
Boost, Increased Sideband Levels and More  
HD Radio, the Way Forward

Translators and Boosters — What You Need  
to Know

Putting the IBOC Quality Metric to the Test



Paul Shulins of  
Greater Media.

Photos by Jim Peck

## MONDAY, APRIL 12

### Radio Facilities

10:30 a.m.–Noon

The Smart Site: Integrating Intelligence Into All  
Facets of the Broadcast Facility

Reducing Operation Costs With Better Monitoring  
and Control of Transmitter Facilities

Radio in a Cloud

### IP Audio for Radio

1 p.m.–4:30 p.m.

LANs, and Drivers, and Fares — Oh My!

Extending AoIP to the Transmitter

Beyond Automation: Intelligent Software Design  
for Live-Assist Applications

VoIP in the Broadcast Studio

Going National: Special Considerations for  
Large-Scale Deployments of Audio Over IP

An Introduction to IEEE 802.1 Audio/Video

Bridging for Radio Broadcasters

Point-to-Point Audio Distribution: It's Not Just  
Satellite Anymore

# Conference Highlights

## TUESDAY, APRIL 13

### Radio Data Services

9 a.m.–Noon

Emerging Bonded Meta-Data Applications

Accessible Radio Services

Saving Lives With FM Radio-Based Mass Notification

The Benefits of Using FM RBDS Data in Integrated Public Alert and Warning

Do More With RDS Data

Providing Media-Rich Content Using Digital Radio

Enhanced Radio Broadcasting: Next-Gen Features for Connected Devices

### Radio Case Studies

1 p.m.–5 p.m.

Satellite Distribution of HD Radio and Analog FM Using HDC

Maximizing the Reliability of Studio-to-Transmitter Links for Radio

Indoor Noise Conditions in the FM Broadcast Band

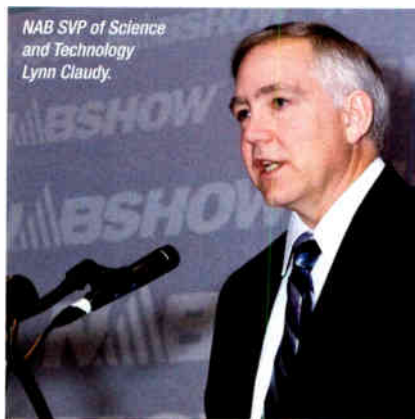
Case Study: PRSS Next-Generation Content Delivery

Radio Living in a Multimedia World

Detuning in the MoM Era

Telephones in Your Studio or Newsroom: Big Changes Coming

Power Quality in Communications Facilities



## WEDNESDAY, APRIL 14

### Disaster Preparedness,

### Recovery and Security

9 a.m.–Noon

Strategies for Disaster Preparedness: Staying on the Air if the Worst Happens

Are You Prepared for a Disaster?

Putting the Final Touches on Next-Generation EAS Panel

Technology Luncheon

12:30 p.m.–1:45 p.m.

### Spectrum Issues for Broadcasters

2 p.m.–5:30 p.m.

Leveraging White Spaces and an Introduction to the New Networks Being Built With Them

Wireless Microphone Testing for White Space Proceeding in Mid-town Manhattan

What Wireless Mic Users Need To Know About White Spaces and the 700 MHz Band

Radio Communications in Today's Complex RF World

Broadcast Operation and Co-existence in the White Space Era

Spectrum Issues Panel Session

## THURSDAY, APRIL 15

### Green Technologies for Broadcasters

9 a.m.–Noon

Sustainable Facilities and LEED Certification: A Broadcaster's Guide

Building a LEED, WEEE and RoHS Facility  
Hollywood East: Home of Sustainable Production

Best Practices for the Design Facilities: How Better Design, Better Acoustics and New Media Impact the Cost of Operations

HD-Quality, Energy-Efficient, Low-Heat Broadcast Lighting

Alternative Power Options for Broadcasters

# Radio/Audio Exhibitors

This is a selection of exhibitors of interest at the 2010 NAB Show. Check on-site program for changes and full list. Booths preceded by C are in the Central Hall, N is North Hall, SL is South Lower, SU is South Upper, OE is Outdoor Equipment, MR is Meeting Room, L is Lobby, R is RTNDA at the Las Vegas Hilton.

25-Seven Systems	C144	Belar Electronics Lab Inc.	C846
Acoustical Solutions	C4937	Bird Technologies Group	C3062MR, C454
AEQ	C1928	Broadcast Devices Inc.	C1451
Aeta Audio Systems	N1002	Broadcast Electronics	C1628
Altronic Research Inc.	C1625	<b>Broadcast Software International</b>	<b>C1151</b>
Argosy	N4316	See pages 6-7 and 31	
Armstrong Transmitter	C1420	Broadcast Tools Inc.	C1451
Arrakis Systems	C2007	Broadcasters General Store	C1451
ATI-Audio Technologies Inc.	C1720	BroadcastStore.com	C9733
Audemat - APT Inc	C751	Broadview Software Inc.	N4334
Audioarts	C2623	<b>Burk Technology</b>	<b>C1614</b>
Audio Precision	C2023	See page 5	
AudioScience Inc.	C1721	Burli Software Inc.	C2343
Audio-Technica U.S. Inc	C1632	<b>BW Broadcast</b>	<b>C3034</b>
AVT Audio Video Technologies GmbH	C12238	See pages 10-11	
Axel Technology S.R.L.	C1654	Calrec Audio	C1746
<b>Axia Audio</b>	<b>C146</b>	CGS Infographics Automation	SU2602
See page 4		CircuitWerkes Inc.	C1451
Azden Corp.	C1110	Clark Wire & Cable	C9533
Barix Technology	C1139	Clear Channel Satellite	SU3117
Beat The Traffic	SU2302	Coaxial Dynamics	C1310
		<b>Comrex Corp.</b>	<b>C1920</b>
		See pages 8-9	
		Continental Electronics Corp.	C1607
		CPI	SU2617, C1407
		Crown Broadcast IREC	C2632
		Dalet Digital Media Systems USA Inc.	SL4720
		Dan Dugan Sound Design	C1944
		Davicom, a div of Comlab	C1124
		DAWNco	SU7813
		DaySequerra Corp.	N3400
		DB Elettronica Telecomunicazioni SPA	SU5610
		Denon & Marantz Professional	C1444
		Dielectric Communications	C2222
		Digigram	N1306
		Digital Alert Systems	C3651
		Digital Radio Mondiale	C1607, C2615
		DK - Technologies	C1751
		DNF Controls	N1212

## IP AUDIO CODECS FOR STUDIO TO TRANSMITTER & STUDIO TO STUDIO LINKS



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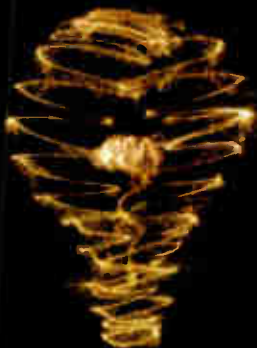
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# Radio/Audio Exhibitors

Dorrugh Electronics	C3016	Lawo AG	C2217
DPA Microphones	C3319	LBA Technology Inc.	N516
DSI RF Systems Inc.	SU5717	Linear Srl	SU7327
Econco	C1407	Logitek Electronic Systems	C2636
Elber SRL	SU2624	Magnum Towers Inc.	C1307
Electrorack Enclosure Products	C10421	Markertek	C5343
Electrosys S.r.l.	SU2226	Marshall Electronics	C8931
Electro-Voice	C4337	Mayah Communications	C444
Elenos	C3207	Megatrax Production Music Inc.	C757, SL8013
<b>ENCO Systems Inc.</b>	<b>C3036</b>	Merging Technologies	C3139
See page 12		Microsoft Corp.	SL220, SL227
ERI-Electronics Research Inc.	C2032	Minnetonka Audio Software Inc.	C2037
ESE	C6437	Moseley Associates Inc.	C2610
Eventide	C2634	Myat Inc.	C1317
Flash Technology, an SPX Division	C3129	Myers Information Systems Inc.	N1615
Fraunhofer IIS	C1446	NAB Public Service Initiatives	N6138
Genelec	C2239	Nagra USA Inc.	C1107
Gepeco International, A General Cable Co.	C5643	National Association of Tower Erectors	SU7202
Harris Corp.	N2502	National Weather Service	C3029
HD Radio	C151	NauteI	C2615
<b>Henry Engineering</b>	<b>C1246</b>	Nemal Electronics Int'l Inc.	C2541
See page 13		Netia	SU3502
HHB USA	C2228	Neumann USA	C2228
HME	C8439	Neutrik	C2336
IABM	C10149	NewBay Media LLC	C1458
IEEE Broadcast Technology Society	L30	NewTek	SL10814
Independent Audio Inc.	C2939	Nielsen Company, The	R106
Inlet Technologies	SL929	NOAA	R216
<b>Inovonics Inc.</b>	<b>C1411</b>	NPR Satellite Services	SU6913
See page 14		NVerzion	N729
Intelsat	SU1417	OMB Sistemas Electrónicos	SU5720
International Datacasting Corp.	SU6321	<b>Omnia Audio</b>	<b>C146</b>
iZotope	C1620	See page 15	
Jampro Antennas Inc.	C2607	OmniBus Systems	N3722
Jetcast Inc.	C3128	<b>OMT Technologies / iMediaTouch</b>	<b>C1054</b>
JK Audio Inc.	C2010	See page 2	
Jünger Audio	SU7206	Orban	C1657
Kathrein-Werke	SU817	Potomac Instruments Inc.	C1410
KD Kanopy Inc.	C1134	Power Module Technology	C1623
Kintronic Labs Inc.	C1332	Prime Image/Greentec	N4036
KLZ Innovations LTD	C862	Pristine Systems/Summit Traffic	C3032
K-Tek	C10037	Propagation Systems Inc. (PSI)	C754
LARCAN USA	SU3317	Radio Frequency Systems	C2907





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MUSIC PRODUCTION TOOLBOX

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BASE PLAYER  
KEYBOARD  
EQ  
MUSIC PLAYER NETWORK

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SYSTEMS CONTRACTOR NEWS  
AV TECHNOLOGY  
RESIDENTIAL SYSTEMS  
RENTALS STAGING SYSTEMS  
DIGITAL SIGNAGE

#### **K-12 EDUCATION**

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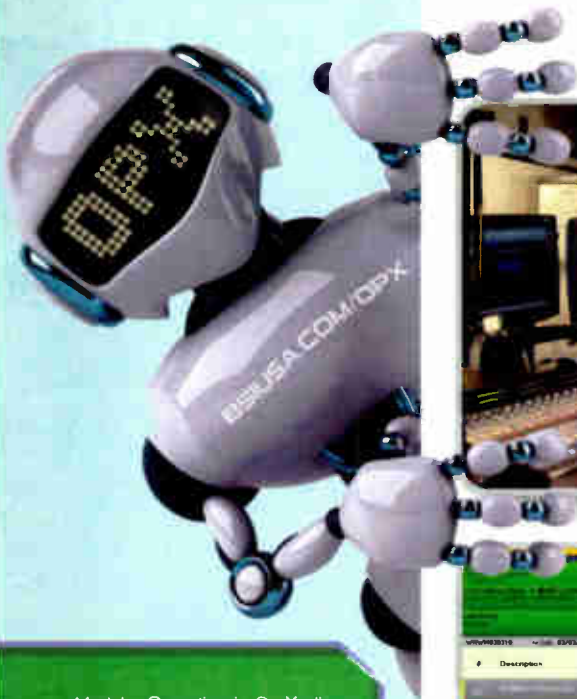
For more information on these brands and the many others offered from NewBay Media, as well as subscription information for all of NewBay's print and electronic products, visit [www.nbmedia.com](http://www.nbmedia.com).

# Radio/Audio Exhibitors

Radio Systems	C3013	Tektronix Inc.	N2522
Radio World	C1458	Teletream Inc.	SL3614
<b>RCS</b>	<b>C2628</b>	Telex	C4337
See page 32		<b>Telos Systems</b>	<b>C146</b>
RDL Radio Design Labs	C451	See page 20	
Richland Towers	C1635	TFT Inc.	C2307
Rohde & Schwarz	SU3717	Thales Angenieux	C6037
Roland Systems Group	C4345	Thermo Bond Buildings Inc.	C1430
RVR Elettronica	C848	Tieline Technology	C157
Rymosa	C2313	TrafficLand Inc.	SU1708
S.W.R. Inc.	C1126	<b>TransLanTech Sound</b>	<b>C1323</b>
Sabre Towers and Poles	C1925	See page 21	
Sage Alerting Systems	C1358	Transradio	C1607
Sennheiser Electronic Corp.	C2228	TWR/Orga Aviation Lighting Inc.	C2136
Seratel Technology	C3316	Utah Scientific	N4511
Shively Labs	C3019	Vaddio	C8008
Shure Inc.	C2013	VIDIZMO	SL8207
Sierra Automated Systems & Eng. Corp.	C3010	Vimsoft	N520
Singular Software	SL4128	Vocalbooth.com Inc.	SL8510
SIRA S.r.l.	SU3022	Volicon	SU5302
Society of Broadcast Engineers	L29	Vorsis	C2623
Solid State Logic	C3313	V-Soft Communications	C2734
Sonifex Ltd.	C2739	Ward-Beck Systems Ltd.	N3425
Sony Electronics Inc.	C11001	Wegener	SU4902
Sound Devices	C1354	Wheatstone Corp.	C2623
Sound4	N1403	Whirlwind	C4342
Staco Energy Products Co.	C1148	WhisperRoom Inc.	SL5105
STAGETEC (Salzbrenner Stagetec Mediagroup)	C1057	<b>WideOrbit</b>	<b>N5129</b>
Stainless LLC	C2025	See pages 22-23	
Stantron	C6049	Will-Burt Co.	C8333
Stratos	OE1720	WinMedia America	N1005
Studer Soundcraft	C2619	Winsted	C8608
Studio Technologies Inc.	C10048	WireCAD	N6219
Superior Broadcast Products	SU2713	Wireworks Corp.	C8612
Superior Electric	C1108	Wohler Technologies	N3023
Sure Shot Transmissions Inc.	OE1715	WorldCast Systems Inc.	C751
Switchcraft Inc.	C8137	Wowza Media Systems	SU9310
Systembase Ltd.	C3134	XDT Pty. Ltd.	SU3010
TASCAM	SL1717	Yamaha Commercial Audio Systems Inc.	C1336
TBC Consoles Inc.	C12626	Zaxcom Inc.	C154
Tec Nec Distributing	C1941	Zeus Broadcast - An Ober Digital Company	N4319

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World Radio History

# Mexico Is Set to Elect IBOC

The Country's Regulator Is Expected to Formalize the Decision This Spring

BY GABRIEL SOSA PLATA

**MEXICO CITY** — HD Radio, the in-band, on-channel system developed by iBiquity Digital Corp., will be chosen as the standard for terrestrial digital radio in Mexico, according to the country's broadcast regulator, the Comisión Federal de Telecomunicaciones.

## DIGITALNEWS

Cofetel Commissioner José Luis Peralta said that Mexico had decided for IBOC because it's an easy way for stations to maintain analog signals while adding simultaneous digital operation.

IBOC proponents in the United States believe Mexico and Canada were just waiting to see how HD Radio was going to play out in the U.S. before adopting it in their respective countries. A total of 1,973 U.S. stations broadcast at least one HD Radio signal as of mid-March, according to iBiquity.

The Mexico decision is expected to be adopted formally at the next Cofetel meeting this spring. The date was not set as of mid-March.

Cofetel also is still trying to get buy-in to the IBOC decision from a group of broadcasters who favor Mexico's adoption of the Eureka-147 DAB standard, according to sources.

"The primary problem for Eureka in Mexico is that here the L-band is used for maritime transmissions and space communications," Peralta said.

Cofetel has leeway in deciding upon a digital standard for the country following a 2009 decision by the nation's highest court determining that Cofetel is the exclusive regulator for broadcasting in Mexico. Previously some of its decisions had to be approved by or made in consultation with the Ministry of Communications and Transport (the Spanish acronym for which is SCT).

### LEEWAY IN DECISION

The choice of HD Radio was somewhat predictable, according to those interviewed for this article.

On May 14, 2008, the government published guidelines for stations wishing to adopt HD Radio within about 200 miles of the northern border. Under the guidelines, transition was voluntary and focused on meeting the needs of listeners and advertisers in the region of the U.S.-Mexico border.

Since then, of the 187 authorized stations in the border region, 11 AMs and



Photo by John Schneider, iBiquity

**XHNK(FM) in Nuevo Laredo was one of the first stations broadcasting HD Radio in Mexico. The building façade features a stylized 'R,' the Radiorama group logo. Engineers from around Northern Mexico participated in an IBOC training meeting. Also among them is Paul Gregg of Bauer Transmitters, front row, second from left.**

10 FM's have launched hybrid analog/digital operations.

According to media expert and university professor Fernando Mejía Barquera, the pioneering groups include Grupo Fórmula with five AM stations; Grupo Gape with four stations in Tamaulipas; Uniradio with two stations in the Mexican state of Baja California; and Mega Radio de México with two stations in Chihuahua.

Radiorama, Multimedia, MVS, Cadena Baja California and Grupo Palacios each operate a single HD Radio station in the region.

In addition, said Mejía Barquera, there are one independent station and two broadcasters licensed to Mexicans but operated by U.S. companies to cover the San Diego market from Tijuana.

The station recognized as the first HD Radio station in Mexico by broadcast association CIRT (the Cámara Nacional de la Industria de Radio y Televisión) is XHTY(FM), La Invasora, which launched digital broadcasts with a Nautel transmitter in July 2008. The station is owned by Uniradio, founded by Gustavo Astizarán Rosas, and serves the Tijuana-San Diego market from Tijuana in Baja California.


### MAJOR INVESTMENTS

Uniradio also was the first Mexican broadcaster to launch a digital multicast channel, airing *grupera* folk music on its HD1 main channel and a *romántica* format on its HD2 channel, according to the trade association.

Eureka-147 DAB, Digital Radio

(continued on page 16)


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And more compatible equipment is likely on the way. The IEEE is working on a consumer electronics standard called "AVB" (802.1), which is similar to Livewire. When the standards-making process is eventually complete, CD players and other devices that can interoperate with Livewire studio equipment will probably appear.

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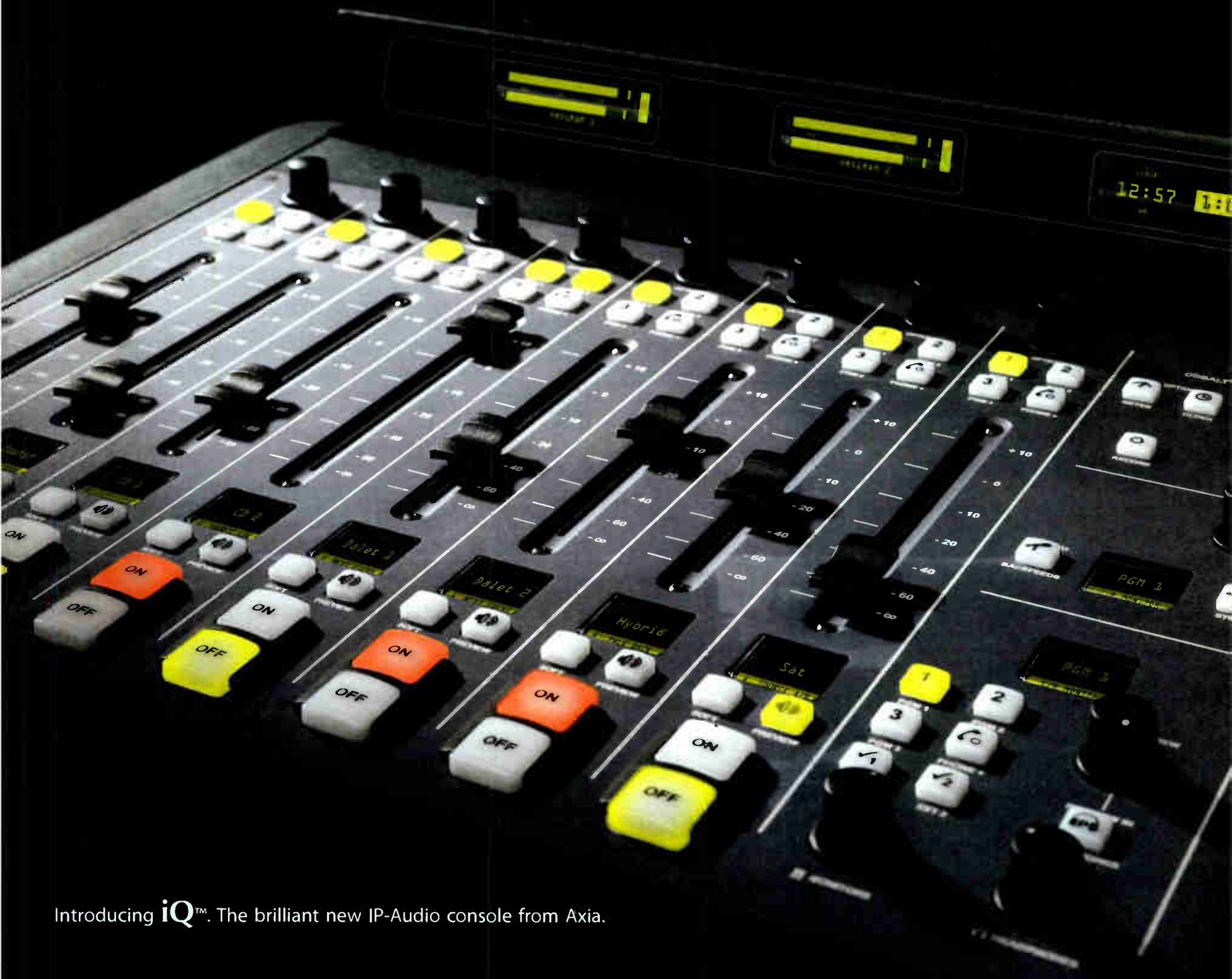
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## MEXICO HD

(continued from page 13)

Mondiale and HD Radio have been tested in Mexico, though there have not been public or industry forums involved in the process to date.

According to John Schneider, manager of business development for Latin America for iBiquity Digital, stations will need to invest the equivalent of \$20,000 to \$60,000 to ready their transmission systems for HD Radio. The figures do not include any studio or production upgrades that may be involved.

Even considering that not all AM stations will transition to HD Radio — in part because many Mexican stations in the same city operate at 30 kHz or even 20 kHz spacing from one another, not the 40 kHz U.S. for which IBOC AM was designed — the Mexican radio industry, as a whole, will have to invest roughly \$280 million to \$840 million in transmission infrastructure to adopt HD Radio.

iBiquity notes that while 20 kHz spacing is too close to recommend using IBOC AM, the system has been found in other nations to work “acceptably well” with 30 kHz channel spacing.

Company officials in mid-March declined other comment on a Mexican



Photos by John Schneider, iBiquity

**Top:** José Avedillo is the engineering manager at Radiorama in Nuevo Laredo. XHNK bought a V10 Nautel solid-state FM transmitter for the analog/digital broadcasts. The station is airing two multicasting channels.

**Right:** The Jampro JAHD antenna is a panel model with half-wave spacing. The tower is collocated at the studio building in Nuevo Laredo.

standard, noting that approval had yet to happen. DRM said it hoped that Mexican authorities would give due consideration to all digital radio standards before making any decision.

Until the decision is official, it's

unknown whether Mexico will approve FM operation at the digital power levels in place in the United States.

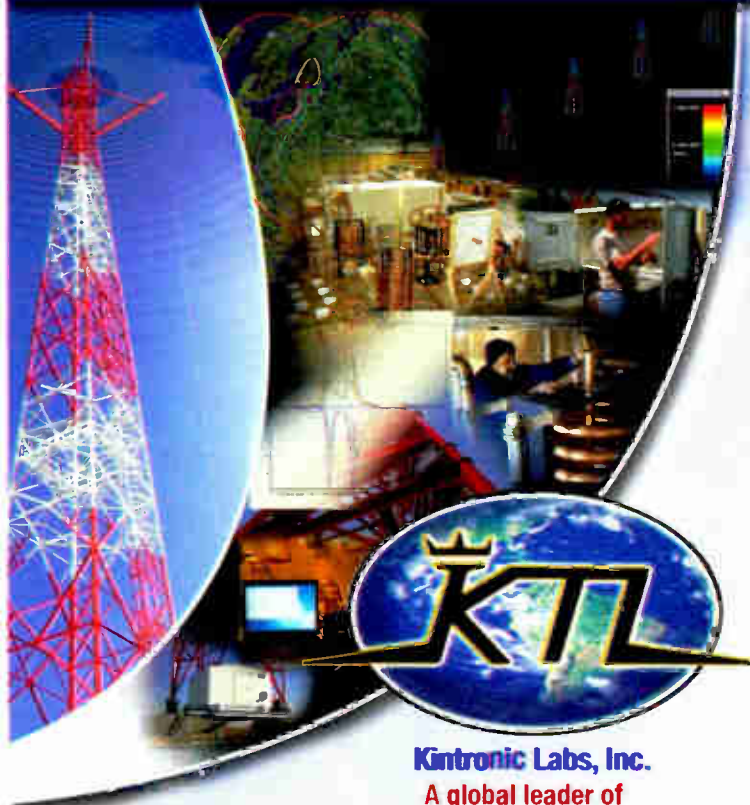
Another factor influencing the Mexican decision for HD Radio was

(continued on page 18)



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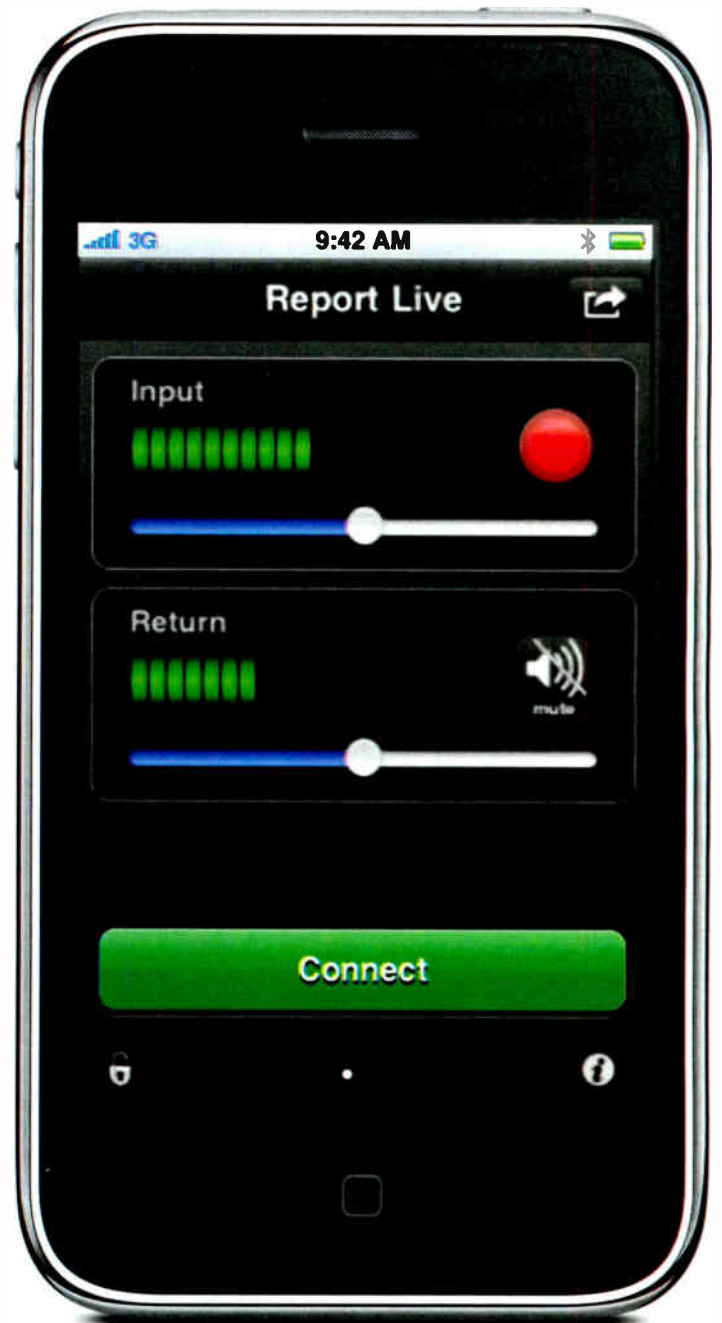
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**DIGITAL RADIO NEWS****MEXICO HD***(continued from page 16)*

a September 2008 agreement allowing some AM operators to migrate to the FM band. Although there is not frequency space for all AM operators to move to FM, Cofetel says a "significant" number of licensees are making the transition, which may alleviate some of the problems with 20 kHz spacing for some AMs.

In July 2009, the SCT and Cofetel published a timetable for AM stations to make the transition based on which of six regions they operate in. However, as of mid-March, no AM stations had made the move to FM because the Ministry of Finance and Public Credit had not validated the formula SCT used to determine the fee for a new FM allocation.

**A spring decision is expected.**

The formula was based on charging the equivalent of about four cents for each listener, population coverage of the station, its market value and technical capabilities.

The 47 broadcasters seeking to move to FM could have to invest as much as roughly \$585,000 in license fees and new equipment to make use of the new spectrum.

Once selection of a digital radio standard is formalized, Cofetel also is expected to define the possibilities for broadcasting ancillary and multicast services, as well as develop a program to help cultural, educational and community broadcasters make the transition to digital.

Digital radio in Canada is stalled due to lack of interest on broadcasters' part, as they seek to avoid the expense of new equipment and as DAB receivers languish on store shelves.

A representative from the North American Broadcasters Association told Radio World in June that Canadian broadcasters are waiting to see what happens with IBOC in the United States.

*T. Carter Ross and Leslie Stimson contributed to this story.*

*Gabriel Sosa Plata is a journalist specializing in media and communications based in Mexico City. E-mail him at gsosap@yahoo.com.*



Selected content from Radio World's "The Leslie Report" by News Editor/Washington Bureau Chief Leslie Stimson. To receive the free, bimonthly e-mail newsletter, subscribe at [www.radioworld.com/subscribe](http://www.radioworld.com/subscribe).

**RECEIVERS HANDLE IBOC POWER INCREASE AND NOISE DIFFERENTLY**

NPR Labs has uploaded to its Web site an expanded version of the "Advanced IBOC Coverage & Compatibility Study" report previously delivered to the commission. The new version adds test results on FM host compatibility or noise degradation at various IBOC transmission powers and an analysis of IBOC coverage increases at higher digital power.

John Kean says NPR found that noise increased with IBOC injection, as you'd expect; but you might be surprised to know that noise was significantly higher at stronger signal strength. Noise increase with IBOC injection or with higher service modes, such as MP3, and the combinations of power and mode are included in the final report. Kean tells me he found it surprising to find that in all cases, noise increased with stronger signal strength.

Design and performance factors that are common to both newer and

older receivers were found. Section 7 of the final report details the signal-to-noise test results for a large number of consumer receivers.

There are other noise sources like manmade electrical noise, noise in the audio program, etc., that will mask these effects; however there are losses in received signal-to-noise ratio that should be considered when adding both extended partitions and higher IBOC power, he said.

The data is notable in that stations can glean not only the potential effect of increasing their FM digital power on their first-adjacent neighbors, but the potential ramifications on their own FM analog signal, too.

You can download the report at [www.nprlabs.org/publications](http://www.nprlabs.org/publications).

**SIPORT APPOINTS NEW CEO**

SiPort, the Santa Clara-based company that makes the HD Radio chip used in the Microsoft Zune HD, has someone new in charge.

David Rolston was chairman and chief executive officer of Forterra Systems, a 3D graphics software company. Before joining Forterra,

Rolston was general manager and vice president of engineering at ATI Inc., where he managed development of advanced graphics/video chips used in personal computers, mobile phones, HD televisions and gaming consoles. (This is a different ATI than the company familiar to equipment shoppers in the radio broadcast/audio sector.) He has also held general management and marketing positions at Silicon Graphics.

Rolston earned a BSE from Northern Arizona University, an MSE in systems engineering and a Ph.D. in computer science from Arizona State University.

David takes over the reins from Aiman Kabakibo, a founder and interim chief executive of SiPort. Aiman took over in 2008 after the company's top three executives, including CEO Sid Agrawal, were shot and killed at their office, allegedly by a former employee.

Now Aiman assumes a new role, as executive vice president and founder, responsible for SiPort's products and the handset market.

At CES, SiPort displayed a data development program for advanced traffic and navigation as well as album art, in iBiquity's booth.

The commission now says the 2003 court decision was correct, which makes Primosphere's 2007 applications looking to revive its case moot.

**DIGITALRADIO NEWS****PRIMOSPHERE LICENSING QUEST REJECTED**

Primosphere, one of four applicants in 1997 for satellite digital radio licenses, apparently has reached the end of the road in that effort.

Seeking to "provide clarity" about the question, the FCC in March formally rejected the company's efforts to get an S-DARS license, dismissing an application to review the original decision.

The agency said Primosphere's case actually was resolved in 2003 when a federal appeals court agreed with its decision to award only two licenses. Those went to Sirius, then called Satellite CD Radio Inc., and XM, known as American Mobile Radio Corp.

Primosphere Limited Partnership and Digital Satellite Broadcasting Corp. lost out to those companies' bids of approximately \$83.3 million and \$90 million respectively.

Primosphere is a holding company for New York resident Clifford Burnstein and Peter Mensch, his

partner in the entertainment industry company Q-Prime, a music management group.

It had asked the International Bureau of the FCC to deny both winning license applications. The bureau said no in 1997 and said there were no more licenses available. The company appealed, first to the full FCC, then to the D.C. Circuit Court. Both appeals were rejected.

Three years later, in 2007, Primosphere said it intended to go ahead with another appeal and that because the commission had never formally dismissed its Application for Review, its document seeking an S-DARS license remained pending.

By this time, Sirius and XM had asked the commission to approve their subsequent merger. Primosphere, among other companies, hoped for an S-DARS license should one become available when Sirius and XM combined. Both Sirius and XM fought that application and the FCC denied it at the time it approved the satellite radio merger.

**LIBERTY, WORLDSPACE TALKS TERMINATED**

WorldSpace is preparing to decommission its satellites, which would involve pushing them into a higher orbit so they wouldn't interfere with other satellites.

That's because its talks with Liberty Media broke off and the satcaster is reviewing strategic alternatives.

Liberty bought nearly all of WorldSpace's debt in 2009, after also rescuing Sirius XM with a loan of \$520 million. That led to speculation that Liberty Chairman John Malone intended to combine the two satcasters.

Silver Spring, Md.-based WorldSpace has been under bankruptcy protection since October 2008. It ended its business in India at the end of 2009 and indicated then that the company was a potential buyer of the WorldSpace global assets.

Selected data in Radio World is from BIAfn's MEDIA Access Pro™.



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# To Tweet or Not to Tweet

Promotion Guru Dan O'Day Tackles Topic of Twitter

BY JAMES CARELESS

"Random."

That's the adjective Dan O'Day uses when asked to describe radio's approach to using Twitter — or lack thereof.

"Twitter is like any promotional tool: It should be employed in line with a station's coordinated, well-thought-out branding strategy," says this radio promotion, advertising and show prep expert.

"But in reality, most radio stations take an entirely random and unplanned approach to Twitter. Generally, they let someone who is keen on 'tweeting' set up their station Twitter account, giving no thought to what's being said on behalf of their brand identity."

## PAUSE, THINK

"The percentage of stations that use Twitter effectively is comparable to the percentage of those that consistently create effective radio commercials, which is about 10 percent," he believes.

"The reason so many misuse Twitter is because they don't understand how it can be used to drive traffic to your Web site and station — or away from it."

O'Day will headline a Monday session at the NAB Show about "How to Use Twitter to Increase Your Station's Ratings and Revenue."

His goal is deliver simple, smart ways to make Twitter a useful part of a radio or TV station's promotional efforts.

Okay, Mr. O'Day: So how can a station use Twitter effectively?

"Step one is to get onto Twitter and register your station name; one that ideally fits your on-air tag line, or as close to it as you can get," he said.

"This is something you can do right now, or right after you listen to my NAB 2010 talk."

Caution: Be sure to have the Twitter account created by a long-term employee who can be trusted to hang around, because it will be their e-mail that controls access to the account. Better yet, manage it yourself.

Once you have nailed down your Twitter name, the next thing to do is ... pause and think.



KRMG(AM/FM) in Tulsa, Okla., tweets.

"Twitter really pushes new users to get tweeting, but don't give into that temptation," O'Day advises. "Your first tweet is your station's introduction to the Twitter universe (i.e. the 'Twittiverse') so it better deliver the kind of brand statement you want to promote."

"Posting 'so what do I do with this thing?' — which is what most first-time tweeters do — really doesn't do much for your image. So decide how your station will portray itself on Twitter, before posting your first tweet."

Speaking of image, every Twitter account page — which other Twitter users look at before choosing to sign up and 'follow' your tweets — comes with a short 160 character bio. Resist the temptation to put in something vague and irrelevant.

"This is where you need to post something that accurately sums up your station brand. For instance, if you are positioning your station as an upstart rock renegade in constant danger of annihilation by an angered Establishment, your bio should reflect this: 'We ARE the Tri-Cities renegade rocker that *The Man* wants to CRUSH. Until the FCC, the banks and the suits shut us down, we'll be PLAYING the kind of KILLER ROCK you can't find anywhere else.'"

For the record, this branding bio is 158 characters in

length; well within Twitter's limits.

This in-your-face bio clearly defines a rebel rock station's Twittiverse persona.

"It also clearly polarizes Twitter users into those who want to identify with your image, and those that don't," O'Day says.

"Polarization is key to effective branding, because it creates an 'in' group of people who endorse what you stand for, and are motivated to follow your tweets, plus tune in online and over the air."

## FREE POTENTIAL

This is just the beginning. Strategically planned tweets can play off this image, promoting personalities, programs, special events, promotions and anything else that boosts your station brand.

Twitter can also be used to post links to your Web site, including photo and streaming audio/video clips. And if other Twitterers like what you're saying, chances are they will forward — "re-tweet" — your messages to other users. This builds the number of followers who receive every tweet you send. The more followers, the more people reached — and all for free. (That's right: Twitter is free.)

Twitter can be used to provide the Twittiverse with an apparently "private" view of popular radio personalities.

"BBC 1 presenter Chris Moyles, whose on-air persona has a bit of an edge to it, uses Twitter to portray a softer, more human side of himself," O'Day said. "That's part of Chris's overall strategy; and my understanding is that he has a staff member who actually handles the tweeting for him." Moyle's Twitter account name is CHRISDJMOYLES. As of press time, he has 439,540 followers.

Dan O'Day offers these housekeeping tips for Twittering stations:

"Whether you do one or 20 tweets a day, be consistent," he says. "People won't stick with you if you tweet excessively for a week, then drop to nearly nothing from then on." Tweets should also always relate back to the brand and they should be interesting. Don't let station staff post what sandwiches they are having for lunch.

"Like the Web, television and newspapers, Twitter can be a useful tool for promoting your station," O'Day concludes. "Is it a must-have? No, in the sense that you can succeed without it. But since Twitter is free and has the potential to reach thousands of people at no cost to you, why not use it?"

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**MORE SHOW HIGHLIGHTS**

Find session details at [www.nabshow.com](http://www.nabshow.com).

**NAB Show Opening**

Gordon Smith gives his state of the industry address; Hiroshi Yoshioka of Sony keynotes; Michael J. Fox receives the Distinguished Service Award. Monday, 9 a.m.

**Cool Gadgets, Hot Content**

Brian Cooley of CNET talks about the latest consumer electronics gizmos. Monday, noon

Information Administration. Tuesday, 2:30 p.m.

**Hubble 3D**

Content Theater session about "Hubble 3D: Filmmaking in Outer Space with IMAX Technology." Session will explore how IMAX collaborated with NASA to capture Hubble 3D's imagery. Tuesday, 3 p.m.

**Export Help**

Department of Commerce official Suresh Kumar will discuss President Obama's National Export Initiative



and talk about programs for companies interested in expanding exports into new markets. Wednesday, 11:45 a.m.

**Destination Broadband**

An exhibit area focuses on advances and applications for broadband technology and the online video experience within the broadband ecosystem. Includes areas on Broadband Innovations, Mobile Solutions and Broadband Lifestyles, a "living room-like setting for consumer products and services."



**HD Radio Digital Marketing**

Rick Greenhut of iBiquity Digital talks about how stations can "cash in on all your content." Monday, 4 p.m.



**FCC Keynote**

Fresh off announcing the National Broadband Plan, Chairman Julius Genachowski talks to broadcasters. Tuesday, 9 a.m.

**Ray Kurzweil**

The inventor and futurist talks about acceleration of technology in the 21st Century and its impact on media and society. Tuesday, 9 a.m.

**Radio Luncheon**

Ron Chapman is inducted in the NAB Broadcasting Hall of Fame, Phil



Hendrie keynotes and winners of the Crystal Radio Award are named. Tuesday, 12:30 p.m.

**The New FCC Database: A Sneak Preview**

Peter Doyle, James Bradshaw and Patricia Rinn of the FCC provide a first look at the commission's new Consolidated Licensing System. Tuesday, 1 p.m.



**Washington Face-Off**

Three FCC commissioners including Meredith Attwell-Baker, shown, join the deputy administrator of the National Telecommunications and

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# Show Explores New Radio Models

Money, Mobile and Machinations Are Hot Topics at Management Conference

BY JAMES CARELESS

Hard economic times mean tough choices for radio owners and general managers.

How do they generate more money when ad sales are down while convincing top sales and management talent not

to jump ship? How can the public's passion for iPhones build radio's audience, rather than erode it? Could government bureaucrats and money-seeking rights-holders hamstring the industry or rob it blind?

These topics will be up for discussion during the NAB Show Broadcast

Management Conference. Here is a sampling of sessions of interest for radio managers.

## FINDING OTHER REVENUES

*"The New Radio Model: Tool Kit and Case Studies"* — For decades, commercial radio has lived and died on advertising revenues. In fact, "the old radio model was reliant on spot sales for over 95 percent of its revenue," says Mike Henry, CEO of Paragon



**Mike Henry. 'The old radio model is now seriously underwater from the perfect storm of advertising declines and new competition.'**

Media Strategies and moderator of this Monday morning session.

Thanks to this addiction to ad dollars, he said, "The old radio model is now seriously underwater from the perfect storm of advertising declines and new competition."

In contrast, he says, the new radio model, while drawing on spot sales, increases the amount of live event and digital revenue in the overall mix.

In particular, "the new radio model combines hyper-local content and community-building with multi-platform distribution and revenue streams. 'Multi-platform' means all platforms, including events and on-site non-traditional revenue." By hyper-local, Henry refers to the kind of local news, sports, events and community interaction at which radio can excel.

*"Copyright Licensing"* — Meanwhile, the cost of content remains a major concern for radio broadcasters, particularly with cash-strapped record companies pressing their case for performance royalties from radio every time one of their songs is played on air. Royalties historically have been paid to songwriters and composers but not to record labels and artists.

"The record industry's business model is failing, and they are trying to shore it up by taking hundreds of millions, even billions, of dollars from the radio industry," says NAB Executive Vice President of Media Relations Dennis Wharton.

"If this becomes law, many stations will have to switch to all-talk to survive, or just go dark. Fortunately, there is strong bipartisan resistance to performance royalties, but this battle is far from over."

Performance royalties will be on the table during the session on Monday morning, as will fee determinations for BMI and ASCAP that are the subject of rate court litigation by the Radio Music License Committee; the status

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**RETAINING TOP EMPLOYEES**

*“Recruiting & Retaining Sales and Management Superstars”* — Work harder, make less money: It hardly sounds like the best way to keep top salespeople and managers on staff. Yet this is precisely what radio owners must do to weather the challenging financial times.

How do you persuade profit-minded staff to stick around? Start by reminding them how hard they’ve worked to date, replies Patty Kincaid. She is director of new business development at Media Staffing Network and moderator of a Monday afternoon session.



**Mark Levy.** ‘Stations that pay close attention to rates as an integral part of their daily business have seen less rate erosion in “bad times” and substantial rate growth as things get better.’

“Many salespeople and managers who have worked for a company for a number of years have a vested interest in seeing it through,” Kincaid said.

“In today’s world, most are happy to have a job and know that while their income may have been affected by the business climate the past several years, their value has not waned.”

Meanwhile, money isn’t the only reason people stay with employers. Job satisfaction and how they are treated are factors. To keep top performers, build a relationship with them, she advises.

“Get them involved in top-level projects, let them take the lead, partner them up with junior employees which not only provides training for your new hires, but gives the senior employee some assistance with their workload. Focus on one-on-one time with employees; make sure you listen to them and recognize their achievements.”

**RULES AND AD RATES**

*“Regulation: You Want Me to Do What?”* — Once a year, the FCC

bureaucracy, which may seem monolithic at other times, becomes human when top FCC execs and commission staff fly into Vegas to come face to face with NAB delegates.

According to Wharton, this is the time to catch the commission’s attention and get your questions answered.

“The FCC has been almost totally preoccupied with tackling broadband regulation,” he said. “But for broadcasters interested in discussing radio regulation with top policymakers, the NAB Show offers a prime opportunity.” For example, attendees can hear

from, and talk to, FCC General Counsel Austin Schlick and Media Bureau Chief William Lake at this Monday afternoon session; they are among the panelists.

Separately, Chairman Julius Genachowski will speak in a high-profile keynote Tuesday afternoon, and three FCC commissioners will be part of the Tuesday session *“Washington Face-off.”*

*“Raising Radio Rates”* — The last few years have been tough for most U.S. commercial radio businesses. Many stations have lowered ad rates in an effort to offset dropping demand and more inven-

tory. Unfortunately, without an increase in spot load, the result of rate cutting is less revenue, even if a station sells the same amount of airtime as before.

“It is part of the reason that many stations have had such a difficult time achieving budget,” says Mark D. Levy, vice president and general sales manager of educational services with the Radio Advertising Bureau.


RAB has developed a strategy for resisting rate reductions, Levy says.

“It is based on knowing what a station has to sell, building a belief among

*(continued on page 24)*

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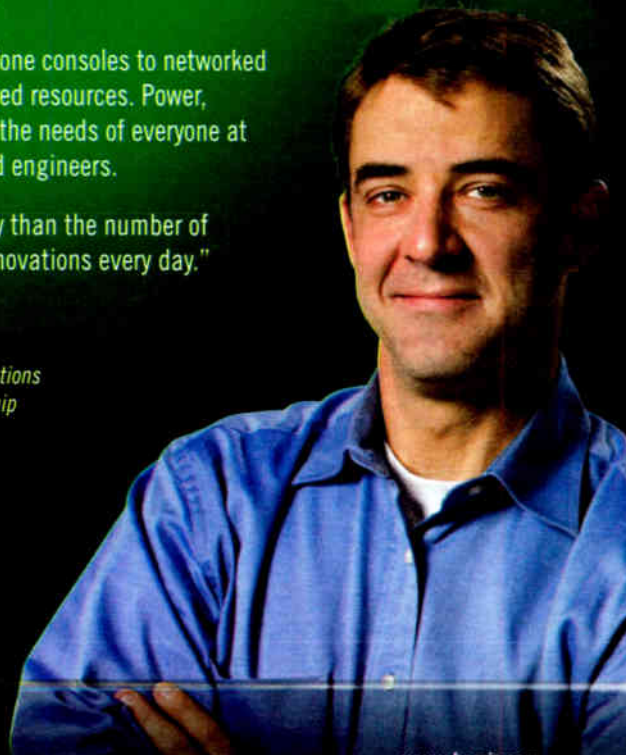


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## NAB SHOW

(continued from page 23)

the sales team that pricing is an integral part of their daily routine and then instituting a series of weekly checkpoints to make sure things are on track," he said.

"Historically, stations that pay close attention to rates as an integral part of their daily business have seen less rate erosion in 'bad' times and substantial rate growth as things get better. Rate growth that outstrips the market is common."

Levy will moderate a session on this topic Tuesday morning at the NAB Show.

### CAPTURING GENERATION IPHONE

"*Mobile: The Seventh Medium*" — In the old days, "mobile entertainment" referred to transistor radios. Today, mobile means iPhones and similar wireless devices — and it's a space some observers think radio must conquer if it's to remain viable.

"As the Walkman was replaced by the iPod, radio's portability has been severely challenged," said Fred Jacobs, president of Jacobs Media/jacAPPS.

"But mobile devices that allow consumers to download applications open up an entire new platform for radio.

And apps do more than stream. They are mini-marketing machines that carry podcasts, advertising, games, connectivity to social media, and anything a station wants to present."

Radio is a natural fit with mobile, providing access to new audiences for enhancing existing sales packages and generate added revenue.

"For example, our apps provide stations with control over their artwork remotely, so they can change ad panels at the station level," says Jacobs. "There are five panels that rotate, creating more avails for sales reps. They can be used



'Apps do more than stream,' says Fred Jacobs. 'They are mini-marketing machines.' He will moderate a session about radio and the mobile revolution.



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## INTERNATIONAL EXCELLENCE

Sri Lanka's Shree FM and India's MY FM will receive the NAB International Broadcasting Excellence Award.

"India's 94.3 MY FM tirelessly served their community, dedicating its airwaves to several philanthropic initiatives aimed at helping its listening area," NAB stated. "With a broadcast network that spans 17 cities and seven states, MY FM successfully coordinated large-scale blood collection drives and clothing donation centers." A 10-day warm clothes drive provided clothes to more than 10,000 homes and spanned across three cities. The station also initiated a voter education effort.

NAB said Shree FM is one of the most popular stations in Sri Lanka and has participated in programs aimed at providing health care assistance.



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**WHEATSTONE WHEATNET-IP BLADES 2.0**

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World Radio History

# Termites Dine on Cable Cuisine

## And How a Ham Shack Became An Emergency Production Room

When we think of insect pests, we might think first of hornets, wasps or bees. Fig. 1 reminds us of another worry: termites.

### WORKBENCH

by John Bisset

Read more Workbench articles online at [radioworld.com](http://radioworld.com)

Even the trim around studio walls and windows can fall victim to these nasty insects. Watch for their swarms as well as their dried mud tunnels running up the side of buildings.

Don't wait until the problem gets this serious: seek professional help early and save your structures.

Perhaps you think that because you occupy a concrete or metal structure, you don't need to worry. Read on to learn otherwise.

Ted Fuller of Fuller Electronics in North Carolina was at a contract station's transmitter site, re-routing a section of half-inch Helix brand cable recently. The cable was buried in sand that filled a trough in a concrete floor. It is pictured in Fig. 2.

Ted had to dig the cable out to move it. As he did, he noted termite dirt encrusting the Helix cable jacket.

Upon removing the dirt, Ted was surprised to find that some of the jacket was eaten away, exposing the copper, shown in Fig. 3. Can you imagine what they would do if they got into the foam?

Just another issue for engineers to deal with. Ted Fuller can be reached at [tsfuller@webkorner.com](mailto:tsfuller@webkorner.com).



Fig. 1: This termite damage is to the trim around a studio window.

Ron Kumetz is the director of Engineering for Broadcast Devices Inc. Ron writes that while the *Workbench* column in the Feb. 10 issue addressed hot switching, one of the major issues concerning motorized RF switches, we did not mention the most foolproof solution.

The BDI SWP-200, winner of a 2009 Radio World "Cool Stuff" Award, is an integrated switch controller and power monitoring solution. This integration allows the SWP-200 to sense RF power in the line and prevent hot switching.

It's been BDI's experience that

interlock connections are not always connected correctly and are, in some cases, even bypassed. This creates a scenario for a potential disaster.

After turning off the transmitter(s), the SWP-200 checks for RF and will not attempt to move a switch if there is RF present.

You can find out more about this "smart" switch controller by visiting [www.broadcast-devices.com](http://www.broadcast-devices.com). E-mail Ron Kumetz at [ron@broadcast-devices.com](mailto:ron@broadcast-devices.com).

Normally you might see nice, new, pristine studio spaces gracing the pages of Radio World.

It isn't the case in Fig. 4. When those big back-to-back blizzards blew through Washington recently, Radio America Production Director Al Peterson received doctor's orders to stay home

(continued on page 28)

Fig. 2: A cable, buried in the sand, looks benign ...



Fig. 3 (bottom): ... until the dirt is wiped off. Termites have eaten the outer jacket.



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Simplify antenna alignment and help validate all measurements. Rear-panel appointments include balanced audio out, composite in/outs, and both antenna and high-level RF inputs. Alarm tallies are provided for overmod, audio loss, carrier loss and excessive multipath.

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— Billy Page THE IN CROWD

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Need to control more phone lines? Check out Nx6's big brother, Nx12. Handles twice the number of phone lines, and can serve two independent studios simultaneously. An Nx12 package with a Desktop Director and Assistant Producer software is only \$4,995 MSRP.



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**WORKBENCH***(continued from page 26)*

to tend to his wife, who was recovering from surgery. But hours of pre-produced programs had to go up for the weekend, and some were live-to-disk interview shows that had not yet been recorded.

Al's home studio had been down for months for a redesign; and even then it had been set up primarily for electronic music production and not creation of talk shows.

So with time and weather against him, Al commandeered his basement ham shack. He stuffed it with two old computers, a 12-year-old Mackie 1202 mixer, an M-Audio PC audio interface, a Telos One digital phone hybrid borrowed from work and yards of audio, network and telephone cable going everywhere. After Al downloaded some free software to get rolling, it was time to put shows together and save the weekend.

Remote hosts who normally dial into the studios via ISDN instead called Al's computer via Skype, the popular free VoIP application which, on good days,



**Fig. 4: Man it's ugly, but it worked. Al Peterson's emergency blizzard 'production room.'**

gives performance close to G.722 audio. Guests rang in on Al's home phone instead of the studio's call-in numbers.

Segments were recorded and edited using the free Audacity audio editor,

with final processing done on an old version of Cool Edit in Al's ham radio computer.

Over the air, the home-cooked audio was indistinguishable from that pro-

duced at the network's Arlington, Va., studios.

Shows were uploaded to Radio America's secure FTP site using free WinSCP software. The programs were imported into the network's elaborate Rivendell audio management system via RealVNC, more free software that allows remote control of distant computers via the Internet.

The weather is better now, as is Al's wife; and he is back in the network studios. But for one winter weekend, this ungainly assemblage of second-hand gear and a bunch of free software unexpectedly came together in the corner of a basement and saved a snowy weekend.

Al Peterson can be reached at [alan-peterson@earthlink.net](mailto:alan-peterson@earthlink.net).

John Bisset marked his 40th year in broadcasting recently. He is international sales manager for Europe and Southern Africa for Nautel and a past recipient of the SBE's Educator of the Year Award. Reach him at [johnbisset@myfairpoint.net](mailto:johnbisset@myfairpoint.net). Faxed submissions can be sent to (603) 472-4944.

Submissions for this column are encouraged and qualify for SBE recertification credit.

## Does Your E-Letter Get Opened?

If You're Going to Do It, You Might as Well Do It Right

I dare you to subscribe to a radio station e-mail newsletter that isn't in your city. Pick a station you've never heard of, but that has a format that interests you.

Here's what will happen: First, you'll go that station's Web site and have a tough time finding out how to subscribe.

Once you locate the opt-in page, you'll receive an out-of-date auto-response when you subscribe.

The auto-response text will be worded poorly and not signed by a station personality.

This auto message will not have a link in it for you to read the most current e-letter instead of having to wait a week or longer to receive your first issue.

When the inaugural e-letter finally does appear in your inbox, the subject line will offer you no real reason to open it.

Once opened, you'll see a laundry list of reasons to tune in to that radio station — but no good reason to read the e-letter because it has no actual content.

You'll wonder why listeners of that station would waste their time signing up for marketing messages and advertising. You'll also wonder why the station is wasting its time with this garbage when they could be engaging more people via Facebook and Twitter.

### IN-BOX WIN

All cynicism aside, I'm not saying the e-letter is dead quite yet.

A handful of stations make great e-letters and have substantial numbers of regular readers. Yes, social media could make e-letters irrelevant in the not-distant future — but in the meantime, how can you win in this space?

Stations with successful e-letters have a method of sanity. They start with the notion that people want to

**The e-mail newsletter sign-up page for CBS station WWJ(AM) in Detroit.**

read actual content and not just be bombarded with marketing messages about station tune-in.

If they're sending an e-letter to a country music fan, that e-letter must have the very latest news about performers in that format; entertainment information that fits the lifestyle — like what's going on locally

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Mark Lapidus

for the family in that coming weekend; movie reviews; NASCAR news; and links to unique video(s), new songs, and a place to provide feedback or opinion easily via a link to Facebook.

After the e-letter has been completed, ask several staffers and friends to check it for typos and errors (which, by the way, are more commonly found with e-letters from news/talk and sports formats). Be sure also to ask your volunteer proofreaders if everything is stated clearly and if they find the e-letter entertaining. Take their feedback seriously.

**For many younger listeners, Facebook has significantly lowered interest in checking e-mail with frequency.**

Next step is to determine a subject line that will get the recipient actually to open the e-letter. Putting the name of the station and the date in the subject line is a huge mistake because it banks on the power of the station brand to translate into action. Few stations have this kind of authority. You'll obtain a much higher open rate by using emotion, controversy, sex, or a promise of delivering info that they'll hear first from you.

How do you measure success? There are e-mail delivery programs that measure open rate, click-throughs and more; I've been told repeatedly by web

## FOTI AND OMNIA GO TO 11

*Omnia Audio this month unveils the Omnia.11 broadcast processor. In the first detailed public discussion about the product, Radio World's Paul McLane e-mailed with Frank Foti, self-described*

### SUPPLYSIDE

*Omnia "chief cook and bottle washer, servant to three cats, caretaker to steam engine" and company president.*

**RW:** You've been teasing about the Omnia.11 since last year. Is it real? Why is it a big deal?

**Foti:** Teasing? Ah Paul, I think you've been staring at those new Omnia.11 ads a bit too much.

Omnia.11 is as real as NBA MVP LeBron James. It ships right after NAB. We spent last year doing private demos and field tests in major markets.

The big deal is what people told us they're not hearing on-the-air with Omnia.11: intermod distortion. One key executive told me we're about to change

the way people to listen to FM — again — as the audio is noticeably cleaner, for the same relative level of loudness.

Paul, you asked me a number of years ago what was the next step in processing, and I told you we needed to clean up on-air processed audio, yet remain competitive. That's what Omnia.11 is all about.

**RW:** What does it cost?

**Foti:** Good question ... :) It's in the price range of Omnia.6.

**RW:** As fans of "Spiñal Tap" we assume  
*(continued on page 30)*



experts that none are completely accurate. At the least, however, these logs present you with you a baseline to measure against. Even the most simplistic e-mail delivery program does offer you the unsubscribe rate. It's vital that you do keep track of your unsubscribe rate so you can see what's working for you and what isn't.

Few stations can sustain more than one e-letter per week. Sending out more also potentially raises your unsubscribe rate simply because your listeners do have a real lives with little free time, so don't push too hard.

One trend worth watching is how youth audiences are dealing with e-mail as a tool. There is evidence that for many 12- to 24-year-olds, Facebook has significantly lowered interest in checking e-mail with frequency.

So, if your e-letter has been like the one described at the start of this article, what should you do?

Once you've got something you're proud of, promote it heavily on-air. Offer specific reasons for listeners to sign up. Prod with incentives like free tickets or T-shirts. In your first few new e-letters, solicit feedback and then read it on the air.

Last, I recommend you not send out standalone advertising to your database. Your unsubscribe rate will soar and your open rate will plunge. You can still make money with banner ads or sponsorships in e-letters — just make sure that content remains king.

The author is president of Lapidus Media. Write to marklapidus@verizon.net.

# This Phone Makes Other Hybrids Go Running Home To Their Mommies.

**NEW!** Universal Host handles VoIP, PBX and EVERY other phone!

More and more stations are turning to VoIP for their phone systems. And rightfully so. Cost savings as well as increased feature sets make them a natural. One problem, though, is finding a hybrid that can work with your new system. Leave it to JK Audio to deliver a hybrid that integrates flawlessly with your VoIP phone system (or any other)! Universal Host Digital Hybrid connects your VoIP phone to your computer via its USB audio CODEC, giving you immediate talk-show quality for interviews right from your desktop with no fuss!

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## OMNIA

(continued from page 29)

the product name is a nod to that classic movie.

**Foti:** We ran an Omnia.fm ad, back in 1999 where we used the "It goes to 11" slogan. The movie's always been a bit of fun for us.

**RW:** What should we understand your philosophy about loudness to be with this box?

**Foti:** It's not about getting loud. Flip on the radio today and there's plenty of packed-up, constipated-sounding audio.

The trick is to clean it up, yet remain loud in a competitive sense. The philosophy is simple. We took our prior efforts, critically listened to them, checked our egos, and said, "What must be done to make it cleaner, for the same relative loudness?"

Easier said than done. I tipped my hand at last year's NAB, as my paper "Cleaner, Yet Still Loud" was all about this topic.

The project that became Omnia.11 played out where I took on the final limiter/clipper stage. Cornelius Gould took the dynamics sections and together we went about investigating methods to clean up the audio. What we learned is that

intermodulation distortion is the silent killer to processed on-air audio, even at reduced levels of processing. Fast limiters and clippers, until Omnia.11, generated intermod distortion that most broadcasters have come to accept as that "sounds like radio" signature.

The algorithms in Omnia.11 grew out of Omnia.6, but all of them, from the wide-band AGC up through the clipper system, employ our "Chameleon Technology" and LoLMD processing techniques. These methods enable Omnia.11 to reduce, and in some cases eliminate, processing induced intermodulation distortion.

The result is added clarity. Snare drums sound like snare drums, live voice is crystal-clear, yet the resultant on-air product is loud with extremely consistent spectral balance. Instead of rambling on, it really needs to be heard. I'm happy to let the broadcasters decide.

During one field test, we had a well-known corporate director of engineering claim the audio was missing something, as he tested Omnia.11.

Listening with him, I agreed he was missing something. After critically listening, and adjusting, he realized he wasn't hearing the level of intermod distortion he was used to hearing. The on-air audio was louder than his existing processing, but noticeably cleaner. Detail and clarity were quite revealing.

**RW:** What does the 11 do that your other processors, or others on the market, don't?

**Foti:** You can't use just any box to do the job of an Omnia. Our new box is cleaner, bar none. Additionally, the firmware platform is considerably more powerful and flexible than previously available. We're taking advantage of power in both the DSP and quad-core domain, which extends exponentially present and future processing possibilities.

It also contains onboard Wi-Fi, 10.5-inch touch screen, Livewire, an installation wizard that makes the out-of-the-box experience much easier, soft-patchable headphone monitor, along with a host of additional useful goodies.

**RW:** Does this replace one or more models in your line?

**Foti:** Well, it becomes the new flagship. Eventually, Omnia.5 will head off to the processing home for the aged.

**RW:** Are there various configurations of this processor?

**Foti:** Yes. There are various options for monitoring the FM multiplex signal, HD Radio diversity-delay with ramp in and out function, and we're going to add as an option the Arbitron PPM encoder and confidence monitor. There's other stuff in the works as well.

For information, visit [www.omnia.audio.com](http://www.omnia.audio.com).

### NEW

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## WORKBENCH

by John Bisset



EVERY ISSUE  
**RADIOWORLD**

**WHO'S BUYING WHAT**

Sonifex equipment is part of a refurb project of two air studios at **Hospital Radio Bedside** at the Royal Bournemouth Hospital in Dorset, United Kingdom. The operation broadcasts to five hospitals and online at [www.hospitalradiobedside.co.uk](http://www.hospitalradiobedside.co.uk). Engineer Simon Davies is using new Sonifex S2 split mixers, SignalLED studio signs and RB-SS10 10-way stereo analog source selector/mixer ...

The **University of Central Florida** chose emergency notification provider **viaRadio Corp.** to add its Envoy Emergency Solutions system on its Orlando campus. The system uses common alerting protocol to send an auto message to special receivers in strategic locations, to notify listeners of weather events, NOAA alerts and other emergency info from university officials. UCF uses the platform as part of an RDS emergency notification network called UCF Alert. ...

Separately, **Putnam County, Tenn.**, Emergency Management Services/911 will use the Envoy platform as part of its RDS emergency notification system. Receivers will be used to notify schools, hospital, nursing homes, government buildings and emergency responders. ...

**Audio-Technica** said 3,000 of its microphones were used at the Winter Olympic Games. **Olympic Broadcast Services Vancouver (OBSV)** was the host broadcaster. ...

India's national broadcaster **All India Radio** placed an order for a pair of megawatt DRM-capable medium-wave transmitters to replace analog transmitters of similar capacity at Chinsurah (West Bengal) and Rajkot (Gujrat). The transmitters can be operated in analog, in simulcast or in DRM mode with automatic changeover between the three operational modes. The transmitters will provide coverage to large areas in the Indian sub-continent as well to the West, North, East and Southeast Asia, the **DRM Consortium** stated, adding that this purchase "underlines the commitment made by India to new technology in general and the DRM standard in particular." ...

**Corus Entertainment Ltd.** installed a **Wheatstone** Wheatnet IP-based audio network for a new facility that covers the Kitchener/Cambridge markets, sold through **Ron Paley Broadcast**. The system is using a Cisco Catalyst Series Gigabyte Ethernet switch with redundant power supply. Tristan Brake is chief engineer, working with **TRC Systems** on the install. ...

Separately, the **University of Toronto** and Chief Engineer Sam Petite purchased a Wheatnet IP sys-



Hospital Radio Bedside Studio is using Sonifex S2 mixers.

tem for a new broadcast studio on campus purchased through **Ron Paley Broadcast** and installed by **TRC Systems** using a Cisco Catalyst Gigabit Ethernet switch.

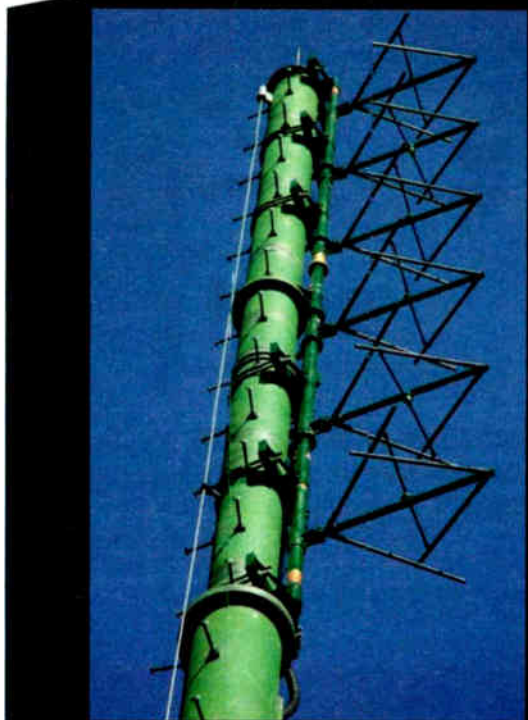
**Specialty Data Systems** said **CHIN Radio International** chose the SDS Symphony system for its three radio stations in Ontario. CHIN Radio provides multilingual programming in approximately 30 languages. ...

**Telos Systems** said recent users of Zephyr include **Godaddy.com** in Scottsdale, Ariz.; **WQDR(FM)** in Raleigh, N.C.; **WADO(AM)** in New

York; **KRDA(FM)** in Fresno, Calif.; and **Sirius Satellite Radio** in New York. ...

**Mayah** said about a dozen radio stations in Germany, Austria and Switzerland broadcasted a concert by Robbie Williams in Cologne in March. Frankfurt-based **Hit Radio FFH**, handling signal distribution, used audio codecs over ISDN lines. Ten C1161 units were supplied by Mayah to supplement the station's existing gear, transmitting live audio with apt-X, MPEG-4 AAC, MPEG Layer 2 and Layer 3 formats.

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## CHURCH

(continued from page 1)

phone systems and speakerphones.

The Telos 10 is but one achievement on his résumé. Church, 53, takes his place this month among a select group of broadcast engineers as the recipient of the NAB Engineering Achievement Award, an honor bestowed for significant contributions to engineering. It's a distinguished list that includes the likes of Carl E. Smith, Jules Cohen, Bob Orban, Hilmer Swanson and other luminaries.

"I've enjoyed every aspect of my career. It's been very satisfying," he said.

Church, considered an authority on telecommunications and audio coding, also is responsible for designing the first product to combine MP3 audio and ISDN telephone technology.

The self-taught electronics product designer released the Telos Zephyr in 1993, which allowed for transmission of high-quality audio without dedicated audio circuits and satellite paths. Then in 1997, he and business partner Frank Foti co-invented the Omnia.fm audio processor — thus, as the NAB put it, perfecting the DSP-based stereo generator and composite limiter.

Telos Systems, based in Cleveland, has 50 employees and multiple divisions, including Omnia audio processors, Axia audio consoles and Linear Acoustic TV audio processors and encoders. Broadcasters in approximately 175 countries use its equipment, according to the company Web site.

Church, who was born in San Diego, began his broadcast engineering career in 1975 at WFMK(FM) in Lansing, Mich. He later worked at WWWW(FM) in Detroit as a broadcast engineer just prior to Howard Stern's arrival in 1980.

But it wasn't until Church moved to Indianapolis as full-time broadcast engineer and part-time talk show host at WFBQ(FM) that he began work on the innovation that launched his equipment career. It was there, frustrated by phone lines that delivered poor fidelity and levels and as well as a low-frequency bubbling, popping sound, that he began two years of work on the Telos 10 digital signal processor hybrid.

"I was hosting a weekend call-in show and had strong motivation to make the phones sound better.

### LOYAL COLLEAGUES

*To hear Steve Church's collaborators at Telos Systems tell it, the winner of the NAB Engineering Achievement Award is brilliant but humble:*

"Before Steve's Telos innovations cleaning up the quality of the telephone caller and balancing the presentation between caller and talent, telephone based talk radio was primarily a fringe-time feature on radio. ... And that's for just one innovation."

— *Denny Sanders, Telos Systems general manager*

"This is a treat for those of us who work closely with Steve. He's not the kind of guy who blows his own horn, but his ideas have truly changed the broadcast industry in subtle but significant ways."

— *Michael Dosch, Axia Audio*

"While I could easily write volumes about Steve and his accomplishments, probably one of the best he brought to my life, and our company, has been 'out of the box' thinking, working to be a paradigm

We were using a speaker phone system that really was a big distraction when putting calls on the air," he recalled.

The technological breakthrough for the phone hybrid came after several fortuitous breaks, Church said.

### DSP CHIP

"It was a very painful process to get where I wanted to go with it. I knew it was going to be through digital signal processing somehow, some way. But no one had ever used [DSP] before for radio broadcast. We think of digital being so ubiquitous today, but this was before even compact disc players."

At the time the only DSP chip available was from Intel, but Church said he learned early in the development process that the Intel chip suffered from poor performance and wasn't up to the task for his application.

**'The future is audio over IP. VoIP and audio over IP will all be very closely connected throughout the broadcast structure.'**

"I had heard about another DSP chip from NEC, the Japanese company. However, there was only something like 20 prototypes of the NEC chip in the whole world. Well, I had to find one of those DSP chips," Church said.

It turned out there was a NEC sales office in Indianapolis, a bit of a hotbed of audio technology thanks to the presence of research and development arms of Western Electric and RCA, as well as a Delco Electronics manufacturing plant.

"I went and paid a visit to the one salesman NEC had in Indy, and turns out he was a big fan of the radio station and my show. I told him what I needed and he wrote a letter to the main office asking for one of the DSP prototype chips. I think he told them I was working on a ground-breaking project, but embellished a

bit," Church said. "Anyway, he got it for me and as it turned out I got the only chip allocated to the United States."

Church went to work but soon ran into other obstacles, he said.

"There were no tools. You need tools for getting audio in and out of the chip and tools for writing software to run off the chip. It was a huge struggle."

Eventually Church converted a Radio Shack TRS80 personal computer into a development system for writing code for the NEC chip.

"The chip had an EPROM, but I still had to figure out how to program it," he added. EPROM stands for erasable programmable read-only memory.

After fits and starts, Church perfected the technology and launched the Telos 10 digital hybrid; call-in talk radio has never been the same, according to industry observers.

Meanwhile, Church shifted from Indianapolis to

WMMs(FM) in Cleveland in 1985 to become director of engineering. However, entrepreneurial drive won out and Church left in 1988 to work solely on his fledgling business.

Church had sold one of the first Telos 10 hybrids to Foti, who was then chief engineer at WHTZ(FM) in New York. Foti, who was building proprietary audio processors of his own, would launch Cutting Edge Technologies; in 1992 their companies merged and eventually produced the Omnia family of audio processors for broadcast and streaming applications.

In 1993 Church unveiled the Zephyr, the first product to combine MPEG Layer 3 audio and ISDN telephone technology in one product, according to the NAB. He is credited by colleagues as bringing MP3 technology into the United States after visiting with research organization Fraunhofer in Germany.

### MP3 AUDIO CODEC

"I saw the potential of MP3 and really locked onto it. We thought it was the best audio codec, first over ISDN and then as a means to do music on the Internet. It was very gratifying to see it take off in the United States," Church said.

According to the NAB's award announcement, "Church is also credited with designing Zephyr NET, the first ISDN-based program distribution network and the first low-cost alternative ad-hoc audio distribution system in the world. For streaming audio, Church invented the hardware MP3 encoder with a built-in audio server, the Audioactive Hardware Streaming Encoder, which for the first time enabled streaming for radio stations as we know it today."

Church — who cites Maj. Edwin Armstrong, inventor of frequency modulation (FM) broadcasting, as a major inspiration — also created the first standards-based audio-over-Ethernet transmission system for broadcast in 2003. The protocol, called Livewire, used standard Ethernet as a transmission backbone and off-the-shelf switching components to

(continued on page 34)



**Church is flanked by Omnia Audio President Frank Foti, left, and Axia Audio President Michael Dosch.**

changer and disruptive technology creator. All of this done with no trace of ego. He's a guy who can be dreaming out on the new frontiers of technology one minute, and then have an ad hoc chat with Pete Townshend of The Who about some abstract article he read in *The Economist*."

— *Frank Foti, Omnia Audio*





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## CHURCH

(continued from page 32)

create real-time, uncompressed audio routing systems.

Livewire eventually became the core technology for Axia IP Networks, which sells studio control surfaces and routing switchers.

"The future is audio over IP," he says today. "That story will unfold over the next few years. There will be an evolution in audio studio design. We're not there yet." Voice and audio over IP, he continued, "will all be very closely connected throughout the broadcast structure."

Speaking of the future, the condition of the economy is never far from Church's mind these days, especially the financial condition of major broadcast groups, he said.

"Of course you have the macro influence in that the economy in general is in a serious funk. Broadcasting is highly dependent on consumer spending, and

that, combined with the big broadcast groups having to pay down lots of debt, is causing lots of trouble," he said. "Thus, the broadcast equipment business is hurting."

Despite the downturn here, Church singles out India, Asia and most of Europe as strong markets for Telos and its sister companies.

Church never had formal technical training in college, instead taking finance, economics and philosophy classes at several schools, mostly at Buffalo University.

He has spent much of the past decade living in Riga, Latvia, and finds life in the Baltics fascinating. He found Latvia

while traveling to Estonia in 1996 to visit a Telos sales office.

"I found Riga to be very appealing and charming. The people were very nice. There is a large segment of DSP experts and audio people there in a research institute at the local university that we hire for projects.

"It's actually been a very benefi-

## 'I saw the potential of MP3 and really locked onto it.'

cial relationship both personally and professionally," he added. Church met his wife Lana in Latvia; they recently married.

This year's Engineering Achievement Award for Radio will be presented to Church at the Technology Luncheon during the NAB Show in Las Vegas.

## HONOR ROLL

*Past winners of the NAB Engineering Achievement Award are listed. Beginning in 1991, radio and TV winners were named; radio winners are shown.*

1959 John T. Wilner  
1960 T.A.M. Craven  
1961 Raymond F. Guy  
1962 Ralph N. Harmon  
1963 Dr. George R. Town  
1964 John H. DeWitt Jr  
1965 Edward W. Allen Jr.  
1966 Carl J. Meyers  
1967 Robert M. Morris  
1968 Howard A. Chinn  
1969 Jarrett L. Hathaway

1970 Philip Whitney  
1971 Benjamin Wolfe  
1972 John M. Sherman  
1973 A. James Ebel.  
1974 Joseph B. Epperson  
1975 John D. Silva  
1976 Dr. Frank G. Kear  
1977 Daniel H. Smith  
1978 John A. Moseley  
1979 Robert W. Flanders

1980 James D. Parker  
1981 Wallace E. Johnson  
1982 Julius Barnathan  
1983 Joseph Flaherty  
1984 Otis S. Freeman  
1985 Carl E. Smith  
1986 Dr. George Brown  
1987 Renville H. McMann  
1988 Jules Cohen  
1989 William Connolly

1990 Hilmer Swanson  
1991 George Marti  
1992 Edward Edison & Robert L. Hammett  
1993 Robert M. Silliman  
1994 Charles T. Morgan  
1995 Robert Orban  
1996 Ogden Prestholdt  
1997 George Jacobs  
1998 John Battison  
1999 Geoffrey Mendenhall

2000 Michael Dorrough  
2001 Arno Meyer  
2002 Paul Schafer  
2003 John W. Reiser  
2004 E. Glynn Walden  
2005 Milford Smith  
2006 Benjamin Dawson & Ronald Rackley  
2007 Louis A. King  
2008 Thomas B. Silliman  
2009 Jack Sellmeyer

## MARKETPLACE

**EMPOWERING:** Power protection manufacturer SurgeX International introduced a line of power conditioners and surge protectors, the SX1200 family, for worldwide use. The line offers regional variants including United Kingdom (13 A), Europe (16 A), China/Australia



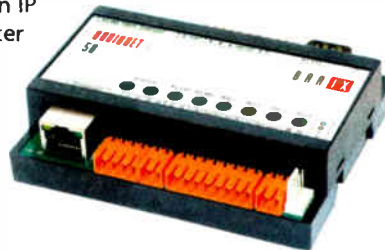
(10 A) and South Africa (15 A). The variants also use region-specific plug styles (different than traditional U.S. NEMA style). All models share Advanced Series Mode and Impedance Tolerant EMI/RFI filtering. Some (RLi and RTi) have SurgeX's Inrush Current Elimination (ICE) and Catastrophic Over/Under-Voltage Shutdown (COUVS) technologies. All also have 10 plugs, eight switchable and two permanently on. The RLi models offer plugs for Littlites. The RTi models offer remote turn-on capabilities. [www.surgexinternational.com](http://www.surgexinternational.com).

**GSELECTOR:** RCS announced a new version of GSelector music scheduling software. Version 3.13 offers tweaks and GUI aids. One change is a "Multi Link Changer" that acts a batch tool for modifying attribute values in groups of links in one move rather than modifying each link individually. For links, new attributes have been added as well: Mood, Tempo, Energy and Opener are the new attributes. Items in the Consideration window in the Editor now can be dragged and dropped (inserted) onto the schedule or they can drag and dropped (replace) onto the schedule.

[www.rcsworks.com](http://www.rcsworks.com).



**IP NETWORK CONTROLLER:** Barix offers the Barionet 50, an IP controller or hub for all IP devices in a network to communicate and be controlled. An IP coffee maker? IP water meter? IP security camera? IP lighting controllers? All can be routed to, monitored and controlled via the Barionet 50. For radio broadcasters, a Barionet



50 might monitor the local machine room's equipment, front-door camera at night, outside weather monitors and the equipment at the remote transmitter site — lights, security camera, transmitter, power, backup generator — in one application. And of course the coffee maker. Barix offers a free programming app for creating applications for the Barionet 50. [www.barix.com](http://www.barix.com).

**SOUND PACKAGES:** The morning zoo show producers will be all over new sound effects packages from Hollywood Edge. The Edge Edition III is a large six-CD or one -DVD package with a variety of "interesting" sounds.



hidden sound treasures in their corners, basements and attics. I love all their creaky and squeaky objects." Alien Machine shop brands itself as "Sounds no one has ever heard from places no one has ever been." Less a package of distinct, defined sounds than a collection (480 cuts) of discordant, eerie, tension-inducing, distorted, jarring and mysterious cuts. [www.hollywoodedge.com](http://www.hollywoodedge.com)

Cars, machinery, household objects, weather, electronics, business, construction are some of the categories. Sound designer Kamen Atanasov said of his production, "I find that old houses have lots of



**Steve Church**

# Congratulations, Steve!

## 2010 NAB Radio Engineering Achievement Award Recipient

*Well deserved, Steve — from your Livewire friends at AudioScience.*



*We applaud your success and admire your visionary outlook. Congratulations from your friends at BGS!*

*You literally have changed the way our industry works and thinks, taking us to places we didn't dream possible.*



*Congratulations to one of the most innovative engineers in the Broadcast Biz! Your friends at BSW.*



*The entire ENCO team salutes you, Steve, on this well-deserved honor.*



*Without you, mp3 would never have been as successful as it became. Congratulations from your many friends at Fraunhofer!*



*Congratulations Steve from your friends at Nautel!*



*Congratulations, Steve, on your well-deserved recognition — from your friends at Crouse-Kimzey Company.*

*Engineering is a tough job, but for some it is a passion!*

*Steve, we congratulate you for all your creations. The SAVE DIFFUSION Team*



*If Steve had been present at ...*

*The invention of the telephone: "Watson is busy, but Alex, that audio really sucks."*

*The invention of the computer in 1946: "Guys, this runs WAY too hot."*

*The founding of Telos Systems: "Wait a minute. I was there!"*

*With love and respect to our favorite pioneer. —THE TELOS FAMILY*



# National Production House Relies on Heil

Microphones Impress Broadcast Vet for Radio and TV, in Studio and Out

## USERREPORT

BY KEVIN MCCARTHY  
President  
Sounds of Chez Le Chasseur Inc.

ST. LOUIS — As president of Sounds of Chez Le Chasseur Inc. based in St. Louis, I use Heil Sound microphones in all phases of producing nationally syndicated radio and TV shows as well as voice-overs and narrations for clients worldwide.

The "Travel Planners Radio Show" has used Heil Sound microphones for more than nine years. The live show uses the Heil PR40 for all of its in-studio broadcasts. The dynamic PR40 does not require phantom power, yet it offers a warm, full-frequency response with what seems like a sweet spot for the human voice. It sounds equally good for the female and male hosts with zero equalization or compression.

This, along with the PR40's cardioid pattern, eliminates the background noise associated with multiple hosts and their computers in the same studio. We simply ISDN the show to Global American Broadcasting's uplink in Florida and it sounds great.

The Heil Sound PR40 is a solid, end-fire mic that coincidentally fits perfectly in an Electro-Voice RE20 shock mount. I've used both and the Heil is a much better-sounding mic that is impossible to



Kevin McCarthy enjoys his Heil Sound PR40.

overload.

While the PR40 is a great voice mic, it is equally at home with musical instruments, amplifiers and even kick drums. The PR40 was taped to the side of military cannons for the soundtrack of the movie "Letters from Iwo Jima," which won an Oscar for its soundtrack. I told you that you can't overload the PR40 and it always sounds great.

When "Travel Planners" is on location we use the Heil Sound PR20 as a handheld mic for hosts and guests. When the hosts are self-recording in the field for their radio and cable TV

show, they use the new Heil Sound Handy Mic Pro for its small size and high quality. In noisy locations we rely on Heil noise-canceling headphones with Heil noise rejection boom mics. These microphones are the same mics we use ringside for the nationally syndicated "Combat Showcase" MMA TV show.

I have used many condenser and dynamic mics from Germany, the United States and the rest of the world. Those mics are occupying shelf space in our storage room because Heil Sound microphones, designed and assembled in America, give me the sound I want at

a price I can afford.

Major artists and producers have found and respect the quality of Heil Sound microphones. Give them a call; who knows, Bob Heil might even answer the phone.

For information, contact Heil Sound in Illinois at (618) 257-3000 or visit [www.heilsound.com](http://www.heilsound.com).

## TECHUPDATE

### MULTIPHONES II OFFERS THREE-ZONE TALKBACK/IFB

Henry Engineering has updated its MultiPhones distributed headphone system.

The MultiPhones II has three-zone talkback/IFB, to provide users with



"more communication and less confusion," according to the company.

It is a multiple-user headphone system that is more reliable and flexible than the older "brute force" method of providing headphone jacks for multiple listeners, Henry says. Instead of using a power amp with lots of scratchy L-pads, MultiPhones uses a master unit that distributes line-level audio to multiple "guest pod" listening stations. Each guest pod is a self-contained headphone amp, with a volume control and headphone jacks. A single master unit can support up to 12 guest pods.

The new MultiPhones II master unit now features three-zone talkback/IFB. The guest pods can be divided into three groups, each of which is an independent "talkback zone." For example, in a typical radio studio environment the guest pods could be divided into host, guests and call screener zones.

Headphone listeners who need the cues will hear them; listeners who don't want to be disturbed with unnecessary IFB chatter won't be. When the talkback/IFB function is used, regular program audio is momentarily dimmed or ducked.

For information, contact Henry Engineering in California at (626) 355-3656 or visit [www.henryeng.com](http://www.henryeng.com).

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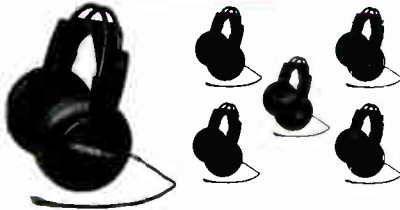
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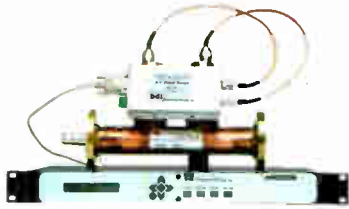


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Since 1979

# AKG C414-XLII Performs in Belgium

Latest Version of Recording Microphone  
Treats Vocal and Instruments with Kindness

## USERREPORT

BY PASCAL ZANDER  
Senior Sound engineer  
RTBF

**LIEGE, BELGIUM** — The C 414-XLII from AKG is the successor of the C 414 B-TL II. It is a large-diaphragm condenser microphone with 48 V phantom power.

When the original C414 was born in 1971, it became a legend among sound engineers. What does this "modern" version of a legend have to offer?

I want to start by mentioning the accessories that come with the microphone because it is really what struck me when I first opened the C414-XLII case.

The C414-XLII comes in a small hard-shell case. Everything a user needs is inside the case: the microphone, a shock-mount, a windscreen and even a pop filter.

Yes, you heard me right; all of these extras are included in the package. That is a pleasant surprise when you open the box.

Second surprise is that these accessories are well-made, not low-quality products.

I have microphones that cost several times the price of the AKG C414-XLII that do not have that many accessories.

### THE MICROPHONE

The AKG C414-XLII is a side-addressed, large-diaphragm condenser microphone. As usual with AKG, users can expect a well-made and robust microphone.

The body of the microphone has two sides which have switches. On the first (with the gold grid), you'll find the pickup pattern switch. Five main



Pascal Zander and the AKG C414-XLII

pickup patterns are offered to the user: omnidirectional, wide cardioid, cardioid, hypercardioid and bidirectional/figure 8. A green LED indicates the chosen pickup pattern. The clever thing here is that there are four more, intermediate pickup patterns that are "in between" the main pickup patterns positions.

All switches on the microphone can be locked for trouble-free use.

On the second side (with the black grid) are two sets of switches; the first is a low-cut, the second is the curve of the low-cut filter. Once again, a green LED will show users what was selected. The low-cut filter presets are 0 Hz, 40 Hz, 80 Hz and 160 Hz. Attenuation curve presets are 0 dB, -6 dB, -12 dB and -18 dB.

Another feature is an overload LED. The stated dynamic range is 152 dB. This will let you use the C414-XLII as

an overhead microphone.

The capsule of the microphone has a slight presence boost at around 6 kHz to "enable lead vocals and solo instruments to be placed even in a dense mix," according to the manual.

### IN USE

I first used the C414-XLII to record some voice-overs in a pretty dead-sounding vocal booth. What became immediately clear is that the AKG microphone is not neutral. When compared to a Neumann TLM103 usually used in that vocal booth, the AKG mic offered more character.

I find it positive to be able to offer something a "little special" as an alternative; on the other hand, the C414B-XLII did not fit all the voices that came in for the test. It brought some "body" to those who had "narrow" voices.

I also used the C414-XLII on female singers. The AKG microphone did not suit one singer's voice so it was left aside; for another the C414-XLII won the comparisons easily.

I also used it at a music ensemble recording. I did not have two so I could not put together a stereo pair for testing; however the AKG microphone bailed me out anyway. The stage was small

and crowded with musicians. I wanted to put a spot mic on the percussion and drum kit on the back of the stage but there were so many musicians around the percussions there was no place for me to put my spot mic.

In came the C414-XLII with all of its switches and customization possibilities. I squeezed the microphone stand just between the drum kit and the percussion kit. I changed the pickup pattern from cardioid to wide cardioid and filtered some lows to prevent overload.

I had my spot mic — not physically placed at the ideal position, but the C414-XLII performed its task perfectly thanks to its versatility. This would not have been possible with a fixed pattern microphone.

Is the C414-XLII the perfect microphone for every job? No, but it should perform adequately on all the jobs you'll have. Here in Europe, the C414-XLII is sold at around €800 (app. \$1,049 street in the United States). At that price I don't think you'll find another microphone that will give you as good results with so many possibilities and with so many accessories.

Could the C414-XLII be the microphone one could take on a desert island? I surely would.

For information, contact AKG in California at (818) 920-3212 or visit [www.akg.com](http://www.akg.com).

## TECHUPDATE

### PRIMACOUSTIC TAMES THE RECOIL

The Primacoustic Recoil Stabilizer is a speaker mounting device designed to eliminate disruptive resonant coupling from a loudspeaker to the stand, while providing a stable base that reduces the recoil caused by the forward energy of the loudspeaker motion.

Made from three basic components, the Recoil Stabilizer essentially is a platform for the loudspeaker that features a high-density foam base that isolates the speaker from the shelf, monitor-bridge or stand. According to Primacoustic this effectively decouples the loudspeaker to eliminate vibration-borne resonance to the substructure.

A heavy laser-cut steel plate is added and sandwiched between the isolation layer and a nonslip neoprene top. The steel plate adds significant mass to the structure and serves to stabilize the speaker. By reducing the backward "recoil" energy as the speaker coil pushes energy forward, initial waveform transients no longer suffer lag and the sharpness of the resulting pulse is more defined. Primacoustic claims that the result is significantly greater detail at all frequencies, with tighter bottom end and improved depth of field.

The Recoil Stabilizer is available in various sizes and weights to address different speaker designs.

For information, contact Primacoustic in British Columbia at (800) 939-1001 or visit [www.primacoustic.com](http://www.primacoustic.com).



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**TECHUPDATE****WOHLER PROVIDES MONITORING AND METERING**

Wohler Technologies' AMP2-S8DA multi-format audio monitor provides audio monitoring of AES/EBU and analog signal sources.

The 2 RU unit is capable of monitoring eight channels from two sets of four AES/EBU signal pairs (balanced and unbalanced) or eight balanced analog channels. Eight 53-segment tricolor LED bargraph audio level meters provide visual level monitoring.

The AMP2-S8DA features a high-contrast LCD display on the front to show user settings and status (as currently selected), type of signal, channel selection, mute status and phase/correlation (alternately).

The acoustic design of the AMP2-S8DA provides focused sound in a close-field (1 to 3 feet) space, which provides a higher SPL for the operator while reducing ambient sound and adjacent-bay crosstalk. The audio amplifier section features



five high-performance transducers, driven by three power amplifiers. Two amplifier/driver combinations handle mid-range and high-frequency information in stereo (left and right speakers) while the third (center) channel

reproduces information below the 500 Hz crossover point (woofer speaker).

Protection circuits are incorporated to protect the speakers, and magnetic shielding allows placement adjacent to magnetically sensitive equipment such as video monitors.

The AMP2-S8DA is suitable for monitoring in areas with high noise levels such as transmitter sites and server/network rooms, or any area where ambient noise tends to make it difficult to determine the quality of the monitored audio. Confidence that a particular signal is present is determined in critical applications by the LED metering.

For information, contact Wohler in California at (510) 870-0810 or visit [www.wohler.com](http://www.wohler.com).

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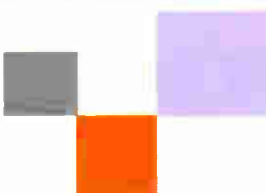
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# TECHUPDATES

## AUDIO-TECHNICA FEATURES NEW BROADCAST HEADSET

Audio-Technica's BPHS1 Broadcast Stereo Headset with Dynamic Boom Microphone is intended for on-air or live news and sports broadcasting, announcing and interviews.

The rugged unit features closed-back circumaural (around-the-ear) cups to provide comfort and ambient noise rejection with minimal ear fatigue. It also has a boom-mounted moving coil dynamic microphone that can be positioned for use on either side of the mouth.

The microphone has a unidirectional polar pattern tailored for voice intelligibility over a wide frequency range, according to the company. A neodymium magnet in the microphone ensures high output level and detailed sound reproduction. The microphone is more sensitive to sound originating in front of the element, making it useful in reducing pickup of unwanted, off-axis sounds.

The headset's dual earphones offer an frequency response of 20 Hz-20 kHz for smooth, natural sound reproduction. In each earpiece, a 40 mm neodymium driver offers power handling suitable for high maximum sound pressure levels. Padded cups provide acoustic isolation and long-wearing comfort. The adjustable headband is cushioned.

The BPHS1 includes a user-replaceable detach-



able 11-foot cable terminating in two output connectors, one each for the microphone and headphone; the microphone output is a three-pin XLRM-type connector, and the headphone output uses a 1/4-inch connector. Three windscreens are included to protect against noise and pops from breath and wind. Replacement parts, including the BPCB1 Replacement Cable and the AT8162 Replacement Ear Pads, will be available separately.

For information, contact Audio-Technica in Ohio at (330) 686-2600 or visit [www.audio-technica.com](http://www.audio-technica.com).

## GENELEC NEW 8260A IS A THREE-WAY SYSTEM

The Genelec 8260A three-way DSP monitoring system is the latest offering from the company in Finland.

Multiple new technologies are incorporated into its design, including a proprietary midrange/tweeter Minimum Diffraction Co-axial driver. This design allows maximum use of the front baffle for the Advanced Directivity Control Waveguide and enables a point source for the bandwidth between 500 Hz and 20 kHz.

The 10-inch woofer is designed by Genelec and incorporates a unique mounting mechanism to isolate it from the aluminum enclosure.

Inside are new electronics including a true three-way DSP card that is coupled to the analog and digital circuitry yielding high resolution and low distortion throughout its 27 Hz to 35 kHz operating range, according to the company.

The 8260A can be operated in either a standalone mode, using the back-panel DIP switches, or with the Genelec Loudspeaker Manager, incorporating its automatic calibration and optimization program, AutoCal.

For information, contact Genelec in Massachusetts at (508) 652-0900 or visit [www.genelecusa.com](http://www.genelecusa.com).



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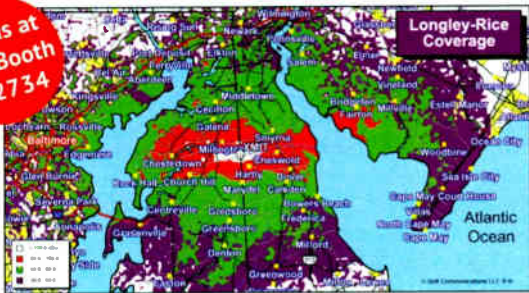
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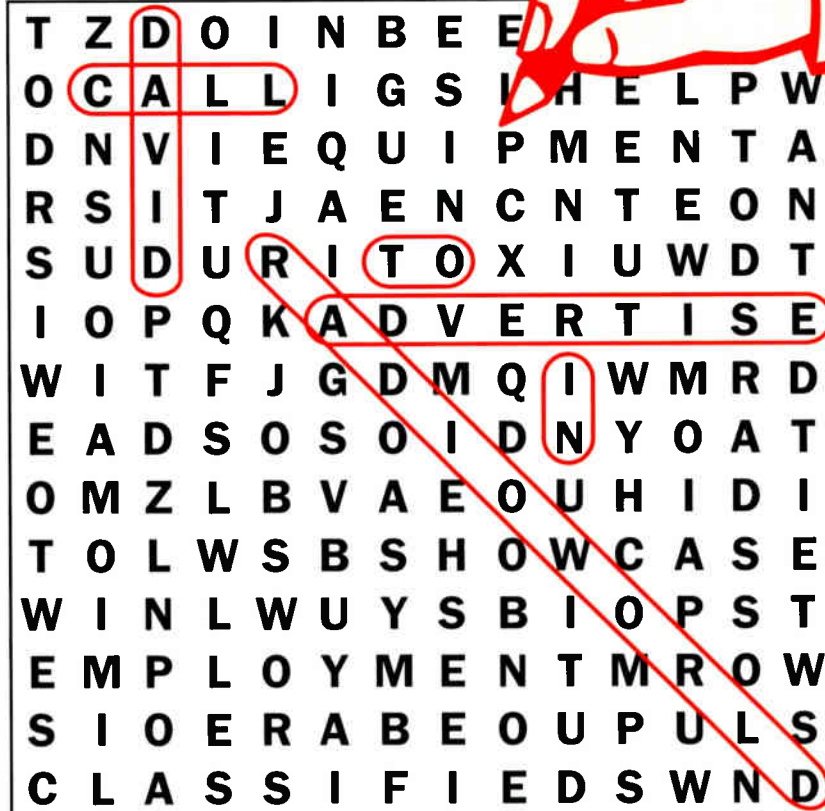
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ENGINEERS AND LICENSES, CONTINUED

I read Mario Hieb's Jan. 13 response letter to my comments in Radio World and must offer rebuttal.

I stated here in October that the FCC in 1974 had dismissed a petition by the Association of Federal Communications Consulting Engineers to have the FCC mandate a "PE stamp" on all FCC license applications. I maintain that they acted correctly by dismissing it. I might also mention that the Reagan FCC eliminated the First-Class Radiotelephone License requirement for operation of directional AM stations as well as 50 kW AM stations.



145 injured. Examination by Minnesota authorities revealed that the gusset plates were underdesigned. I am sure this bridge, built with federal funds, included a "PE stamp."

We are over-regulated beyond reason in the United States, and Mr. Hieb wants more self-serving protectionist regulations. When it comes to the field of radio engineering and the FCC, I still maintain that a PE is unnecessary.

John C. Aegerter  
Brookfield, Wis.

AM RADIO, BACK TO BASICS

Paul, great series on AM radio. I happen to be a believer in the medium. But I was thinking: Is it strictly the economy and new technology that has so many local-market stations on the ropes? I wonder.

I was thinking back to when I started in small-market radio in the Midwest. In 1971, look who was doing what at good old KCOG in Centerville Iowa:

The news director also sold. The midday guy did, too. So did the president, the GM, the sales manager, our one actual full-time salesperson and the receptionist, who worked a list over the phone.

That's seven hot bodies selling every day on the street and over the phone. Competition? A daily local newspaper, a big regional daily, a TV station and three or four other radio properties.

We also had an honest-to-God copywriter, who was part-time but worked a ton of hours because those folks sold so much advertising in our county seat town of 6,000 (market area maybe 40,000). I know because that copywriter was my mom. The only people at that 500 watts day/250 night AM who didn't sell were the morning guy, the bookkeeper and the part-time high school kid who rocked at night (me).

I do wonder if local stations aren't relying so heavily on automation, satellites and running lean that they overlook the possibilities of hiring announcers who also sell and of using a personable office person (like our receptionist) to do some quality phone work.

Yeah, I know: Nobody asked me. Might be the kind of back-to-basics thing that would save some small stations, though.

Great series and a much-needed airing of many voices!

Doug McLeod  
Scottsdale, Ariz.

The writer is an occasional contributor to Radio World. Opinions are his own.

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**READER'S FORUM****THE POWER IN YOUR WRISTS**

Richard Strickland's article in the Jan. 13 edition, concerning de-energized towers that are part of an AM array that is otherwise energized ("May I Climb This De-Energized Tower?"), was very good and timely.

I have a quibble that is more academic or theoretical in nature than practical.

Mr. Strickland states, "Induced currents are a result of forming a branch circuit with the tower. Most of the current flows through the highly conductive steel, but some of it flows through the climber ..."

Experimental evidence indicates that the current driven into the climber's hands and feet is a result of the radial electrical field surrounding the tower. In areas near the tower, the electrical field decreases radially as you get farther from the tower. The fact that the climber's body hangs away from the tower means that the difference in the electric field across his body will drive a current through it.

There are a couple of experimental observations that demonstrate this.

The first is, the farther your butt hangs out, the higher the measured current in your wrists and ankles will be. The second is that the wrist/ankle current is highest in locations where the electric field is highest on the tower. These locations correspond to where the current in the tower is the least. If the body current were a result of forming a branch, or parallel circuit, with the tower, then it would be expected that the body current would be highest where the tower current is highest.

For radiators that are approximately 90 degrees tall, the highest electrical field occurs at the top. For radiators approaching 180 degrees, this occurs at the top and bottom.

The current (and power) density is highest in the wrist and ankle because these are the areas with the smallest cross section. In most circumstances, the wrist is the controlling area. Typical climber's boots are not very conductive and are thick enough to reduce capacitive currents through the ankles.

It has been determined that double-gloving with a leather glove over a thick rubber glove will greatly reduce wrist currents.

Much of this information was developed by Richard Tell in the early 1990s as part of an investigation done for the Federal Communications Commission. Reports about this work prepared for its Office of Engineering and Technology include "Induced Body Currents and Hot AM Tower Climbing: Assessing Human Exposure in Relation to the ANSI Radiofrequency Protection Guide" (1991) and "Current Reduction Provided by Work Gloves at AM Radio Broadcast Frequencies" (1993). Copies may be ordered at [www.ntis.gov](http://www.ntis.gov), the National Technical Information Service.

Gray Frierson Haertig  
Gray Frierson Haertig & Assoc.  
Portland, Ore.

Author Richard Strickland of *RF Safety Solutions* replies:

Mr. Haertig is correct that the primary source for the current flowing in the wrists and ankles is from the body acting as an E-field antenna, which is the reason that body's distance from the tower and the field levels at that elevation on the tower are the primary factors in determining the amount of current flow. There are secondary sources, as well, including the body acting as a loop and the body acting as a loaded branch circuit.

I tend to simplify things when I teach as long as it does not impact getting the primary point across, which I also did in the relatively short format of the *RF Safety* column in this case. I appreciate Mr. Haertig's comments, which are correct and further explain the phenomena. The practical guidance offered in the article remains the same.



iStockphoto/Julie Kendall

**EMERGENCY WARNING  
AHH-OOO-GAH**

I still get P-O'd when I see the "system" gearing up for another unfunded mandate.

Granted, the latest "idea du jour" concerning emergency warnings has been perpetuated by many owners just looking for ways

to legally keep their stations "in the loop" while running totally remote, sans operator. For them, ponying up a grand or two for the latest whiz-bang contraption that repeats some "smiley bastard's" recorded message, warning the area to prepare for a catastrophe, may fit their lifestyle. But it's the epitome of smoke and mirrors while providing a PMA for broadcast ownership.

For the station that's actually manned during this emergency, is that annoying EBS two-tone warble — or the even worse gawd-awful noise burst of the "new and improved" EAS system — really essential? The normal weather sounder developed by most of the stations I listen to is more than adequate to get my attention.

Back when the bureaucrats were dreaming up this glorioski EAS system I suggested a survey of all stations be made. Not costly; done on a post card, with a simple question: "Would your station like to continue to be involved in the EBS system?" One small box for Yes and another for Hell No!

That of course was lambasted by the "well-heeled" and the equipment manufacturers, not to mention the "messengers" whose publications they wrote for, who needed that advertising, I suspect. Kinda like HD Radio today eh? Although, thankfully, that's not an unfunded mandate, and a lean-mean-financing-machine the FCC FI's have turned the EBS/EAS systems into.

But not one of these inventions will turn on the listener's radio ... or TV ... or computer ... or whatever device the warning is supposed to be received on. Nor will it turn on the radio transmitter of the signed-off stations, whether a daytimer or a go-to-bed-at-midnight operator.

When I had a dog in this hunt as a small-station owner, jock, salesman, engineer, janitor, etc. etc. etc., and was looking at coming up with the money to pay for that new Sage or TFT or some facsimile, I made a suggestion to that august bureaucracy, the FCC: Why not do something that might actually work?

At that time, according to the FCC's figures, 86 percent of all EBS actuations were weather-related. So my thought was, why not spend this revenue expanding the NOAA weather system transmitters, so all the voids could be filled in? Then we'd have a system that would actually turn on during an alert and awaken a sleeping resident/listener. There were receivers on the market that sat on a counter, bedstand, cabinet, wherever, that awaited the "turn on" signal from the NOAA transmitter. Imagine that: a government-run entity that actually worked.

Admittedly, during my rant at the time I may have gone overboard by suggesting we inform Japanese manufacturers of our intent and how there might be a "run" on those NOAA receivers. At that time, it was my guess they would be supplying our nation with units for about \$4.95 each, cheap enough to buy several for rooms in the home.

This wouldn't be the end-all, of course, but it certainly would be the initial "flag-waver" and AHOOOOGGAHH horn to alert us, and maybe awaken us, to a pending disaster. That's way more than my AM daytimer could do in 1972 during the Rapid City flood. I am still awaiting a two-tone warble. Even the full-time operations must have figured it was superfluous.

Bill Spitzer  
Rapid City, S.D.

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