

# RADIO WORLD

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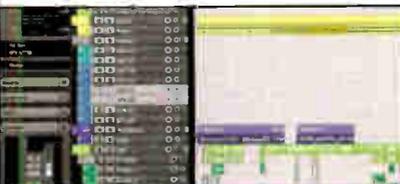
## INSIDE

### NEWS & ENGINEERING

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## Johnston Laments FM Noise

Engineer Believes Electronics Makers Should Do Something About the Indoor Racket

### COMMENTARY

BY STEVE JOHNSTON

*The author is director of engineering and operations for Wisconsin Public Radio.*

The impact of indoor noise on AM broadcast reception is well known. For FM that's not the case thanks to the ability of FM receivers to hide the noise.

Radio hobbyists — ham radio operators, shortwave listeners, broadcast DXers and other enthusiasts — know about the growing radio noise issues in our modern world; but less-technical listeners seem unaware of such noise pollution. Yet while FM receivers may not emit the buzzes, growls or pops that make AM noise obvious, noise can mask weaker FM radio and, probably, digital HD Radio as well. Listeners may not know why; they just know the signal is "weak."

I suspect all broadcast engineers have heard reception complaints; it's normal. But I've noticed a new trend: long-time



Photo by Jim Peck

Steve Johnston

listeners describing *deteriorating* reception. "I used to get good reception here, but not anymore ..."

Wisconsin Public Radio is a three-network, 30-station public radio group. It is one of the largest such groups, with complex interconnection systems serving AM and FM stations around the region. Thirteen of the 30 stations have been upgraded to include HD Radio multicast service.

In the past five years, WPR Audience Services "Listener Logs" show a 37 percent increase in e-mail and telephone complaints related to reception.

At the same time, FM's digital HD Radio indoor reception is simply not as good as predicted — both at WPR and industry-wide.

Could these phenomena be related?

My hypothesis was that growing levels of indoor noise from modern electronics may be masking weaker FM

(continued on page 3)

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# FM BAND NOISE

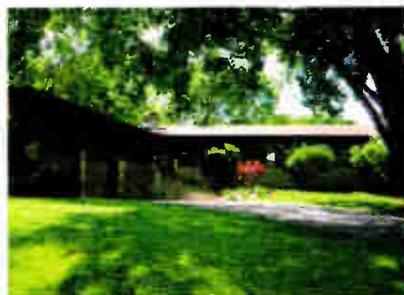
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signals — and probably digital HD Radio and HDTV too. I further suspected that this noise increase creates the impression that HD Radio and HDTV have difficulty with “building penetration” and subsequently led to the effort to increase digital power.

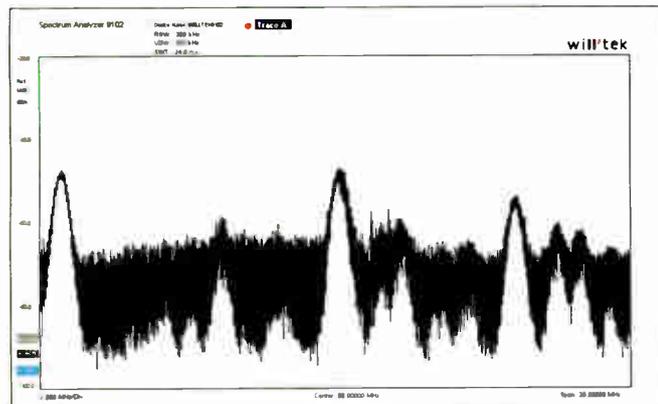
To get a sense of the noise present in the FM band in a variety of indoor

It’s important to note that I did not try to put numbers on the signal strength of the noise, but rather made a comparison of outdoor to indoor reception at the same location.

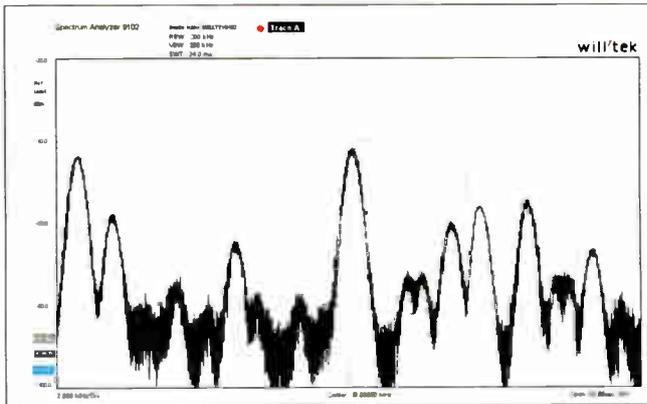
I visited several examples each of three types of locations: urban apartments, suburban houses and urban offices. In each location I inspected the signal-to-noise conditions, as shown on the spectrum analyzer, first just outside the premises, then inside.



An example of suburban homes tested by the author, this one in Fitchburg, Wis.



Outside a suburban house.



Inside a suburban house.

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situations, and see if it might explain the trouble these listeners were having with digital reception. I made measurements with a portable spectrum analyzer and antenna. I studied several urban apartments, suburban houses and urban offices. All were found to have higher noise levels inside than outdoors on the same property. I also pinpointed some common sources of this noise.

### MEASUREMENTS

I made an informal study of some Wisconsin Public Radio listener and staff homes using a battery-powered spectrum analyzer (a radio receiver with visual display of strength vs. frequency) and a loop of stiff wire about one-quarter wavelength in circumference on a short length of coaxial cable as a pickup antenna. My goal was to get a better sense of the noise encountered in the 88–108 MHz range in a variety of indoor situations and see if it might explain the reception troubles.

### RESULTS

My tests showed suburban homes had much more noise in the FM broadcast band indoors than outside in the driveway.

Note that my spectrum analyzer configuration was optimized to show conditions across the whole band in a very broad manner; the settings would not be appropriate to measure an individual signal.

The strongest noise sources I found inside the home were recently-manufactured “wall-wart” switch-mode power supplies used for charging batteries in cellphones and digital cameras. Some made a broad “hash” while others produced a series of noise peaks on discrete frequencies through the band, probably related to the switching frequency.

Some HDTV sets and DVD players also were very noisy in the FM band, maybe from their power supplies as well but with their internal supplies it was impossible to be certain. Some personal computers and digital clocks

and telephones were quite noisy in the FM band too.

The urban apartments I checked also were awash in noise, much higher than the background level in the parking lot outside. With fewer square feet of space, noise sources were more concentrated than in the single-family home. I encountered a similar array of noise sources, though, and a similar increase in the overall noise from outside in the driveway to indoors.

We checked several urban office structures on our University of Wisconsin campus in Madison as well. They all suffered a bad combination of significant attenuation of the desired FM signals and high noise levels indoors.

I found it harder to find specific causes of the noise in this environment. Some computers were noisy, as were many of the telephones. Printers with their switching-mode power supplies were cranking out the noise as well.

(continued on page 5)

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**Brian Bannon**  
Engineer  
WLNG Radio

# 'Agnostic About the Delivery Mechanism'

## Musing About Platforms, Data Services And Radio's Place on the Glass Dashboard

In gathering ideas for our recent "25 Things" webinar, I asked numerous observers for comments on industry trends. Thought I'd share a few here too.

Steve Davis, senior VP of engineering and capital management for Clear Channel Radio, is surprised he still runs into people who consider the Internet, digital and HD Radio as threats.

"As long as we are providing compelling content and selling advertising on it, we should be agnostic about the delivery mechanism," Davis told me in an e-mail.

"CC has a lot invested in terrestrial over-the-air delivery and continues to see this as a strong and vital platform, with the dual advantages of huge reach and local targeting (each signal is in a local geographic area — unlike, say, the satellite footprint or Internet)," he emphasized. "But we also see the unique opportunities that other delivery mechanisms present."

Steve also praised the National Radio Systems Committee for adopting an updated analog FM subcarrier-based data broadcasting system standard. "It opens the door for all broadcasters to provide more rich content over radio, such as real-time traffic information."

NAB's Senior Director of Advanced Engineering David Layer believes "the whole industry seems to be rallying around support of program-associated data, recognizing that PAD is necessary to compete with broadband services (like Pandora) and satellite radio."

He thinks it's important for FM analog, FM digital and AM digital broadcasters to support a consistent program-associated

data experience for listeners.

"Broadcasters and equipment manufacturers are getting more on-board with this, but participation needs to be much higher if terrestrial broadcasters are going to be competitive."

Radio data is on the mind of Radio World contributor Tom Vernon, too.

"If you've been letting RDS run on autopilot while busy with other things, it's time to check in again," he says. At the NAB convention, "Slide shows illustrated how RDS looks on larger display in new car radios. Also, the addition of FM tuners to mobile devices is another incentive to pay attention."

Says Tom: "He who masters these details can gain a competitive advantage in a tough market."

He also was impressed with a solar panel made by Solergy, a Cogeneration Concentrated Photo-voltaic solar energy system, or Co-gen CPV. It captures not only the electricity generated by the CPV cells, but also the heat; so the panels achieve a claimed overall efficiency of around 75 percent. They could be used to heat transmitter buildings, or run through an absorption chiller for air conditioning.

With rebate programs as in California, Tom says, these panels can pay for themselves in about five years.

### MOOD SWING

A common theme is that business has improved and that the cap-ex outlook for



**Solergy makes a Cogeneration Concentrated Photo-voltaic solar energy system, or Co-gen CPV, that promises very high efficiency.**

Photo by Jim Peck

U.S. radio stations is better than it had been.

To be clear, that's coming out of some pretty lean years. As engineering guru Ron Rackley told me, "I would not say there was wild optimism for a growing radio business like in, say, the 1980s when FCC rulemakings were rolling out new opportunities."

But it seems broadcasters largely have recovered from a feeling of financial free-fall and are starting to think of their facilities in terms of the future.

One radio DOE said "the economy certainly slowed capital spending, but at least in large and medium markets, key purchases are still taking place. Savvy owners seem to recognize that deferred maintenance or replacement later will be more costly."

But a note of caution: Another exec with a big commercial group told us recently that many broadcasters, especially publicly held ones, are expecting a softer second quarter and summer, and have asked stations to cut back on expenses, except for mission-critical stuff.

Meanwhile, eyeing the broader com-

## FROM THE EDITOR

Paul McLane



petitive landscape, RW Engineering Extra Technical Editor Michael LeClair says Internet radio is on the verge of gaining the capacity to go wireless on a scale that dwarfs standard broadcasting.

"At the Public Radio Engineering Conference, there was a presentation and discussion on web streaming that revealed that most broadcasters are just on the very edge of being able to monetize their streaming, and still a long ways from making a profit on it," he said.

"At the same time, radio broadcasters are well established in the streaming world, and a large proportion, if not the majority, of Internet radio listening is to streams provided by radio broadcasters. This is a very interesting trend because of the conflicting currents."

With the uptick in the economy, Michael predicts that Internet streaming will start to find more sponsors and perhaps start to support itself, at least in part.

And NAB Director of Digital Strategies Skip Pizzi, a former colleague at Radio World, says we can expect to hear the phrase "glass dashboard" more, as radio managers try to keep their services front and center in the world of electronic instrument displays.

That phrase is borrowed from aviation, where they talk about the "glass cockpit" (as opposed to old mechanical gauges).

Comment on any of these points to [radioworld@nbmedia.com](mailto:radioworld@nbmedia.com). For more thoughts on radio's direction, and a lot of other neat stuff, view the webinar free under the Resource tab of our website; click on Webinar Archive.



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JUNE 15, 2011

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iStockphoto/pagadesign

# FM BAND NOISE

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But some of the noise in the office areas was harder to pinpoint; I'm thinking there are more sources in this environment, on various floors and rooms, with more reflection and multipath propagation on the noise signals from the metallic structures, all of which tends to "blur" the source.

Using the loop antenna as a probe, I

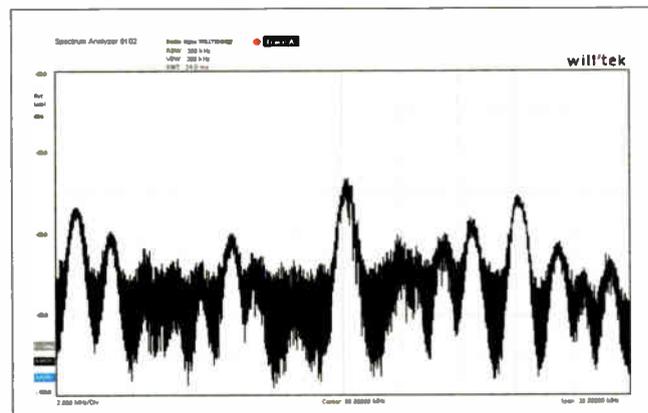
the noise sources and reception was naturally better. But of course we cannot expect all listeners to have a broadcast engineer with test equipment available to come to their home and help position their radio for best reception.

Why the increasing noise problem indoors? My research seems to show that electronic devices are being manufactured without adequate concern for their incidental RF radiation.

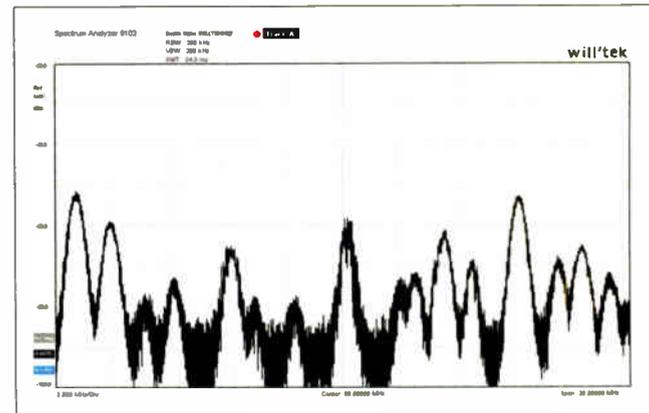
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An example of urban apartment buildings tested by the author, this one in Madison, Wis.



Outside an urban apartment.



Inside an urban apartment.

swept many rooms in the test buildings. Switching power supplies, consumer electronics and office equipment like computers, printers and monitors were among the worst culprits. Noise was pouring out of some of these devices at alarming levels. It seems impossible that they ever met existing specifications for radiated or conducted RF noise.

One cell phone battery charger was so noisy that when it was unplugged I could see a change in the noise outside the building.

## CONCLUSION

All locations visited showed a dramatically higher noise level indoors.

Putting numbers on this noise is difficult, as moving the antenna around even a bit greatly varies the absolute strength of the noise.

Stepping back and thinking of my overall experience, across the whole band, in all the locations, it would be fair to say I saw as much as a 20 to 30 dB increase in overall noise going from outside to indoors. Even without hard numbers it is clear that the modern indoor environment is much noisier in the 88-108 MHz range than nearby outdoor locations.

In the situations in which I was assisting a listener with a reception problem, I was able to find places to put the listener's radio and antenna to get better radio reception. In most cases the listener had installed his or her radio on a shelf or table quite close to other electronics, some of which were spewing out noise.

I moved the radio out from among

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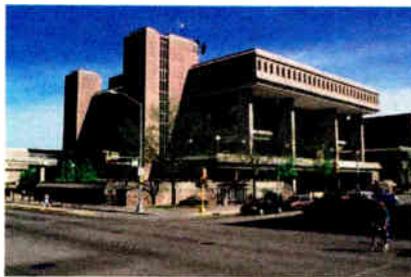
## FM BAND NOISE

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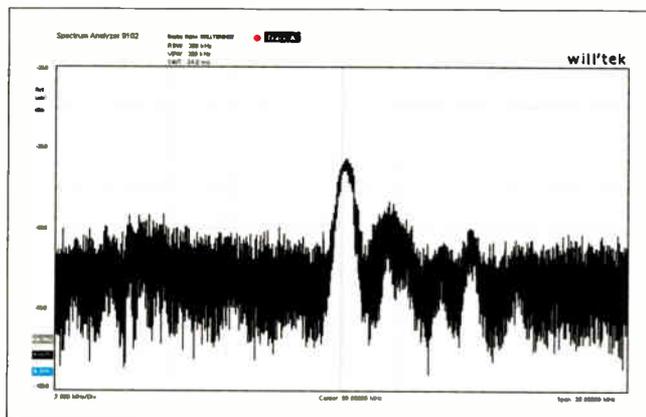
I contacted five engineers working in the field of switch-mode power supplies. Four of the five indicated that radio frequency interference was not a major priority for their companies — especially if improved RFI performance would result in *any* increase in manufacturing cost. The fifth engineer said his work was on devices for the medical electronics market, and RFI specifications had some importance for his company.

One of these engineers also said that further cost cutting may occur when products are contract-manufactured at a distant factory. For example, shipments of a battery charger built in China were found to be lacking the specified metallic shielding paint applied to the inside of the plastic cabinets.

I also heard from several engineers who said the third-party switching power supplies that had been specified and tested for their products were later replaced by less expensive products that had not been tested for RFI compliance. The replacement power supplies had the correct mechanical form-factor and made the right voltages at the right currents, but were probably not as RF-quiet.



An urban office building in Madison, Wis.



Outside an urban office building.

The fact that these manufacturing abuses can happen indicates to me that the regulatory agencies involved may have lost control of the situation.

As interference from these incidental

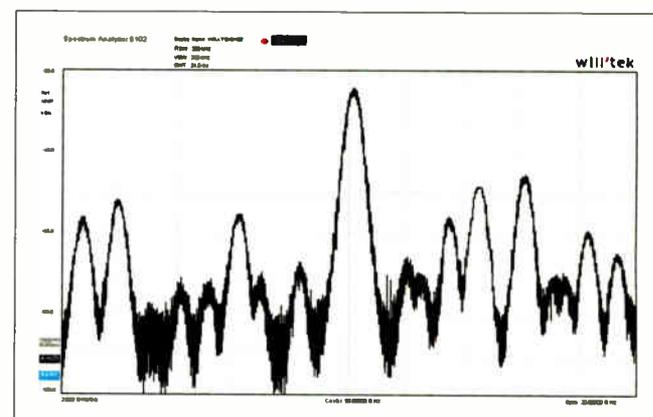
noise emitters increases, all radio and “wireless” systems are at risk. We can expect our signal coverage to decrease and user complaints to rise. And new technologies, such as HD Radio and HDTV, may not perform as predicted due to the increasing noise levels.

In the face of intense competition for attention of listeners, broadcasters cannot afford to ignore this problem. Today’s listeners and viewers have little

ful. Listeners can often reposition their radios and antennas, and/or disconnect offending noise sources, to get better reception. Radios tend to be placed on shelves or tables quite close to other electronics spewing out noise.

Moving the radio out from among the noise sources and reception naturally will help. But this is an example of treating the symptom rather than the cause.

For the long-term health of broad-



Inside an urban office building.

patience with reception problems, and faced with any difficulty will go to other media for their news and entertainment.

In the short term, education about the noise pollution problem is help-

casting, better control of radio noise at the manufacturing end is necessary.

*This article is based in part on a paper delivered at last year’s NAB Broadcast Engineering Conference.*

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### PTFP ANNOUNCES ITS OWN DEMISE

The NTIA’s Public Telecommunications Facility Program officially is closing down.

Earlier, we reported from the Public Radio Engineering Conference right before the NAB Show that Congress had granted no PTFP funding for fiscal 2011 during the flurry of funding cuts and final budget negotiations in April.

I heard then that PTFP employees had begun migrating to other offices of NTIA and that Congress had told the remaining two employees to set aside the 100+ applications received for this year. Actual grant awards were predicated on whether funds would be available.

Then, soon after the NAB Show, PTFP announced its own demise.

On its website ([www.ntia.gov/ptfp/](http://www.ntia.gov/ptfp/)), NTIA states that it will not process applications it received nor award any additional grants. The applications will be destroyed as part

Selected content from Radio World’s “The Leslie Report” by News Editor/Washington Bureau Chief Leslie Stimson.

of “an orderly shutdown” of PTFP though the organization will continue to monitor grants awarded previously. The terms and conditions of prior grants remain in effect until the expiration of a grant’s award period.

PTFP grants have been used by noncoms to not only convert their plants to HD Radio, but to also improve their analog FM facilities at the same time. PTFP funded about \$20.5 million in 2010. The program had \$18 million for grants in that fiscal year; it also awarded additional sums through money recovered from projects that finished under budget.

CPB, which also provides equipment grants to public radio broadcasters, was funded at essentially the same level as last year for 2011. It doesn’t award matching grants for replacement or new gear specifically, but can do so as part of a larger project, such as raising FM digital power to replace lost coverage compared to the analog, I’m told.

When I asked if there’s a chance PTFP could come back if it were refunded, an NTIA spokesperson said the agency isn’t speculating on that.

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# Oops, There Goes More Copper

Thieves Continue to Find Precious Metal and Remove It From Radio Plants

I recently spoke at a Society of Broadcast Engineers Ennes Workshop, co-sponsored by the Connecticut Broadcasters Association and SBE Chapter 14, the Connecticut Valley Chapter.

## WORKBENCH

by John Bisset

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

Ennes workshops were created in 1991 to bring affordable education to members locally. The Ennes Educational Foundation Trust offers them around the United States. Programs typically are a day in length and focus on technology, both radio and television.

As you can see in Fig. 1, the Connecticut event drew a good turnout of engineers. I recommend you attend if one comes to your area.

If you don't see your town on the schedule, talk to your SBE chapter about sponsoring an Ennes Workshop. Find out more by heading to [www.sbe.org](http://www.sbe.org) or e-mailing SBE Education Director Kimberly Kissel at [kkissel@sbe.org](mailto:kkissel@sbe.org).



Fig. 1: Attend an SBE Ennes Workshop if you can. Here's a group at the recent meeting in Connecticut.

A member of Chapter 14 and a contributor to *Workbench* is Bob Meister, who shared stories of transmitter site vandalism and copper theft.

An AM station had a problem recently in which its transmitter would stay off at pattern change. The cause: thieves had stolen about 8 feet of copper tubing that had been used as the RF feed-line from the ATU to the tower. The tower light wires inside the tube were missing too.

The resulting open circuit prevented

the station from operating on its directional pattern.

Further inspection disclosed that the thieves also had removed most of the three copper ground straps going from the Johnny-ball under the base insulator and over the sides of the concrete pier where they joined the ground system. Only a few short inches of strap remained at each end.

The station installed a piece of 1/2-inch Heliax temporarily to get back on the air.



Fig. 2: Overgrown weeds and bushes are a fire hazard. They also can serve as cover for a thief or vandal.

Another station recently discovered that copper thieves had made off with about 12 feet of 1/2-inch soft copper gas line that ran from the propane tanks to the generator. The station learned about the theft when a crew working at the site asked permission to move its propane tanks, since they weren't attached to anything!

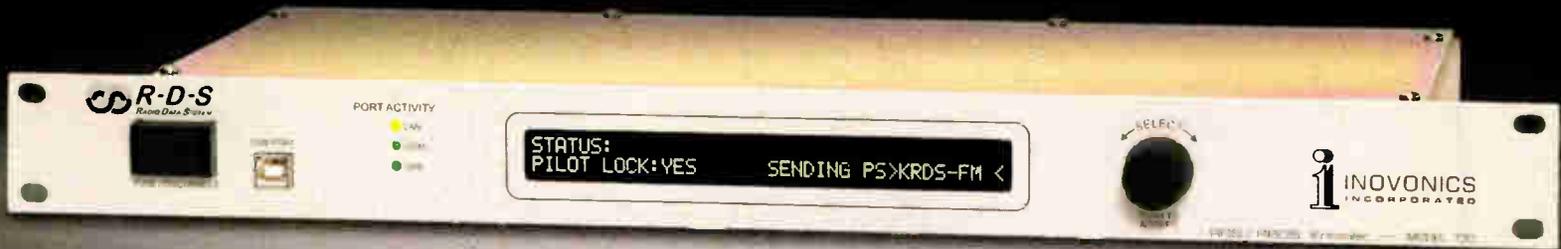
In warmer seasons, such vandalism tends to increase. Visit your site more often, even if the visits are brief.

While you're there, keep the property mowed and clear of brush. Who knows what's going on in the field in Fig. 2?

Do neighbors about your transmitter

(continued on page 10)

# "Name That Tune."



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"virtual phones" in production rooms, news workstations, or anywhere there's a PC with a USB mic and headset. Got a hot talkshow that suddenly demands more lines in a certain studio? Just a few keystrokes at a computer and you're set.

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PC Software for archiving and logging all of your stations audio.

World Radio History

# A Mod Solves Transmitter Troubles

## Why Would the RF Output Drop Suddenly, But Only Briefly?

BY MARK PERSONS

It all started when the phone rang.

A fairly savvy radio operations manager was at a site with a sick FM transmitter, a

### TECHTIPS

Continental 816R-2C 20 kW transmitter with a tube power amplifier, solid-state IPA (intermediate power amplifier) and 802B FM exciter.

The symptom: hours of normal operation would be interrupted when the RF output dropped suddenly to zero for a few seconds or a minute; then normal operation would resume.

During the episode the PA voltage would go up a bit while the PA current dropped to a low value. Screen current would be low as well. A VSWR light on the IPA would come on.

This gave every indication of an intermittent tube failure or capacitor failure in the PA tube socket. Changing the tube and visually checking capacitors yielded no results in fixing the intermittent.

When I arrived on the scene, I found that the exciter power would drop to zero for a few seconds and then return to normal. That happened at the beginning of each episode when the transmitter power output went to zero. The "mute" light on the exciter never came on, so I knew it wasn't being told to turn off by the transmitter.

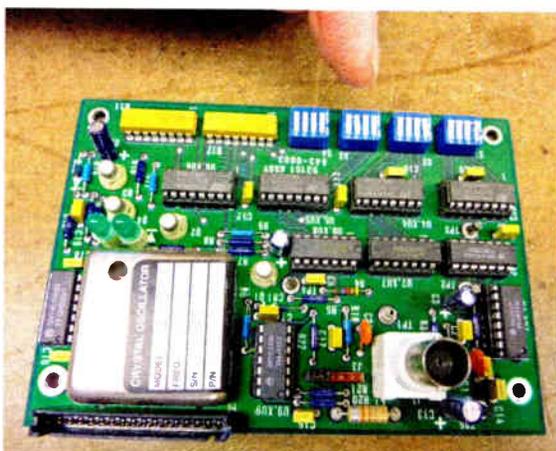
### DON'T BE A DIP

Thinking through the problem, I connected a spectrum analyzer to an RF sample on a Bird Thru-Line Wattmeter section at the transmitter RF output port. All looked fine, with the analyzer showing the station's carrier in the center of its screen.

When the transmitter power went to zero, there was no output from the transmitter at the station's frequency. I expected to see a little of the exciter or IPA leaking through in the center of the display. Instead, I saw a new signal appear exactly 2 MHz up in frequency.

That was the clue I needed.

You remember that the exciter would drop to zero for a few seconds and then came back with normal power. Well, the exciter's frequency synthesizer board is programmable via DIP switch. The 2 MHz switch was *intermittent*. It would open without warning, causing the exciter automatic frequency control to move the modulated oscillator to a new frequency and then turn RF back on.



The exciter's audio/AFC card.

When the exciter was on the wrong frequency, the IPA state driver would show VSWR to the power amplifier because the IPA to PA tuning was set for 2 MHz lower than the exciter was running at the time.

It all made *perfect* sense after the problem part was found and fixed.

In this case, I installed my loaner exciter and took the troubled exciter to the shop for repair.

Replacing just one DIP switch was not a good idea. Replacing *all* of the DIP switches in the exciter was the right

### WORKBENCH

(continued from page 8)

site property? Befriend them and give them your cell number. Station T-shirts or coffee mugs will be appreciated. Ditto for your local police or sheriff; an occasional cruise past your site can't hurt. Chain-link fencing will not prevent someone from gaining access if they are determined enough.

Thanks, Bob, for sharing ugly details of what today's broadcast engineer can face.

Reach Bob Meister at [walmik@comcast.net](mailto:walmik@comcast.net).

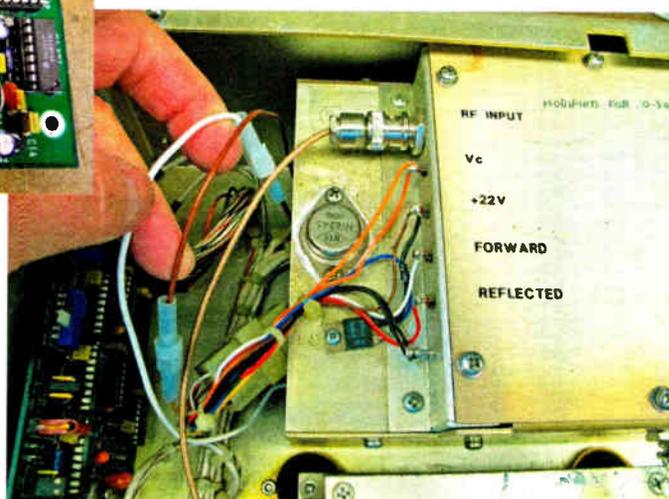
What's the worst example of vandalism or theft that's happened to you? Share your story — and what it taught you for next time. E-mail [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com).

**A**nother Connecticut Valley SBE member is RW contributor Buc Fitch.

Buc recalls a report in the Radio World *NewsBytes* e-mail newsletter about some thieves who were caught because the equipment they'd stolen

idea. After all, if one failed, others could and probably would.

A photo shows the audio/AFC card from this exciter. Continental exciters are not the only ones that can exhibit this problem. Any piece of electronic equipment with DIP switches can suffer a similar fate. My rule of thumb is that if the switches have been in



The modification involves installing a 4 ohm/100 watt resistor under the heat sink.

the equipment for more than 20 years, they are suspect and probably should be replaced.

Regarding the Continental 802A and

bore highly visible radio station bumper stickers plastered onto the sides. Oops!

Buc takes the idea another step, advising clients to purchase a roll of adhesive-backed return address labels, such as those you see advertised in the Sunday papers. They usually cost \$5 for a thousand labels. Have the labels printed with whatever you like.

Buc recommends this format:

**Property of WJPB(FM)**  
#5 Fessenden Road  
Marconi, IL 99999  
Phone: (555) 555-5555  
**Please Return**

Place labels on everything the station owns that's worth more than the few cents the label cost. If the gear is expensive or travels out of the station (like remote, PA, or RPU systems), put labels inside and out. Buc has found that properly labeled equipment tends not to walk off.

Also use the labels to identify your manuals and other paper documents. Memories can be rusty. If someone borrows a manual, he can't later forget where it came from if there's a label

802B FM exciters, there is a factory-recommended modification (200230-1) to improve the reliability of the exciter. This is for those who run their 50 watt exciter at less than 30 watts. It is somewhat common to have to replace the series-pass transistor in the exciter's PA power supply. This transistor shorts, causing the exciter to put out full power. Ouch!

You see the transistor in Fig. 2 near the end of the PA heat sink assembly. It is an NTE245 NPN Darlington. That transistor is a TIPI42 or an SJ3001 on some models. They fail because of heat as they regulate the 3 to 28 Volts DC PA power supply at up to 4 amperes of current.

The modification involves installing a 4 ohm/100 watt resistor under the heat sink. Wiring is reworked with quick couplers, shown here on white and brown wires, to connect or disconnect the resistor in series with the input to the transistor. When connected, the exciter is capable of producing only 30 watts of RF power. The transistor

dissipates most of its heat when operating the exciter at under 30 watts of power so it shares the heat with the resistor when connected.

staring him in the face.

Buc recently bought a replacement manual for an Arrakis board after his manual had been "borrowed" and never returned; the manual cost about \$100. Perhaps a cheap label would have helped avoid that cost.

**L**et's extend Buc's labeling idea even further and suggest a visual inventory of equipment.

This is a great tool for contract engineers to offer clients for a fixed fee. You snap pictures of all the equipment at a station, then assemble the pictures in booklet or binder form. Or do it with video.

The inventory can be helpful in ascertaining proper insurance coverage; it also helps the station "prove" what equipment was owned, should it be stolen. Take a few moments to add the make, model and serial number to photos, or log them to go with the video.

This service is cheap insurance. Savvy station owners will appreciate the idea.

*Contribute to Workbench! You'll help your fellow engineers and qualify for SBE recertification credit. Send Workbench tips to [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com). Fax to (603) 472-4944.*

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Featuring Harris PowerSmart® technology in its transmitter architecture, the Flexiva line offers unmatched efficiency that makes it ideal for all FM applications and delivers a dramatic increase in power density, lower operating costs, servicability and reduced cost of ownership over the life of the transmitter.

Learn more at [www.broadcast.harris.com](http://www.broadcast.harris.com) or (800) 622-0022.



## What's Hot This Summer

In this special section, we feature new or pending products for U.S. radio broadcasters, as shown at the recent NAB Show. Winners of the Radio World "Cool Stuff" Award were featured in our June 1 issue.

### Harris MSC Extends Redundancy

The Harris Multi-System Controller is a control platform that extends a transmitter's redundancy and power range by enhancing the functionality and control of two or more transmitters.



The MSC is configurable across applications such as main/alternate, N+1 and dual transmitters, thus improving transmission redundancy for radio and TV uses.

An optional I/O module supports most legacy and, for the first time, other vendors' transmitters in N+1 systems.

Also, the new FlexStar HDI-200 Importer is a companion to Harris' second-generation

Exporter for HD Radio broadcast environments.

The HDI-200, the company says, adopts generation changes seen in its HDE-200 Exporter.

The new Importer is a more compact IRU unit with a 40 GB solid-state hard drive, reducing footprint and moving parts in comparison to its predecessor. Enhanced memory and processing technologies improve reliability and start-up times.

Harris says the efficient design also reduces power consumption at the studio. The HDI-200 Importer is available as a new system featuring an iBiquity software license or as a hardware-only upgrade for first-generation Harris Importer customers.

Optional DTS Neural Audio NeuStar 4.0SW codec pre-conditioning software is available to reduce audio artifacts in the HD Radio stream, improving audio quality in the process.

On the studio side, the PR&E line added PR&E VMReact, a logic processing device that enables automated responses to changes in audio routes, logical conditions and other events, thus enhancing control and monitoring in VistaMax networked audio systems.

And the company introduced PR&E RMXEngine, an auxiliary device for RMXdigital consoles, providing automatically generated mix-minus signals — a process that eliminates voice echo for live callers — for every fader on the console. It also enables dual-console operation for dual-anchor studio operation.

Info: [www.broadcast.harris.com](http://www.broadcast.harris.com)

### ENCO Doubles Down On Presenter

The Presenter live assist radio automation system from ENCO Systems is available in a new iteration.



Called Presenter 2, the system features LiveList, a feature that allows sharing of monitoring and control of a Presenter screen from any workstation on the network, making control and studio switching easier. "Because Presenter is built on the ENCO DAD Audio and Control Engine, it also benefits from enhanced metadata tools for HD Radio and webcasting," the company states.

Another addition is a manual mode, "for those times when absolute manual control is needed while still requiring an instant return to a live assist or automated mode of operation."

Also from ENCO is interchange, a studio-based support appliance for the iDAD iPhone app that allows remote control and recording for DAD and Presenter systems via Wi-Fi and 3G networks.

The company also offers HotShot, a PC-based button box alternative with a custom hardware control surface; and AutoLog, an application that automatically imports

Music and Traffic files and creates a playlist for DAD.

Info: [www.enco.com](http://www.enco.com)

### Arctic Palm Spotlights RDS

Arctic Palm promotes the latest release of its Center Stage Live software as providing support for more automation systems, satellite services and RDS/RBDS encoders.

Center Stage Live captures data from automation systems, satellite, websites and other sources, and delivers data to RDS encoders, websites, streams and other destinations.



The new CSMultiPort module facilitates the process of updating multiple encoders.

As users send text to their RDS system, CSRDS now returns the now-playing event to the air studio, where the user-definable prompter window automatically displays the copy specific to the on-air event.

This same functionality is now available in Arctic Palm's Paperless CS Contest Management package, which automatically will open the user-definable contest prompter window with contest and prize information specific to the on-air event.

Info: [www.arcticpalm.com](http://www.arcticpalm.com)

## MEET SAM...A COOL WAY TO MONITOR AUDIO LEVELS, BALANCE AND PHASE



When it comes to audio, a quick, accurate and intuitive way to know what's happening is essential for a successful result. That's where SAM comes in.

The **Stereo Audio Monitor (SAM)** is a stereo level and phase meter that incorporates Single Stereo Display\* technology. SAM provides a visual indication of the levels and phase relationships of a stereo audio signal. The unit indicates the usual Left and Right channel levels, and also displays the Sum and Difference components of the stereo signal.

SAM's dual tri-colored Single Stereo Displays show this information in an intuitive and easy-to-comprehend format. Both analog and AES/EBU digital signals can be monitored with SAM. Its compact size allows monitoring three stereo audio sources in only 1 RU of your valuable rack space.

Slip SAM into your audio chain and see what you've been missing.

(\* Patent pending)



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World Radio History

## BSI Supports Seacrest Project

BSI this spring emphasized its participation in "The Voice," a project by the Ryan Seacrest Foundation to help seriously ill and injured children through media centers in pediatric hospitals.



Also, in addition to its "Cool Stuff" Award-winning iPad application (see last issue), Broadcast Software International came to the spring NAB Show with its Op-X radio automation broadcast automation system.

The company highlights an intuitive interface, touchscreen capability, voice tracking, automatic backup features, a built-in clock builder for simple handling of intense satellite broadcasts and versatility of installation.

It also offers Simian 2.1 Pro automation system, shown, for radio broadcast and advanced Internet broadcasting, compatible with Windows 7 32-bit and Windows XP 32-bit operating systems; Simian 2.1

Lite for Internet broadcast professionals; WaveCart 5.0 Pro, the latest iteration of its on-screen cart-machine replacement, including new features; and WaveCart 5.0 Lite.

*Info:* [www.bsiusa.com](http://www.bsiusa.com)

## Comrex Hears The 'HD Voice'

Comrex says the STAC VIP helps broadcasters get full benefit from the trend to voice over IP.



STAC VIP integrates legacy POTS lines with VoIP technology; the manufacturer calls it a new way to manage telephone calls for talk shows, interviews and contests. It handles calls from smartphones that use VoIP apps capable of wideband "HD Voice."

With a STAC IP Call Screening and Control Interface, the STAC VIP Caller Management system will integrate with a VoIP PBX system.

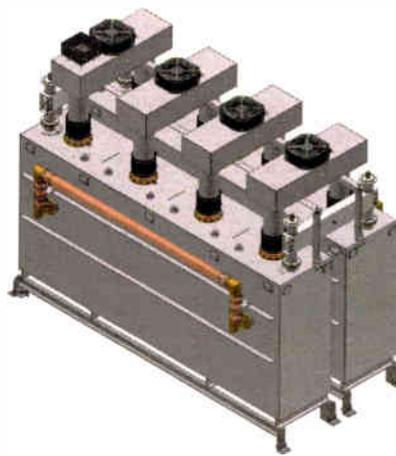
The system will also manage traditional POTS lines.

Comrex also has introduced Access 2USB, with support for more 3G wireless data service modems and new 4G wireless services such as Verizon's 4G LTE and Clear 4G WiMax on certain USB devices.

*Info:* [www.comrex.com](http://www.comrex.com)

## Myat Debuts IBOC FilterPlexer

Myat Inc. introduced a patented technique for combining FM and digital sidebands for IBOC transmission to a single antenna.



The system uses filters to combine digital sidebands (MP1 or MP3) operating at -20 dBc, or up to -10 dBc. It is designed for early adopters wanting to increase digi-

tal power without significant investment and for high-power stations where common amplification is not practical due to excessive peak voltages in the transmitter.

Operating cost is reduced using this "green" combining technique without the need for circulators or isolators to suppress RF IMD products to meet NRSC-5B emissions requirements.

Myat said it recently completed successful beta tests with the cooperation of Clear Channel.

*Info:* [www.myat.com](http://www.myat.com)

## Reboot Your Power Remotely With BTI

Broadcast Tools expanded its Sentinel product line, introducing several at NAB this year.



The Sentinel products are Web-based remote control and audio monitoring devices that greatly expand access and control.

The AC Power Sentinel 2 Remote Power Switch is a solution for remote reboot and other remote power control applications. AC Power Sentinel 2 has two power outlets that can be independently controlled using a browser. It is self-contained and includes a built-in Web server so no external servers, services or subscriptions are required.

Company head Don Winget said, "With the accessibility of Internet continuing to grow, our Web-based products are a bright spot in our product arsenal. We also are experiencing growth in what has been the core of our business for over a decade, analog and AES matrix switchers."

*Info:* [www.broadcasttools.com/](http://www.broadcasttools.com/)

## IDC Shows STR Pro Audio Receiver

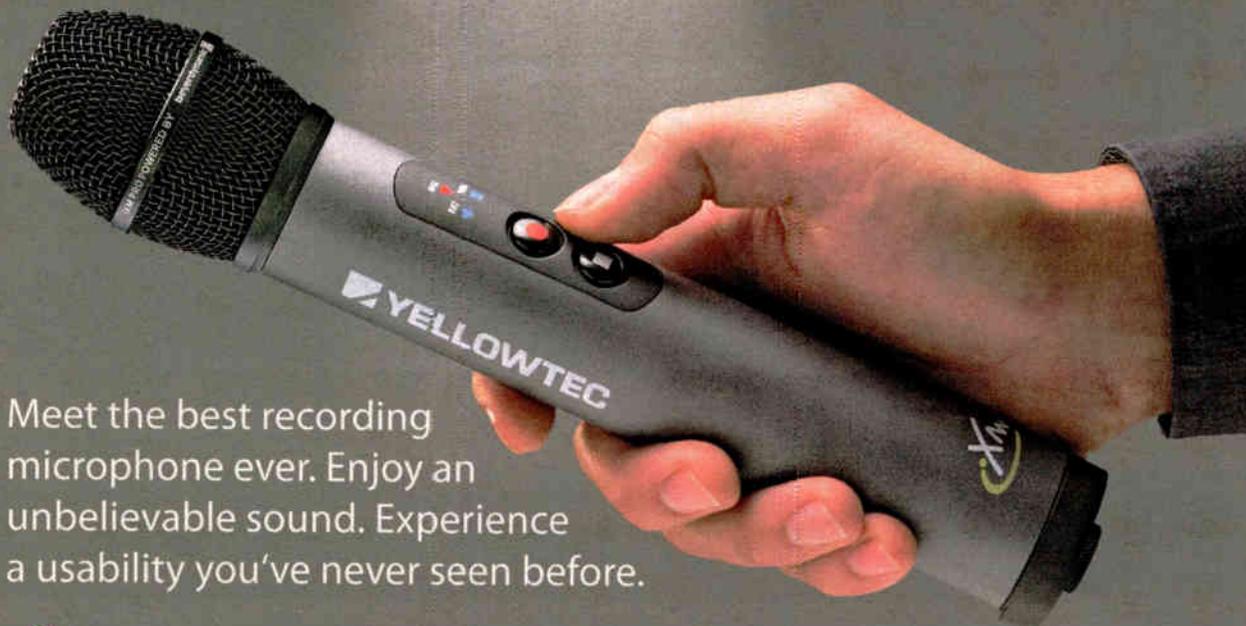
Among offerings from International Datacasting Corp. is STR Pro Audio, a DVB-S/S2 satellite receiver that is DVB-compliant and promises a "future-proof" front end, with software and network management optimization for FM, DAB, DMB and DRM networks.

IDC offers DVB satellite networks for use by radio broadcasters. Products include SuperFlex Pro Audio, a DVB/IP digital audio receiver/decoder offering live IP audio decoding plus time-shift audio file payout for radio networks.

The company's Pro Audio solutions support program and advertising insertion, enhanced monitoring and control, head-end management and an integrated hard drive. IDC says its Pro Audio solutions have been installed in 25,000 radio distribution sites.

*Info:* [www.datacast.com](http://www.datacast.com)

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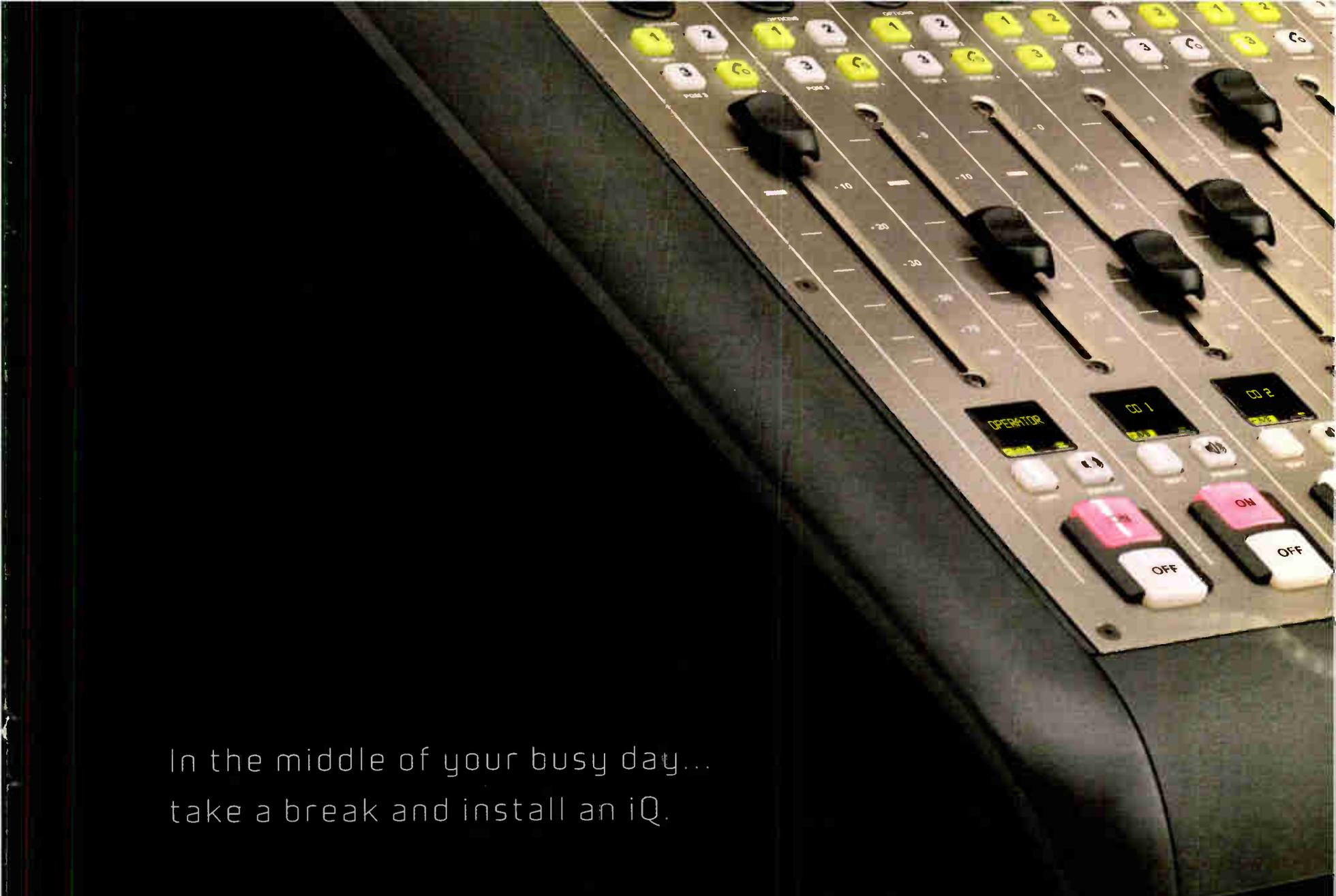


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iQ. It's about time.



## EMLAB Is for Antenna System Designers

Aldena this spring added an antenna network design tool and expanded its line of radio/television antennas.



EMLAB software helps users design antenna systems and to manage complex arrays. It can be used to plan SFN/MFN networks with area coverage calculations, interference analysis and discovery of SFN problems, as well as EM health and safety controls.

The ALP0502912 is a circular/mixed polarization log-periodic high-gain directional FM antenna. The ATS0807920 is a turnstile UHF 1 kW antenna for digital TV applications/gapfiller.

Info: [www.aldena.it](http://www.aldena.it)

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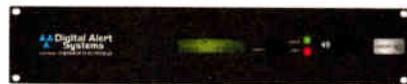
**Make the switch to Presenter now and we'll convert your audio and data for free!**



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(800) ENCO SYS  
[sales@enco.com](mailto:sales@enco.com)**

## Affordable EAS Compliance From Digital Alert

Digital Alert Systems is promoting new DASDEC-II models, the DASLC and DASLCR, for radio and television facilities needing minimal EAS/CAP requirements.



Both are EAS- and CAP-compliant units designed to meet FCC Part 11 rules and conform to FEMA CAP V1.2 and IPAWS 1.0 standards. They are promoted for their affordability, with prices starting at \$1,995.

Also new is MultiPlayer, providing independent and simultaneous EAS switching, playout and control for multi-stream requirements. "Now a DASDEC with MultiStation and MultiPlayer provide the most cost-effective EAS/CAP compliance on a cost-per-stream basis," according to the company.

Info: [www.digitalalertsystems.com](http://www.digitalalertsystems.com)

## JK Looks 'Clean and Simple' With Concierge

JK Audio has introduced the Concierge 2x6 talk show system and companion Guest Module series of control surfaces.

Its look features silver metallic aluminum faceplates, sleek desktop keyboards

with flashing multicolor LEDs and rubberized buttons. A rack-mountable unit got the same treatment.



The Concierge 2x6 Switch Core, priced at \$925, is the heart of the system. Working with one or more of JK Audio's innkeeper hybrids, it can handle six phone lines incoming, and route two at any time using the Guest Module controllers. Two Concierges can be linked to create a 12-line system. The system is modular and scalable.

The Guest Module control surfaces, which start at \$375, are connected to the Concierge with Cat-5 cabling. Innkeepers already in service are compatible with the Concierge 2x6 with a free firmware update.

The system ships in September.

Joe Klinger, president of JK Audio, stated: "All of the smarts are hidden in the processor, allowing for easy setup and call control."

Info: [www.jkaudio.com](http://www.jkaudio.com)

## Axia Raises Its iQ

The iQ from Axia Audio is a "standalone console that networks."

The package, priced under \$10,000 for a 16-fader version, includes control surface, DSP-based mixing engine, audio I/O, machine-control logic and an Ethernet switch.



It has four stereo mixing busses, one-touch recording, automatic mix-minus and Show Profile console snapshots. A 20-input iQ Core supports consoles from eight to 24 faders; for more inputs, plug in Axia audio nodes. The company says iQ is suitable for standalone studios but connects to Axia networks with a Gigabit connection.

Also new is Radius, a compact networked mixing desk with four stereo busses, eight faders, 16 audio I/O ports and Ethernet switch, retailing for \$5,990.

The new Axia SoftSurface provides real-time remote control of an Axia Element 2.0 mixing console.

The Axia IP Intercom networked broadcast intercom system has been expanded with a pair of 20-station desktop intercom stations.

## AudioScience Bites Into Big Mac

AudioScience introduced a Macintosh OS X driver. The company says its professional audio cards are being used more in music editing and production, where Macs are common.

The OS X driver supports low-latency multichannel recording and playback on most of the company's PCI Express adapter models. The driver is compatible with OS X releases starting from Snow Leopard for any application that supports Core Audio.

Also, the ASI5000 series PCM sound cards have been upgraded to the ASI5500 PCI series and now offers +24dBu I/O on the analog models and hardware sample rate conversion on the AES/EBU digital models.

The ASI5211, shown, is an enhanced PCI Express version of the ASI5111, commonly used in radio production. The new unit has two stereo record streams from either a balanced analog input or an AES/EBU digital input, four stereo play streams mixed to both a balanced analog output and an AES/EBU digital output, and a microphone input with a 48V phantom power supply.

New to the ASI5211 are two opto inputs and two relay outputs via a second bracket attached to the ASI5211 using a 10-pin ribbon cable.

Also new, the ASI6685 is a Livewire sound card for radio automation in an Axia AoIP Livewire environment. And the company has created the Connect CobraNet line of a dozen rackmount devices pre-configured with common I/O combinations.

Info: [www.audioscience.com](http://www.audioscience.com)

## Ecreso Basks in Helios

The Ecreso transmitter arm of WorldCast Systems has introduced Helios NextGen.



This is a line of 2 RU FM transmitters based on a digital exciter that's available in 20 W or 100 W versions. From there it can be packaged with Ecreso amplifiers to up to 10 kW.

The Helios NextGen also can be integrated into the Ecreso Goliath NextGen line of amplifiers for a "compact" package up to 2 kW.

Other features include stereo encoder (with analog and digital inputs), RDS encoder, remote control via web and SNMP monitoring, silence detection with automated input switching, audio backup and protection against heat, VSWR and lightning.

Info: [www.ecreso.com](http://www.ecreso.com)

## Economical RDS From Audemat

WorldCast Systems' Audemat division is out with the FMB50, a new RDS encoder and decoder.



Derived from the FMB80 platform, the 50 is intended to offer a more economical approach. RT/PS scrolling and RT+ are part of the package. Stations have more flexibility to explore interactive content, song tagging, Web-related data, electronic programming guides and e-mail/SMS. The platform also offers IP remote control.

It ships with FMB RDS Viewer, shown, a software RDS text viewer for monitoring the RDS feed. A firmware upgrade can turn the FMB50 into the FMB80 (adding items such as traffic message channel and emergency warning system).

Info: [www.audemat.com](http://www.audemat.com)

## WheatNet Line Beefs Up

SideBoard is a new member of the line of surfaces that support the WheatNet-IP Intelligent Network.



Wheatstone said software utility mixers built into its Intelligent Network Blades are popular, so "the next logical move was to create a hardware package that controls them."

Each WheatNet-IP Blade is in effect a 16x16 mixing router; the SideBoard provides control over that capability in a desktop unit with roughly the footprint of a computer keyboard.

Wheatstone also has added the Razor Blade, aimed at bringing WheatNet-IP Intelligent Network connectivity to applications where the cost of a full-featured Blade isn't justified, or where a full Blade I/O complement isn't needed.

The Razor Blade has one AES digital input, one AES digital output and six bidirectional logic ports, suitable for interfacing a satellite receiver, ISDN codec, telephone hybrid or any other single I/O device to the network.

Wheatstone also announced partnerships with Burl Software and RCS. Those systems now can interface directly over IP with Wheatstone's WheatNet-IP Intelligent Network.

Info: [www.wheatstone.com](http://www.wheatstone.com)

## Telos VX Is Scalable VoIP System

"The best caller audio ever" is the claim by Telos Systems for its Telos VX VoIP telephone system for broadcast users.

VX is appropriate for both single-station use and to serve larger operations with up to 50 incoming phone lines.

The system uses new Telos hybrids, a digital connection path and scalable, flexible Ethernet to integrate studio phones, on-air consoles and network. As a result, the company says, talent can navigate complex talk shows more easily. VoIP lets the user move

and share lines between studios quickly.

Telos also added a new member to the Zephyr codec lineup, the Z/IP One. The rack-mountable box is IP-based but offers wireless (Wi-Fi, EVDO and UMTS) pathways too. Telos has a Z/IP Server service to help with firewall and NAT problems and connect with other Z/IPs.

Also new is the Telos iQ6 Telco Gateway, a native multi-line telephone system that



connects to Axia's new iQ AoIP console with a single cable.

And Telos has debuted the ProStream streaming audio encoder, intended to ease the process of sending broadcast audio to the Internet.

It uses MPEC encoding algorithms from Fraunhofer for artifact-free sound quality at various bitrates. The station can encode to MP3 or MPEG-AAC and feed any Shoutcast-compatible media server, or a Wowza server for streaming to Flash clients.

Info: [www.telos-systems.com](http://www.telos-systems.com)

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- Text via CG, RDS, HD Radio
- Free downloadable upgrade to the final version of CAP 1.2

The Digital ENDEC is a drop-in replacement for the classic ENDEC, but new users love it too.

The Sage Digital ENDEC - your one-box solution for CAP and EAS.

# SAGE

**Sage Alerting Systems, Inc**  
800 Westchester Avenue, Suite 641N, Rye Brook, NY 10573  
Phone 914 872 4069 info@sagealertingsystems.com  
[www.sagealertingsystems.com](http://www.sagealertingsystems.com)

## PhoneBox Integrates With Telos NX, VX

Launched at the spring NAB Show were the PhoneBox NX and PhoneBox VX.

PhoneBox is talkshow software from Broadcast Bionics. These iterations are for use with new and existing systems Telos NX and VX hardware.



PhoneBox provides visual talkback; a drag-and-drop database of calls for a show; visual warnings for persistent or nuisance callers; extended call history; enhanced phonebook; prize management; and GPIO functionality. Livewire PhoneBox NX users can do call recording, editing and console integration directly over the network.

Lite versions of the software can be downloaded free from [www.phoneboxnx.com](http://www.phoneboxnx.com) and [www.phoneboxvx.com](http://www.phoneboxvx.com).

Web: [www.bionics.co.uk](http://www.bionics.co.uk)

## Burk Tweaks the AutoPilot

Burk Technology's AutoPilot 2010 software with Jet Active Flowcharts now includes virtual channels and e-mail alarm notifications.

# BURK TECHNOLOGY

AutoPilot 2010 enables multi-site, PC-based facilities management for the line of Burk remote controls including ARC Plus, ARC-16, GSC3000 and VRC2500. Jet Active Flowcharts make automatic intelligent site control easier; the user can create automatic functions quickly by drawing simple flowcharts, with no code required.

Also, Burk now offers the GSC/VRC IP Converter to facilitate cost-effective broadcast control modernization. The converter allows integration of legacy GSC3000 and



VRC2500 systems with ARC Plus and AutoPilot 2010 over IP networks. The IP converter is designed specifically for GSC/VRC remote controls and supports simultaneous connections from multiple users.

Info: [www.burk.com](http://www.burk.com)

## Gorman-Redlich Converter Conforms

Gorman-Redlich Manufacturing said its CAP-DEC1 CAP-to-EAS converter unit has passed the Integrated Public Alert and Warning System Conformity Assessment and would become the first converter-type product listed in FEMA's online database as having passed the assessment.



The standalone converter translates received CAP alerts into EAS headers, which will be transmitted by current EAS equipment in the same manner as they currently are.

Features include RJ-45 Ethernet LAN connection for network/Internet receipt of CAP alerts; RS-232 serial connectivity with Gorman-Redlich EAS units; and FSK output of CAP-to-EAS translated alerts for compatibility with a range of legacy EAS equipment.

The company said it is also doing development work on an integrated CAP/EAS unit for customers who wish to replace their current EAS equipment and meet CAP requirements.

Info: [www.gorman-redlich.com](http://www.gorman-redlich.com)

## WO Aims End to End

Traffic, automation and sales tools are part of the lineup from WideOrbit, which emphasizes its ability to offer solutions such as live log editing between traffic and automation; real-time reconciliation and reporting; automatic updates; and remote access.



WO Automation for Radio 3.0 now features Leader & Follower multi-station and multicasting capabilities; enhanced integration with PR&E VMQuadra consoles; Canadian content counter to help Canadian stations monitor CRTC compliance; widgets for customization of the workspace; enhanced user rights and controls; and a

new work-saving feature: Spots that are e-mailed to your station will be imported and processed automatically.

Traffic solution WO Traffic v6.5 includes new tools to tag programming for spot placement compatibility or copy violations; create custom, multi-level order approval workflows; and book, bill and report on detailed non-linear Internet campaigns. The company said it recently installed the 2,000th station or network on WideOrbit Traffic software.

Info: [www.wideorbit.com](http://www.wideorbit.com)

## Mayah Is MAD-Happy

Germany's Mayah Communications is giving the MADI format a fresh look with a series of products. Called, appropriately, MAD, the line features five products so far.



MAD1 is a half-rack headphone amp unit that passes MADI signals through while intercepting a channel for monitoring.

MAD2 is a splitter/converter for MADI BNC and MADI optical.

MAD3 is a 32-channel A/D-D/A for up to 192 kHz. Two units can be combined to handle the full 64-channel MADI spectrum.

MAD4 is a multifunction box capable of handling a variety of formats (including MADI, ADAT, AES/EBU, MIDI, analog) for routing, monitoring, de-embedding, etc. MAD4 also has a desktop controller.

MAD5, not yet available, will be a matrix for handling multiple MADI ports. According to Mayah it should be up to 1024 x 1024.

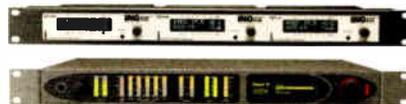
Separately, the Flashman II for field news gathering now has the ability to record and transmit audio back to the studio simultaneously.

Mayah also recently announced it will cooperate with Qphonics, the former Klotz Digital, in a technology alliance.

Info: [www.mayah.com](http://www.mayah.com)

## Inovonics Plans David IV

Inovonics plans to ship its latest giant dish killer, the David IV, shortly.



The on-air processor (shown, bottom) features a five-band "multipressor" (five bands of compressor and graphic EQ each), high-pass filter, gain-riding AGC, stereo enhancer, stereo encoder, bass management controls and Inovonics' PIPP final limiter.

The AGC offers a capture range of  $\pm 18$  dB and an adjustable correction rate according to a release.

Inputs and outputs include a digital input (AES3 32 kHz-192 kHz), digital output (AES3 32 kHz-96 kHz) and analog I/O (XLR). The program outputs are programmable. There are also composite/MPX outputs, an RDS subcarrier input and RDS sync output.

The David IV can be controlled via the Web and a computer. Presets for popular radio formats are included and new ones can be downloaded easily.

Also new is the INOmni 632 HD, top, a professional-grade HD receiver with diagnostic and troubleshooting tools for FM and HD stations. Along with alarm and AES outputs the INOmni 632 is the first scalable HD receiver solution, and the first product to offer an exclusive "No Blend" mode, the company says.

Info: [www.inovon.com](http://www.inovon.com)

## Dawnco Goes For Low Noise

At the spring NAB Show, satellite receiver products maker Dawnco had a new group of LNBs for C and Ku band dishes on display.

These blocks promise improved 1 dB compression and phase noise specs. They should also prove energy-efficient, consuming 250 mA.



Separately, the company has two new products for the well-appointed satellite dish.

Coversat is designed for the face of a dish; it will prevent an accumulation of ice and snow.

Heatsat, shown, is designed for the back of the dish. It heats the dish to melt snow and ice and to prevent accumulation as well. Heatsat kits can be fitted to existing dishes. The kit contains specialized heat element tape along with precipitation and temperature sensors.

Also featured by Dawnco: 3.7-meter dishes that cost under \$2,000. The eight-petal fiberglass dishes are designed for portability.

Info: [www.dawnsat.com](http://www.dawnsat.com)

# Drops jaws. Not audio.



Broadband Internet is everywhere. Which makes it ideal for live remotes.

Unfortunately, the internet is also notoriously erratic. Even if you're lucky enough to get a good connection, it might deteriorate during your show. So you dial back the bitrate, sacrificing sound quality to play it safe.

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## AUDIO LOGGING



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## Fresh Features From iMediaTouch

The latest version of the iMediaTouch radio automation suite, V4.2, includes support for Windows 7, "quick links" to a variety of social networking sites, auto-duck feature for liner EOM adjust, an audio library blade in On-Air, retooled library screen in Log tools, and new Info and Backsell tabs added to the voice-tracking module.

A new "wildcard feature" added to iMediaImport allows for hundreds of downloadable audio elements from external FTP sites using simple id3 tagging.



The company also has added features added to iMediaArchive and iMediaTouch

installations for large public radio music stations looking for mass library storage and enhanced search capabilities within their database.

Such criteria can include support for search fields such as composer(s), soloist(s), conductor(s), chorus, master genre and so on. Users can pull up audio content from within the iMediaArchive library screen and insert the files into the MediaTouch on-air log. Talent can also create hour-to-hour play lists with iMediaArchive, then load the play list into iMediaTouch by highlighting the hour where they want the play list to insert.

Info: [www.imediatouch.com](http://www.imediatouch.com)

## Nautel Goes All-In-One

Transmitter maker Nautel added an "all-in-one" low-power HD Radio transmitter package to its VS transmitter family.



The VS HD matches an HD Radio exciter with an Exgine data collector card; it is intended as an affordable HD Radio implementation for low-power FM stations when used with Nautel's VS series transmitters.

VS transmitters are available in 300 W, 1 kW and 2.5 kW outputs. The VS HD is compatible with Nautel's HD PowerBoost technology.

Nautel also is emphasizing its "Push Radio" concept that allows networked broadcasters to reduce program distribution costs, improve reliability and facilitate local content. In support of that, VS series transmitters now have a scheduler that allows broadcasters to automate switching audio inputs, playlists, processor or other settings based on time and date rules. And a new playlist editor provides drag-and-drop editing.

The company also introduced Re-remote Install and Remote Transmitter Optimization services. Its support personnel can set up and optimize a transmitter remotely in conjunction with the customer or on-site technician.

Info: [www.nautel.com](http://www.nautel.com)

## Kintronics Says Take a Load Off

Kintronic Labs has two new dummy loads.

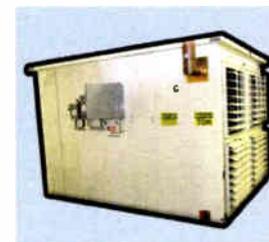
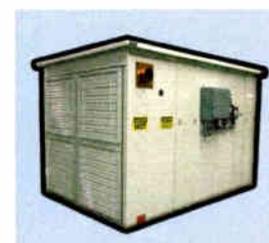
The larger is the 600 kW+ Medium-Wave Load, a new design for high-power situations in 530-1705 kHz. Motorized and fixed louvers are available along with fixed dampers. Additional features

include input current meter with remote output, air interlock for each fan, resistor stack thermal overload sensor and current overload fuses on each fan motor.

A sister version is the 150 kW+ Medium-Wave Load.

Also new this spring at Kintronic are the latest from Austin Insulators Inc. The A-L810RF is a steady-burning red LED obstruction light; the A-L864RF is a medium-intensity red LED flashing beacon.

Features include RF-hardened design suitable for operation in high-powered MF to VLF systems. LEDs last up to five times longer and use up to 90 percent less power



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than older incandescent lamps, according to the company. The lamp assembly and housing are weather- and corrosion-resistant. The lights allow direct replacement of existing incandescent or other light sources.

Info: [www.kintronic.com](http://www.kintronic.com)

### BE Adds Features to AudioVault Flex

Broadcast Electronics said its AudioVault Flex studio control system introduced some new studio moves for the multi-tasker at the spring NAB Show.



Among them are being able to manage cross-fades seamlessly using audio gain control, useful for voicetracking.

Another feature allows quickly marking song sections, which is helpful for creating engaging audio hooks and loops.

Also new is a tabbed gadget docking feature for switching between tasks, an integrated audio editor for manipulating audio

seconds before air and new screen presets for more workflow flexibility.

BE says the IP audio networking and studio synchronization features of AudioVault Flex IP allow stations to access music quickly anywhere in the network, syndicate shows individualized by affiliate and collaborate with talent in various locations. The system can be configured for operations ranging from a single station to a multi-site network.

On the RF side, BE is promoting Vector Power Enhancement technology to improve transmitter efficiency and output for elevated HD Radio sideband power levels. It also is highlighting the use of its portable radio systems by U.S. military and other radio operations. These systems include everything needed for remote, temporary or emergency operation, including AudioVault studio control system and 1kW STX LP transmitter along with mixer, audio processor and audio-over-IP connectivity in a rugged case.

And BE's The Radio Experience introduced a song tagging application that makes song tagging possible on any portable device that supports Twitter.

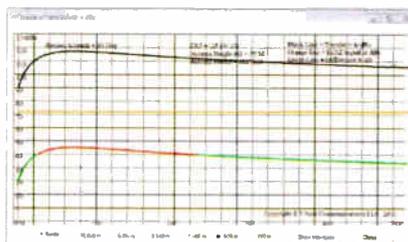
Info: [www.bdcast.com](http://www.bdcast.com)

### V-Soft Releases XField Package

Test, measurement and analysis software developer V-Soft Communications has a

package of new tools for broadcast engineers.

Called XField, it includes tools for relocating FM translators in the second- or third-adjacent protected contours of other stations, and for calculating IBOC interference.



According to V-Soft, the translator application is suitable for LPFMs and their approach to new FCC rules on second and third adjacents. The program uses the translator's vertical elevation and azimuth pattern to illustrate where the mandated 40 dB U/D (undesired/desired) signal ratio is.

V-Soft warns: "In many cases where the proposed translator has a rather low antenna, without consideration of the vertical elevation field at a given angle from the antenna, it is very possible to exceed the 40 dB U to D ratio."

The IBOC interference calculator will, according to V-Soft, "calculate the self-interference caused to a hybrid IBOC station when its antenna is not the same antenna used by the hosting station."

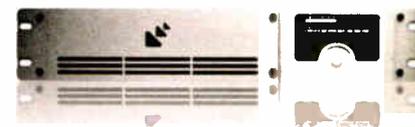
V-Soft's President Doug Vernier said: "This program will make any engineer's

translator and LPFM protection work a breeze compared to all the manual calculations previously required. Also, the program's ability to predict and graph the locations of IBOC host interference will be extremely helpful as station migrate to -10 dBc IBOC levels."

Info: [www.v-soft.com](http://www.v-soft.com)

### BW Transmitter Features AoIP Codec

BW Broadcast introduced a transmitter family called Aptus.

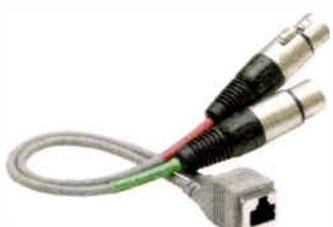


Aptus is an FM transmitter (300 Watts to 2 kW) that includes a built-in IP codec, multi-band audio processing and a VRP web portal to manage products, share presets across a network and check status.

Also included in each transmitter are an RDS encoder, stereo generator, silence detection and automatic switchover, audio metering and analysis tools. Backup audio can be provided via the onboard memory or USB slot.

A capacitive touchscreen front panel is featured.

Info: [www.bwbroadcast.com](http://www.bwbroadcast.com)



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## Arrakis Rides The NewWave

NewWave is a Windows-based software solution for professional radio applications, made by Arrakis.



It is designed for playing audio files from hard disk, Internet streams, FTP stored audio files, MP3 players, smartphones and text-to-speech.

The system lets the user play live broadcasts, automate broadcasts, send podcasts and stream for Internet radio at the same time.

The company emphasizes the system's fault tolerance and says NewWave will not allow dead air in automation.

Connected to an Arrakis Advanced Radio Console (ARC series), the console and software merge to complete an integrated radio workstation.

NewWave supports the Microsoft Windows 7 operating system.

The company also promoted MARC-15, a professional analog console for on-air, production and news applications, and its Accent Furniture Series.

Info: [www.arrakis-systems.com](http://www.arrakis-systems.com)

## AEQ: Enter the Forum

AEQ's latest offering is the Forum, a standalone digital control surface that can be configured with four, eight or 12 physical stereo faders; it has 14 slots on its rear that



will accommodate analog I/O, digital I/O, telco hybrids and mic/line I/O modules. It can be configured as all-analog, all-digital or any combination of the two audio formats.



The Forum, AEQ promises, also has significant functionality built into its main-frame, including a cue monitor speaker, dual stereo VU meters, OLED displays, opto-isolated GPIO and relay outputs. It has internal routing of 64 x 64 channels and an addition 64 x 64 via its MADI interface.

Two Ethernet ports enable remote maintenance, monitoring and control. Fifteen programmable function keys are available. Each channel's OLED display shows channel name, status and balance/audio levels. Each channel module has four routing buttons. A multifunction display is used to show effects, settings and configurations.

The Forum may be countersunk into a tabletop or be placed on top of it. The Forum is designed also to interface with other AEQ systems via an AES10 MADI bidirectional fiber-optic interface, as well as any other manufacturer's equipment which supports this protocol.

Also new is the TH-03 is digital hybrid, which comes in versions for one or two telephone lines, and either analog or AES/EBU digital inputs and outputs.

Info: [www.aeqbroadcast.com/](http://www.aeqbroadcast.com/)

## Phoenix Rises at Omnirax

Omnirax Broadcast Furniture describes the Phoenix family of furniture as a "production-ization" of its custom Innova line — letting users enjoy cost savings while still getting rugged materials and several design choices.



The initial offering consists of three basic configurations, Air, Production and Talk, each available with add-ons that Omnirax says allow additional space or functionality.

Also new are Omnirax Versa Height Adjustable Workstations.

The Versa SS1 Series of electric height-adjustable workstations suitable for video/audio editing, monitoring traffic, forensic video and CSI applications, security, surveillance, handling dispatch, 911/emergency calls or other communication center production needs. The height is adjustable between 26 and 48-1/2 inches.

And company has the eDesk Height-Adjustable Workstation, a lightweight, affordable electric desk available in two widths. It uses a heavy-duty frame for larger gear loads, also available in two widths. Both adjust from sitting to standing position at the touch of a button.

Info: [www.omnirax.com](http://www.omnirax.com)

## AFBM Is Davicom Broadcast Monitor

Davicom has introduced a low-cost AM/FM Broadcast Monitor.

The unit has high- and low-level inputs to accommodate on-site and off-air monitoring. It can watch AM and FM signal strength



and power, AM modulation index, FM peak multiplex deviation, FM carrier frequency, stereo pilot presence, L and R audio and RDS strings, all with user-defined threshold levels.

The AFBM interfaces to the Davicom MACs through a USB connection, or for older MAC units, with GPIO signals.

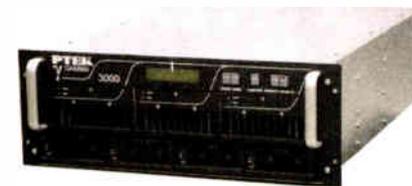
Also new: MAC Firmware 5.41 adds an SNMP Manager to the Davicom MAC's I/O capability. The feature allows control and monitoring of SNMP-enabled devices such as transmitters. It was to be available for free download to MAC users in June.

The MAC Expansion Module MEXM-1 adds extra input/output capability to MAC products including the MicroMAC. Each adds 24 metering inputs, 24 status inputs and 24 relay outputs that are integrated automatically into the MAC's control structure, to take advantage of MAC's control, monitoring and automation functions.

Info: [www.davicom.com](http://www.davicom.com)

## PTEK Gamma Is Single-Box FM Transmitter

The Gamma Series is a line of FM transmitters from PTEK, which promises an affordable, compact, single-box transmitter.



Its power amplifier modules — 1,250 watts — are combinable internally to 3.5 kW, allowing series power levels from 1 kW to 20 kW. Efficient power is provided by multiple 1,500 watt hot-pluggable power supplies that are operated independently and removable from the front. These are load-sharing; the unit is operational at reduced power if one is removed. The 3,000 watt system occupies 4 RU and weighs 60 pounds.

PTEK also promotes its ES Series Transmitters, a solid-state FM line available from 150 to 500 watts. The transmitter is FSK ID programmable from the front for translator use.

Info: [www.ptekpower.com](http://www.ptekpower.com)

## Radio Systems Stands on Platform

The Platform is a new broadcast console design from Radio Systems.

"It provides a solid foundation on which to build a networked broadcast studio," according to President Daniel Braverman, who describes the product as an Ethernet control surface with independent electronic engine.



A 7-inch LCD touchscreen offers control. Platform also enables remote access and control via a studio's Ethernet LAN, WAN or public Internet for network audio transfer.

The board is StudioHub+ compatible, with direct DC power for plug-and-play connectivity.

It is supported by two external engines that house system DSPs, input/output channels, GPIO interconnects and connectivity to Ethernet and USB transports. The "Portal" Engine supports plug-in card expandability; the "Packet" engine is for smaller, economical configurations.

Info: [www.radiosystems.com](http://www.radiosystems.com)

## ERI Expands Offerings

Electronics Research Inc. has several new filters.

Two new notch filters are available: the 785 Series of medium-power FM notch filters and the 786 Series of high-power FM notch filters.

On the band-pass front there are the 780 Series of medium-power band-pass filters and the 783 Series of high-power band-pass filters. There is also the new 935 (2 kW) low-power band-pass filter and the 938 (5 kW) band-pass filter.

Joining the CS300 3-1/8-inch motorized broadband coplanar switch introduced at last year's show are the CS203 (1-5/8-inch) and CS400 (4-1/16-inch) motorized switches.

Also new for switches is ERI's Smart Switch technology for utilizing Ethernet to aid in monitoring and control of switches. The Smart Switch is shown.

Info: [www.eriinc.com](http://www.eriinc.com)



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## Audioarts Launches X-12

With a name redolent of the days of rocket testing, the X-12 Digital is a new digital board from the Audioarts Engineering division of Wheatstone.



The company says it offers "great versatility in a compact, low-profile package." It's suitable particularly for small to medium-sized radio studios.

The X-12 is a 12-fader control surface. It uses modular input and outputs for customizing to each facility. Sources can be analog and/or AES digital. Monitoring features include a headphone jack and a built-in cue speaker, both with level controls. Metering includes program bus meters and multipurpose LED bar graphs.

Each input channel has selectable A/B sources, on, off, cue switches and access to three stereo program busses. A USB port allows for connecting to digital devices and storage media. Audioarts specs the noise floor at -135 dBfs.

Also new is the IP-12, a digital console with a 12-fader control surface, described as a compact, low-cost solution for digital air or production work. The surface connects via Ethernet to its audio engine, the IP-88cb. It is intended to help bring WheatNet-IP technology to users needing a low-cost offering.

Info: <http://audioartengineering.com>

## Tieline Is Ready For IPv6

Tieline Technology said its Bridge-IT and Genie IP audio codecs are the first to be IPv6 compatible, enabling them to connect over both IPv4 and the new IPv6 Internet infrastructure.

It noted that the Internet will soon run out of IPv4 IP addresses and that IPv6 is intended to solve the address shortage by adding billions of new addresses.



Neil Morrish, Tieline's R&D Manager, stated, "Although they use the same physical network, they are, for all intents and purposes, different Internets ... All broadcasters will have to manage connections between both IPv4 and IPv6 network infrastructures, in order to maintain connectivity across networks and the Internet.

"Ideally all new hardware you purchase should be IPv4- and IPv6-ready."

The company's Genie codec is a 1 RU rack-mount IP audio codec that delivers multiple studio-quality audio connections over wired LANs, WANs, the Internet, satellite IP, wireless 3G/4G IP networks, Wi-Max and Wi-Fi connections, redundancy for audio, network and power loss and can be controlled remotely using the Tieline Codec Management System.

Info: [www.tieline.com](http://www.tieline.com)

## A-T Plays With X-Y Gene

Microphone maker Audio-Technica is out with several new microphones.

Perhaps the most interesting is the AT2022, an X-Y mic. This model uses a pair of condenser capsules mounted on branches to give the capsules a slightly wider setting than usual. The capsules also can be swiveled to shrink the spread (90 degrees) or widen it (120 degrees) further. Battery operation allows flexibility in



usage. Retail price is \$439.

Also new is the BP893, an omnidirectional condenser headworn microphone that is part of the MicroEarsset line. The 893 mounts mostly over the ear.

The ES963 is a new boundary mic. It uses three condenser elements in a circular housing. Each element can be turned on or off for flexibility in configuring the pattern. Internal controls also aid in pattern formation allowing everything from cardioid to omni.

Finally, A-T has been a new wireless mic system line, the SpectraPulse. SpectraPulse utilizes Ultra Wideband technology to pick around crowded RF frequencies. Up to 14 channels can be operated simultaneously.

Info: [www.audio-technica.com](http://www.audio-technica.com)

## Logitek Increases JetStream Mini Power

Console maker and digital audio network developer Logitek Audio now has a higher-performance version of its JetStream Mini console engine/IP networking platform.



Using a newly developed 16-channel I/O card, each JetStream Mini box can handle 128 channels when its eight I/O slots are populated fully. Each card handles 16 mono channels or eight AES stereo channels. The cards can be mixed and matched with analog, digital inputs or outputs or 48V phantom powered microphone input cards available.

The JetStream Mini is not exclusively reliant on the input/output cards but moves audio across its network utilizing Gigabit Ethernet and Logitek's JetNet protocol.

Logitek President Tag Borland stated: "Just two of these cards will equal the total I/O capacity of competitive AoIP nodes ... and when you combine these digital cards with our analog and microphone cards along with a full suite of consoles for audio operations, you have the most flexible AoIP system as well."

Info: [www.logitekaudio.com](http://www.logitekaudio.com)

## Sage Talks EAS, HD Radio

Sage Alerting Systems said its Sage Digital Endec model 3644 completed FEMA's IPAWS Conformity Assessment.



The program verifies that alert and warning products conform to the FEMA Integrated Public Alert and Warning System requirements for the FCC-mandated addition to the Emergency Alert System, the Common Alerting Protocol.

The company's Harold Price said, "In a

protocol as broad and open-ended as CAP, it is necessary for the various hardware and software components of the EAS system to use a core set of CAP features in exactly same way, so that a message originated by one manufacturer and received by another manufacturer will appear on radio, TV and cable systems with the same information, whether delivered on audio, radio text services or video crawl."

Sage also participated in an announcement, along with iBiquity Digital and Global Security Systems, that HD Radio-enabled broadcasting is capable of CAP EAS audio and text messages. In April, WTGE(FM) in Baton Rouge, La., became the first HD FM station to broadcast satellite-delivered CAP-EAS messages over HD Radio, they said.

Info: [www.sagealertingsystems.com](http://www.sagealertingsystems.com)

## Staco Introduces FirstLine P

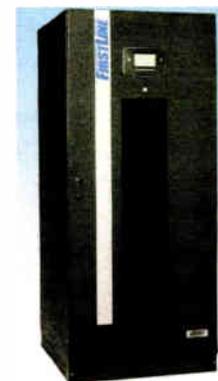
Energy product specialist Staco Energy Products has a line of "mission-critical" three-phase uninterruptible power supplies, the FirstLine P series, which it says is well suited to radio and other broadcast applications.

The line, designed for 80-125 kVA jobs, can be run in parallel to up to eight units. It uses insulated-gate bipolar transistors (IGBT) technology and DSP for double conversion and an input power factor of 0.99 along with an input current distortion of 3 percent or less, according to Staco. These models are highly efficient, according to the company. Staco also claims that battery performance is "best in class."

The units are hot-swappable and carry a two-year warranty.

According to a release: "The compact and reliable FirstLine P is ideal for information technology (IT) applications such as those found within the broadcast arena's highly digitized environment, especially to protect transmitter exciters and HD Radio encoders, monitoring, remote control and Emergency Alert Systems, links to remote programming sources via digital telephony, satellite, etc., as well as office computers, standalone computers and computer networks for audio playback, program scheduling and more."

Info: [www.stacoenergy.com](http://www.stacoenergy.com)



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applications. Dutch firm Technica del Arte. The app is used with V\*Call, Digigram's software IP audio codec, to create a tool for journalists.

The company also debuted IQOYA \*Link/IC, a single-unit rack-mount codec dedicated to intercom applications, coordination circuits and voice commentary along video live contributions.

It grew out of a project for customer Media Broadcast, part of the TDF Group.

Also, Digigram's Aqonda EtherSound stageboxes are now remotely controllable via Soundcraft and Studer digital consoles, as well as Innovason and Yamaha.

Info: [www.digigram.com](http://www.digigram.com)

reduced or linear.

It runs in the background as a Windows service, can be managed and configured remotely with a browser and can process and encode multiple streams in various formats simultaneously.

Users can encode to MP3 or AAC, feed a Shoutcast-style or Windows Media Server in the MP3 format, or stream to Adobe Flash clients through a Wowza Media Server. The Omnia A/XE also can be paired with an existing Windows Media, Real, mpgPRO or MP3 streaming encoder.

A new Virtual Patch Cable allows Omnia A/XE to receive, process and send audio to



other software on the PC. Internally encoded Shoutcast or Wowza server streams can be "tagged" with "now-playing" information received from automation systems or another application.

A built-in scheduler allows streams to be started and stopped at specific times; processing presets can be changed on a schedule, for instance processing a morning show differently than an afternoon program.

Also, as of April Omnia said it had sent out approximately 100 units of the new flagship Omnia.11 processor since it began shipping in November.

Info: [www.omniaaudio.com](http://www.omniaaudio.com)



**Take TASCAM Into the Field**

TASCAM'S DR-05 is a handheld digital audio recorder that records to microDs or microSDHC media in MP3, WAV (BWF) format with up to 96 kHz/24-bit resolution.

Features include audio peak reduction, stereo condenser omnidirectional microphones, variable playback speed of 50 to 150 percent

without pitch change. Level Align for equal playback levels, USB 2.0 port allowing transfer to a PC, loop and repeat playback, stereo MP3 recording from 32-320 kbps rate, auto and manual track increment, 1/8-inch mic/line input, headphone jack and up to 99 mark points per file.

The company also has collaborated with Antares Audio to introduce the TA-IVP Vocal Processor.

Audio input may be line or mic with phantom power. Functions include variable knee compression, variable two-band parametric equalization, gate and variable frequency de-esser.

Additional features are Antares Auto-Tune Evo real time pitch correction with enhanced tracking and correction capabilities, Antares Microphone Modeling and Analog Tube Modeling effect. Factory presets and user memory slots recall settings for each user or application. Real-time MIDI control is provided. Analog outputs are balanced 1/4-inch, and an SPDIF digital output is standard.

Info: [www.tascam.com](http://www.tascam.com)

**Omnia Sound For the Workstation**

Omnia A/XE is aimed at a variety of audio workstation applications, bitrate-

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## Superior Gives Total Power

Superior Electric promotes its "Total Power Quality Strategy" for protection of transmission sites and studios.



The company makes Stabiline power quality products including automatic voltage regulators, uninterruptible power supplies and transient voltage surge suppressors/surge protective devices.

Superior says Stabiline's Line Interactive Buck and Double Boost technology ensures pure sine wave output voltage to critical loads without using batteries. The battery management design doubles battery service life, optimizes recharge time and provides warning of pending battery failure. Hot-swappable batteries and cold start features are included with cabinets and 19-inch rack models.

Info: [www.superiorelectric.com](http://www.superiorelectric.com)

## APT Streams In and Out

WorldCast Systems added to its APT Silver range of low-cost broadcast equipment.



The Stream-In IP Audio Encoder and Stream-Out IP Audio Decoder are designed for reliable encoding of audio content over IP networks.

A range of algorithms including Enhanced apt-X, MPEG 4 AAC-HE and linear audio is available. The decoder version offers headphone monitoring, audio back-up with an



on-board USB port or ShoutCast server, embedded auxiliary data and auto-detection of an incoming IP stream.

The Stream-In Silver and Stream-Out Silver are half-width, 1 RU boxes suitable for broadcast STL, confidence-monitoring and applications in retail, commercial environments and hospitality.

Info: [www.worldcastsystems.com](http://www.worldcastsystems.com)

## STL Is Emphasis For Moseley

Moseley Associates Inc. is showcasing Rincon, calling it the broadcast industry's first software-defined audio transport product optimized to deliver multichannel digital audio over IP, T1/E1 networks and radio links simultaneously.

Rincon carries four stereo audio channels over the multiple network choices. Backup solutions such as failover inputs, redundant outputs and automatic switchover in case of audio loss are included. It inserts a backup audio file to keep audio on the air in case of total link failures.

Users can choose from linear uncompressed audio or various audio compression algorithms. Management and configuration are handled via Web and SNMP interface, or via smartphone.

Rincon is a suitable companion to the Moseley Event 5800 High-Capacity T1/E1/IP radio link. Combined, the pair creates a multi-station bidirectional STL/TSL.

Info: [www.moseleysb.com](http://www.moseleysb.com)

## Crown Announces New Products

Crown anticipates shipping its CT-1 internal AM/FM receiver, intended for use in all Crown units up to 600 Watts, in the third quarter.



The CT-1 is designed for translator use and has an adjacent-channel selectivity of 82 dB (noise limited). Its sensitivity is excellent with mono signal-to-noise levels of 50 dB with only 11.2 dBf of input signal. Stereo separation of 60 dB (60 dBf input signal) and distortion values better than .05 percent (60 dBf input signal in mono) make this tuner the best in its class. It is also compatible with any Crown translator or exciter.

Multiple user adjustments and settings, factory presets and on-board diagnostic tools are some of the features included in the tuner. The CT-1 also has a silence sense function and future HD FM capability.

Users of Crown Broadcast transmitters can add this as part of their renewal program.

Also debuted is the FMD-1, shown, a 30 Watt rack-mounted digital FM exciter features direct-to-channel digitally generated

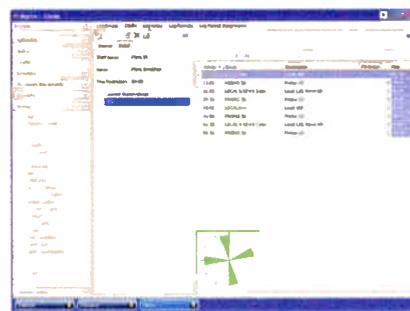
FM. It is frequency agile from 87.5 to 108 MHz in 10 kHz steps. Features include stereo generator, multiple AES digital audio inputs, balanced or unbalanced composite input, and three SCA baseband inputs. The FMD-1 is upgradeable to full HD.

And Crown has added the RMS-2 remote control. Based on the Broadcast Tools Site Sentinel 4 Web-based control, RMS-2 is compatible with all Crown transmitters in any configuration.

Info: [www.crownbroadcast.com](http://www.crownbroadcast.com)

## Acquire With RCS Aquira

The RCS Aquira traffic system provides real-time access to sales and inventory data and a range of scheduling, billing and reporting options.



The system is intended to help stations manage clients, prospects and sales team call activity. The scalable platform supports single- to multi-station or multi-location broadcast groups centrally.

A secure database lets you manage scheduling and billing of advertising orders across multiple stations via a central location.

Contracts are handled from order entry through to single- or multi-invoice billing. Useful reports include account and contract management, invoicing, spot analysis, avails and sales. Aquira integrates with Zetta.

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

## Continental Helps Stations Boost Power

Continental Electronics has created elevated HD upgrade kits for various customers to adapt existing HD transmitters. Kits are based on the type of transmitter in place and the desired elevated HD power level.

Recently it completed modifications to the 816HD transmitter of WYPR(FM), allowing that Baltimore station to make a full 10 dB jump in HD Radio power from 1 percent, or 20 dB below carrier, to 10 percent (-10 dBc).

"This HD Power increase is expected to provide HD service approximating WYPR's analog signal and is another example of WYPR's commitment to providing reliable service to its listeners in the Baltimore area," Continental stated in the announcement.

Continental said the station installed the transmitter in 2007, operating in analog-only

mode at first; a few months later it added HD Radio. Two multicast channels were added last year.

It also is developing 300 W and 1 kW NOAA weather Radio transmission systems and expects to be shipping some 40 systems this summer.

Info: [www.contelec.com](http://www.contelec.com)

## EV Classic Has a New Sibling

Electro-Voice has broadened the application of its classic RE20 microphone with the introduction of the RE320.



Designed primarily for recording studio applications, the RE320 is equally at home in a broadcast environment. Its "Dual Personality" switch allows selection of a frequency response contour specifically optimized for the kick-drum, or a linear response curve suitable for voice or musical instruments.

The RE320 employs Variable-D proximity control, a classic EV hum-bucking coil to guard against EMF hum and interference, and a neodymium magnet for higher output with fast transient response and high frequency detail. The RE320's design affords a 30% lower cost with an identical physical footprint to the RE20.

Info: [www.electrovoice.com](http://www.electrovoice.com)

## Altronic Offers 25 kW Dummy Load

Altronic Research Inc. has debuted the 6525, a forced air cooled dummy load.

The 6525 handles 25 kW continuous power and is suitable for operation in the



Photo by Jim Peck

AM or FM band. It can be powered by 120 or 240 VAC. Air is ducted through the top of the unit. The customer specifies the desired connector at the time of order making it suitable for custom applications. Shipping is expected in the second quarter, 2011.

Shown, the staff answers questions in the NAB Show booth.

Info: [www.altronic.com](http://www.altronic.com)



Why do Axia consoles do phones best?  
(Hint: who's *your* daddy?)



Other consoles treat phones like an afterthought. But Axia's parent company is Telos, so phones are part of our DNA. Consider our Element AoIP console, and the Telos VX broadcast VoIP phone system. Both amazing on their own. But when you connect them — magic. Total integration, so talent can run complex talkshows without taking their hands off the board. Effortless. A dedicated hybrid for each caller, each assigned to its own fader, with automatic mix-minus and talkback. Painless hookup via CAT-5 — no extra I/O or logic connections required. An all-digital path for crystal-clear caller audio, even from cell phones. That's the Telos connection. And only Axia gets it. Axia: the console that talks Telos.



[axiaaudio.com](http://axiaaudio.com)

**SUMMER PRODUCT PREVIEW****Phasetek Debuts Voltage Sampling Unit**

With the FCC adoption of MoM computer techniques for AM directional antenna proof of performance, towers with certain heights and geometries cannot employ toroidal current transformers. These towers may employ base voltage sampling.

The Phasetek P600-206 series of Voltage Sampling Units is intended for this purpose. The inductive voltage divider design provides a DC path to ground, eliminating the need for a static drain choke. The high RF input impedance minimizes tower shunting and current phase shift effects. The RF sample voltage is proportional to the RF voltage connected to the input bowl feed-through assembly. Maximum peak voltage is specified at 28.5 kV.

The Voltage Sampling Unit is intended for indoor use; an optional outdoor cabinet is available. Shipping is expected in the second quarter.

Info: [www.phasetekinc.com](http://www.phasetekinc.com)

**iZotope Repairs Audio**

Boston-based audio technology company iZotope released RX 2 audio repair software.

Features include denoise, hum removal, declip, declack and decrackle and spectral repair. New denoise algorithms reduce arti-

facts and add high-frequency enhancement. Hum removal cleanses electrical hum and line noise including harmonics. The declip function rebuilds distorted audio damaged by analog and digital clipping.



The on-screen lasso, brush and magic wand allow the user natural, freehand visual selections around problem sounds and subsequent remediation.

RX 2 Advanced adds features such as dynamic, adaptive denoise algorithms, deconstruct to separate audio into tonal and noisy components allowing independent control over each, azimuth alignment, phase rotation and the application of third-party VST, DirectX and AudioUnit plug-ins to selections in the spectrogram and in-batch processing.

RX 2 is compatible with Windows XP, x64, Vista and 7 as well as Mac OS X 10.5 or later.

Info: [www.izotope.com](http://www.izotope.com)

**NEWSROUNDUP**

**EAS-CAP:** The FCC is still considering details about the migration of EAS to next-gen delivery. In a third Notice of Proposed Rulemaking, the commission asks whether the Sept. 30 deadline for CAP-compliance should be extended again, how the agency should implement conformance testing and whether it should certify intermediary devices the same as stand-alone encoders/decoders. Comments to EB Docket 04-296 are due 30 days after publication in the Federal Register.

**NAB SCI-TECH:** NAB created a new position and hired someone from outside the organization who has experience in TV and music digital platforms to head its Science & Technology department. NAB EVP/CTO Kevin Gage, 49, will lead NAB's technology efforts, including oversight of current staff. NAB Sci-Tech SVP Lynn Claudy has been heading the department since 1995; he remains in his current position. At Warner Music Group, Gage oversaw creation of new digital platforms and standards for products that included iTunes. The former RIAA board member helped develop the DVD specification and production facilities at Warner Bros. Studios and helped launch the WB Network.

**PIONEER APPRADIO:** When Pioneer's AppRadio aftermarket head unit is connected to an iPhone or fourth-generation iPod, its capacitive touchscreen lets a user control a companion app interface, iPod control and playback, built-in AM/FM radio with RDS text display and Bluetooth calling feature. The Pioneer AppRadio device, coming in June, will list for around \$500; the associated app is available from the App Store for the iPhone 4 and fourth-generation iPod Touch or at [www.apple.com/itunes/](http://www.apple.com/itunes/)

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# Nuendo5: High-End, High-Priced DAW

For Ambitious Production Personnel, Steinberg's Flagship Has the Tools, for a Price

## PRODUCT EVALUATION

BY ALAN PETERSON

From Steinberg Media Technologies comes one of the most loaded and elegant software audio production environments you will see: Nuendo5 (Windows, Mac), designed for the video post-production industry but with features and operation of interest to radio production folks.

Get ready for a little sticker shock, however: Nuendo5 is priced at \$1,800 MSRP, and this is for the software alone (no audio interface hardware).

Much of the expense of Nuendo 5 can be justified in one line from the manual: "Nuendo has been designed from the ground up as a production tool with features that are catered to working with video and film," and provides numerous features (such as 5.1 surround sound) that position the program well for audio sweetening in a video production house.

As such, many of these features might go unused in the radio studio, making it hard to justify the cost of the software.

However, independent production people will be interested in these features as they find themselves stretching

the PC and Mac platforms. System requirements are available at the Steinberg website.

Once installed, you will likely be visiting the Steinberg website anyway to check for updates. At the time of this writing, a patch came available that updated Nuendo5 to the current version Nuendo 5.1.1.

Among the improvements are elimination of some odd crash behavior and screen stutter.

The entire version history can be seen in a PDF on the Steinberg website.

### ROLL UP THE SLEEVES

Be ready to spend a little time learning Nuendo. The PDF operations manual runs a staggering 608 pages.

The Project Window presents an overview of an entire production. The elements used in the window consist of "Events" and "Parts." An Event can be a block of audio, video, MIDI data or automation data. A Part is an assembled block of smaller Events that need to be treated as one unit in the Project.

This window is intended for large edit decisions. For tweaking smaller parts of an audio file, you would double-click to get to the Audio Part Editor, and



Nuendo Multitrack Mixer Window with 5.1 Surround Sound Meters

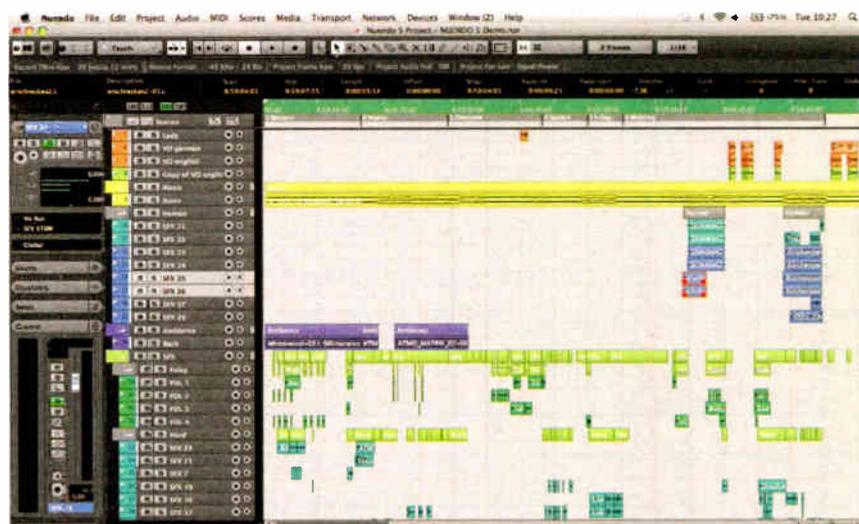
beyond radio and branching more into multimedia.

### SETTING UP

Should video actually be part of your plans, you will likely need a synchronizer between your computer and any tape transports in your shop.

Otherwise, an installation for radio and audio production only is pretty straightforward: connect the computer's audio interface together with your studio mixer (perhaps a MIDI box if music production is also your specialty), run the Device Setup window and go.

If you are doing video, note that Nuendo5 requires QuickTime on both



Nuendo Main Project Screen

the Sample Editor for even more precise work, although the Sample Editor is more for finding loop points, hitpoints and the trimming of short audio samples.

Automated fades are done by clicking points and dragging on Events within the Project Window, but you may also use the pencil tool to draw a desired curve.

Automated control over other parameters is possible too, using hidden Automation tracks. If all you are used to is being able to automate volume and pan, you will very much like automated parameter control.

With the automation tracks, it is possible to perform complex effects over time — such as the effect of walking toward or away from someone speaking in a large reverberant space such as a basement or parking garage, and experiencing changes in the acoustic response of the space (a dynamic mix of EQ, reverb time and dry/wet blend).

Most all DAW software has some type of mixer window, showing moving faders, routing and individual track levels. The Nuendo mixer features a virtual Control Room designed after an

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**PRODUCT CAPSULE**

**STEINBERG**

**Nuendo5 Audio Production Suite**

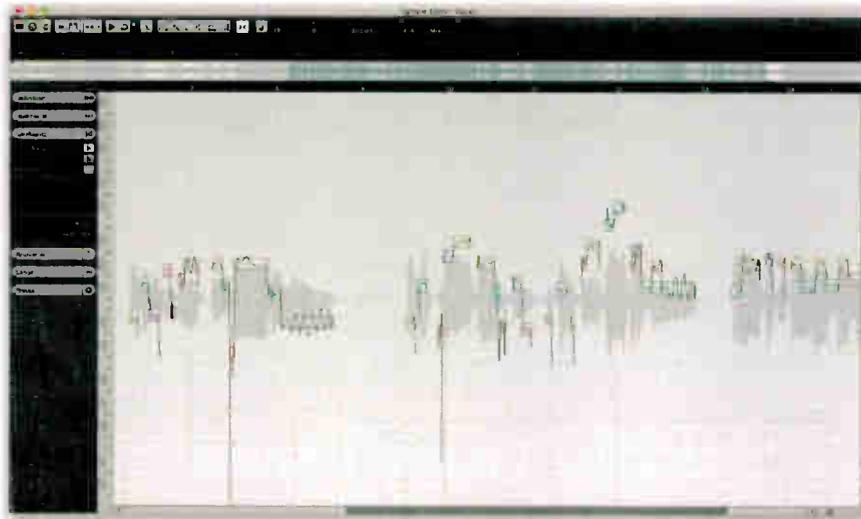
**Thumbs Up**

- + Complex mixes, extraordinary control possible
- + Works on Mac or Windows
- + Backward compatibility with favorite VST plug-ins

**Thumbs Down**

- Expensive at \$1,800 MSRP

For information, contact Brian McGovern at Steinberg/Yamaha in California at (714) 522-9011 or visit [www.steinberg.net](http://www.steinberg.net).



'Vari Audio' Function in the Nuendo Sample Editor

actual studio environment with separate feeds and talkback between the performer (studio) and the engineer (control room). Naturally the audio interface hardware has to be up to the task; you won't be doing this with a common Blaster-compatible card.

If you are used to the "work now, ask questions later" file-saving approach of programs such as Cool Edit Pro or Adobe Audition, Nuendo works differently. It will prompt you for a folder location every time you start a new project.

Some may grouse that this slows down the creative process, that they need to dive into work while the creative juices are flowing. I consider it good housekeeping in action.

**VERSATILE**

A good audio production environment can handle multiple file formats and import from CD. Nuendo is tricked out to import CDA, WAV, AIFF and MP3 files of course, but can also take in Dolby AC3 (with a Steinberg encoder),

open-source OGG files, WMA and a few others. To the company's credit, MP2 file importing is also supported; numerous radio automation and storage systems still work with MPEG Layer II files and not many editors out there are prepared to handle them.

Some formats like FLAC are not natively handled by Nuendo. I use the free MediaCoder program from the Internet for those files that make my computer go, "huh?" Check with Steinberg support if your needs are a

little more esoteric.

Final mixes can be exported as WAV, AIFF, MP3, OGG and Windows Media. Other formats are available, but note that MP4 is not among the choices. Remember, the Nuendo5 output is expected to be routed into a traditional video project, not offloaded as an iPod music format.

**COOL FEATURES**

A superb feature of all Steinberg products, including Nuendo, is the ability to host VST effects.

Steinberg invented Virtual Studio Technology, and hundreds of developers at any time write plug-ins that extend the useful and versatility of any VST-compatible workstation, many for free. Nuendo comes bundled with many staple VST effects, including an assortment of EQs, compressors, a convolution reverb and some "digital" effects like a biterusher and a "Grungelizer" that adds static and vinyl noise to digital recordings, for an Old School feel.

With a little thoughtful loading and adjusting of effects, you can straight-wire a mic channel right into Nuendo and have all your favorite voice processing (multiband EQ, compression/gating and reverb) handled right up front, without the need for an outboard processor.

*(continued on page 34)*

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# STEINBERG

(continued from page 33)

Steinberg thoughtfully included external controller capabilities with Nuendo. Not everyone enjoys “mousing their mix,” so compatible hardware surfaces from Mackie, Yamaha and other manufacturers allow the user to sit at real controls and massage the mix.

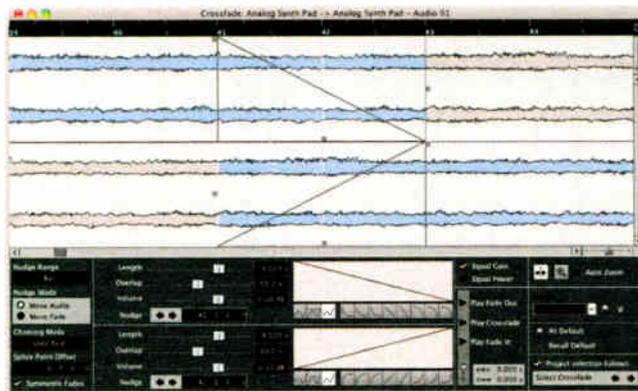
Apple users can use their TV-like Apple Remote Control to access select features of Nuendo — a handy feature for one-man operations that have to work inside a vocal booth but still be able to operate their workstation.

Producers of conventional stereo radio programming or even mono talk shows will not need to dive headlong into 5.1 surround audio. But it can be found in Nuendo for when it comes time to take that original project and remix it for a DVD-audio production or other type of multimedia.

## IN CONCLUSION

Nuendo5 provides plenty of power for some stunning and highly polished production work. For anyone who has used other Steinberg products such as WaveLab or Cubase, the interface and methodology will be familiar. However, given its feature set as a video production tool, much of Nuendo's power may end up gathering dust; with the core feature set used extensively in radio production to get spots and imaging on the air quickly and cleanly. But oh, those core VSTs are quite lovely ...

Many DAW programs are not in the



**Nuendo Crossfade Window**

same strata as Nuendo, but many radio buyers are forced to look at budgets first and features second, making lesser programs a primary choice. To that end, Nuendo faces plenty of competition and perhaps a little conservatism.

For example, the “lite” edition of Pro Tools is affordable to nearly anyone. Programs such as Reaper and Traverso can be obtained for under \$100 or free, respectively; and many long-time users are hesitant to give up their Cool Edit Pro, which saw its last upgrade some seven years ago before metamorphosing into Adobe Audition.

As Cool Edit Pro has a tough time working on Windows 7, and Audition (and its cousin, Soundbooth) is much less expensive than Nuendo5, many users may just automatically jump to Audition.

I have enjoyed Steinberg products for well over 10 years now (Cubase is still on one of my basement machines) and believe there is a place for them as a “go-to” audio production tool for radio.

If the company had an intermedi-

ate product that combined elements of WaveLab and Nuendo (minus the video tools) with an uncomplicated interface and a big toy box filled with VSTs, and offered it at a price at or under what Audition costs, there would be interest.

I will say there are features in Nuendo5 that one does not need today or perhaps tomorrow, but are there when the complexities of modern-day radio are felt

in the production room and truly complex work needs to be done. In the meantime, I recommend to anyone who has hit the wall being a “liner guy” or off-site radio-only production house to look into Nuendo5 when it comes time to make a jump ahead into multimedia production or actual television audio sweetening, while keeping their toes firmly in radio.

But save your pennies 'til then.

*Alan Peterson, CBT/CEA, is the assistant chief engineer and production director for the Radio America Network in Arlington, Va. He can be reached at apeterson@radioamerica.org.*

## MARKETPLACE

### AETA DEBUTS FLASH MEMORY CARD DIGITAL RECORDER



Aeta Audio Systems recently debuted the portable 4MinX digital audio recorder.

It employs removable SD/SDHC flash memory cards with no internal moving parts. Highlights include four mic/line analog inputs, two stereo line inputs, two AES3/AES42 inputs with sampling rate conversion, USB2.0, two stereo line and auxiliary outputs, 100Base-T Ethernet and three AES3 outputs with Timecode. The internal DSP-based mixer allows flexible routing.

Other features include a plain English 3-inch color TFT display, rotary encoder, four programmable function keys and elastomere soft, silent keypad suitable for outdoor use, and Broadcast Wave file 24 bits. The 4MinX can be powered by DV batteries, external 9–18V DC power or AC adapter/charger.

The 4MinX has three versions: Mixer; Mixer plus two-track recording; and Mixer plus six-track recording. Features include 48V phantom power on mic inputs, input limiter and low-cut filter. A 6.35 mm headphone jack is standard as well as four mic/line pre-fader outputs on a D-Sub9 connector.

Info: [www.aeta-audio.com](http://www.aeta-audio.com)

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5-bay high power Jampro antenna, gd cond, \$5000; (25) 20' sections, 3-1/8" line in gd cond, \$200/ea, avail Fall 2011. C Haynes, 601-218-5969.

ERI 6-bay center fed, full wave, tuned to 96.7; Shively 6-bay end fed, full wave, tuned to 94.5, presently in service; Cable Wave 8-bay end fed, full wave, tuned to 92.9; Cable Wave 8-bay, end fed, full wave, tuned to 96.7; SWR 4-bay, full wave, antenna tuned to 95.9, 1-5/8" line; Jampro 10-bay half wave spaced antenna tuned to 107.1, all BO. Gary, 435-881-6071.

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2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio

Village, 760-320-0728 or [audiovlg@gte.net](mailto:audiovlg@gte.net).

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old system to the dumpster. For our needs, we only need a system for NOAA alerts. Our station for the blind/disabled will not carry live programming and will be unattended outside of business hours. If you have this equipment gathering dust, please email [michael@record-inglelibrary.org](mailto:michael@record-inglelibrary.org).

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READER'S FORUM

THANKS FOR THE RDS HELP

I just finished all four of Alan Jurison's articles on RDS and they were a big help.

I live in a city of 30,000, Alaska's capital, and I don't believe any station here has ever had RDS, so I'm very excited to have our RT+ working and our station feeding our listeners more than just audio.

*Dominick Pannone  
Alaska Broadcast Communications  
Juneau, Alaska*

HOW COULD YOU NOT KNOW?

Alan, I enjoyed your Radio World article on RDS injection.

I have to agree 100 percent. My former assistant and I did nearly identical tests in Reno, Nev., and had identical results. We at that time ended up setting all of our FMs to 6 percent injection in quadrature with the 19 kHz pilot. We were running RT+ at the time via

CORRECTION

The URL given for Omnia on page 32 of the June 1 issue was incorrect. The site is [www.omniaaudio.com](http://www.omniaaudio.com), with no dash.

home-brew RT+ compiler units that my assistant built.

It was a fun project. We went so far as to go to each car dealership and test car radios, and found extreme differences in RDS-capable radios. We also tested the Zune and Nano with results identical to the author's.

In Reno I see as low as 2.5 percent injection on some stations, with the highest being 6 percent. My wife has a 2002 Nissan Pathfinder and it will recognize the existence of RDS with as little as 1 percent injections, but will not decode PS at all unless there is 4 percent injection.

It is amazing to me that a broadcast engineer could sleep at night without knowing his RDS injection level. How could you put something on the air and not know? But you are right; it happens often. Absolutely amazing!

Yet if you listen to the average FM station's audio, it is much easier to believe. If they can't get the audio right, why would anything else be right?

Thank you for the cool series of articles.

*Ian Perry  
Chief Engineer  
The Pilgrim Radio Network  
Carson City, Nev.*

LET'S DO LUNCH

I really enjoyed reading Alan Jurison's article on RDS/RBDS subcar-

rier injection levels.

As a designer of RDS/RBDS encoders, I'd like to reinforce his findings about how touchy some tuners are about the level, and really appreciate seeing his attention to detail when testing different radios.

I cannot emphasize enough that you must set these appropriately to get the most out of your RDS/RBDS signal. The subcarrier level is relative to the entire composite signal, so it's not something we can set precisely from the factory; we must rely on the customer to

do it on site.

Sadly, I find that a lot of broadcasters don't have the right equipment available to measure their subcarrier, and never think to ask the engineer down the road to check for them. Trading lunch for a level check is a great solution!

I encourage everyone to double-check your levels, just like you do for your main signal.

*Tom Pittenger  
Embedded Systems Design Engineer  
Inovonics, Inc.  
Felton, Calif.*

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# Station, Redefine Thyself

## Let's Get Out of the 'Transmitter Mindset'

### COMMENTARY

BY DAN SLENTZ

I work in TV at present but continue daily to contemplate radio, our broadcast industry and its "evolution."

I started in cable TV local origination programming when I was 13 years old; by 16 I was working a commercial radio job as a weekend DJ. I studied broadcast and received my BSC from Ohio University and have worked for Armed Forces Radio & TV. I've gone from TV cameraman to director, announcer, news anchor, master control operator, traffic and continuity assistant and engineer. In radio, I've been on-air talent, PD, MD and a manager; I've worked in traffic and continuity, done live remotes, been in news and sales, and was even a chief engineer.

I don't define myself by what position I've held and in what medium. I work in the business of communication and entertainment.

Broadcasters face a question of self-definition too.

#### SELF-LIMITING

Broadcasting is in a state of flux as to what it will become and whom our competition actually is.

I find myself telling others to stop thinking of their TV or FM transmitter as a transmitter, and instead look at it as a unidirectional stream encoder. It's not sending "TV" or "radio" but any data or information we want.

We are in the business of communicating. Whether you manage a radio station or a TV station doesn't matter. Our limitations are those of imagination.

Internet communicators don't put limitations on their medium (or imaginations) by saying, "We supply data." They say, "We can deliver anything to anyone at any time."

It's almost frightening to think that our new competition can be anything a broadcaster can be. And it doesn't stop there; because they can be a retail store, an advisor, a library or about anything that doesn't require the touch of a human hand. And as broadband and broadband wireless expand, their limitations are fading quickly.

I won't say our place as broadcasters is gone or antiquated; but many broadcasters remain locked into a mentality that limits their relevance to the next generation of viewers and listeners (and this is not to say "viewers of TV" and "listeners of radio").

What we provide is the key, not how it's provided. We need to get out of the

mindset that we use a TV transmitter, FM transmitter or AM transmitter, and put the focus on services. The old expression that content is king continues to prove itself. Who cares where it comes from?

#### IMAGINE BIG

I've been reminding TV people that we can be anything we want to be.

Technology allows us to be far more than an "old TV channel." We easily could provide eight CD-quality "radio stations" in the bandwidth of a single, stan-



Internet communicators don't put limitations on their medium by saying 'We supply data.' They say, 'We can deliver anything to anyone at any time.'

dard-def TV channel, and still provide and HD station and another one or two standard-def TV channels. Or we could use one channel of standard-TV bandwidth to stream content for "store and forward" or "entertainment on demand."

And could you imagine one TV station launching eight CD-quality radio stations (and I mean better than 50 Hz to 15 kHz, without the multipath)? Plus we could still add slow-scan video to show business info, maps and even coupons.

A medium that had been limited to people sitting at home goes mobile. Mobile ATSC (digital TV) is about as threatening to the radio industry right now as IBOC has been. The next generation of iPhones, Droids and myriad "smart portable devices" likely will include the ATSC mobile receiver.

Should this happen, the number of people capable of listening/watching mobile DTV instantly will dwarf the

number of IBOC users to this date. IBOC will be as relevant as a Betamax or an 8-track, which is not something the major radio groups that have invested in that technology want to hear.

#### BY ANY MEANS NECESSARY

I still have a passion for radio; I still have a passion for TV; but my real passion is for reaching an audience by any means they care to see or hear us.

As we look at the youngest demographics of our audience, it's clear they won't have allegiance to TV or radio. Managers and leaders in the traditional broadcast environment think beyond the constraints of the label "radio station" or "TV station."

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