



RADIO WORLD

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INSIDE

NRB PREVIEW



• Christian broadcasters will meet in Nashville while keeping one eye on Washington. — Page 22

BUYER'S GUIDE

• A round-up of field recorders. — Page 26



OPINION

• Relax radio's tech rules? But Fitch says be careful what you wish for. — Page 34

Alaska Test Helps Next-Gen EAS

Despite a Few Glitches, First Test of Presidential Code Pleases Experts

BY RANDY J. STINE

ANCHORAGE, ALASKA — A test of the Emergency Alert System that included the first planned activation of the Emergency Action Notification event code was likely just the first of several exercises the Federal Emergency Management Agency will take, seeking data to help plug coverage gaps in the planned next-gen EAS.

The EAN is the activation code that would allow the president of the United States to address the nation directly via broadcast radio stations, TV stations and cable outlets during a national emergency.

The Alaskan test in January was observed by a large contingent of FEMA and Federal Communications

(continued on page 8)

Internet Radio Expands Reach

New CE Offerings Are Heavy in Products Targeting Online Users

BY LESLIE STIMSON

LAS VEGAS — Companies at this winter's Consumer Electronics Show featured gadgets to help drivers get around more easily, access their music databases and give voice commands in car models that will come out this year. Some versions of these products include radio features.

Another trend: More in-dash receiver manufacturers are dropping CDs in favor of a connection for an iPod or other media device.

Radio has more competition coming from programming delivered on

small screens.

Mobile DTV was demoed on devices coming to market this year, including laptops, netbooks and cell phones. Similarly, there were lots of Internet-connected TV sets — enabling direct hookup from a TV set into the growing array of online video services. And for consumers who don't want to buy a new Web-equipped HDTV set, there are services that you can hook up to your TV set to see those Internet video streams. Manufacturers showed 3D TV prototypes.

(continued on page 3)



This Pioneer touch-screen navigation system will detect iPhones and iPod touches that have Pandora installed and put the consumer's Pandora settings on the screen so drivers can hear their favorite channels.

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CES

(continued from page 1)

Possibly the biggest story for radio coming out of CES is the progress Internet radio is making toward parity with traditional radio's penetration not only in the home but in the car.

Pandora Internet Radio, for example, is making gains in the automobile through deals with Ford, Alpine and Pioneer, giving drivers another non-broadcast entertainment option. "We're about bringing personalization to radio. We're about being anytime and anywhere," said Chief Executive Officer Joe Kennedy during a session on connectivity in the car.

"In the future every car will have an embedded Internet connection," he predicted.

A radio programmer at CES who tracks where eyes and ears will be years from now summed up the Pandora announcements as "bad news for radio stations." Radio is not just a distribution service that happens to have an aux transmitter, he told Radio World, noting the substantial investment broadcasters

designed his commercial-free FM radio with his parents in mind. They don't want to use one of his old iPods, for example, because they don't want to go through the process of connecting the devices to a computer, downloading music and creating a playlist to hear the music.

Myine's Abbee model AB001 promises to remove the commercials and DJ talk for hours of uninterrupted music.

Sigal said when you tune to a station, Abbee's FM tuner records the audio stream, and, using the Popcatcher detection algorithm, analyzes the audio and removes the spots and DJ patter. The individual songs are saved as MP3 files and stored on the docked Music Lock portable player for playback over the built-in speakers or elsewhere. The player has a 500 song capacity or 2 GB of storage space, according to the company.

Myine also worked with the National Federation for the Blind to make the portable player accessible. Buttons for skip, pause, play, fast-forward, as well as save and delete command are raised and are different shapes.

The Abbee commercial-free music

FORD, PANDORA MEET IN THE DASH

Ford is integrating Pandora, the "personalized Internet music service," into its Sync platform using Bluetooth connectivity. The automaker updated its Sync communications platform, which allows for hands-free use of the cell phone, radio and music from other sources using controls on the wheel or in the center console.

"Four-point-one billion texts were sent per day in 2009. In Ford vehicles, listening to a text is no different than listening to the radio," said Doug VanDagens, director of Ford Connected Service Solutions, during a keynote speech.

The automaker wanted to incorporate entertainment features into the car, rather than use a bolt-on approach, spokesman Charles Zinkowski said in an interview.

The updated Sync — which controls the user's phone, navigation, entertainment and climate using the MyFord Touch user interface — will be available on some 2011 Fords and Lincolns using MyLincoln Touch later this year.

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have made in their transmission systems.

Here are some of the more notable devices coming on the market as seen at CES. Look for digital radio product news from CES in an upcoming issue.

MYINE'S ABBEE STRIPS OUT SPOTS, DJS

A new FM tuner promises to strip out commercials and DJ talk from FM content; the developer of the underlying technology says it could be adapted to any kind of media player that contains a radio. The user then enjoys full access to the stored songs, including playback, fast forward and rewind functions.

Might this be the first system to gain market traction that does for radio what TiVo did in TV, letting consumers record and save only those parts of a station's programming that they want to hear?

Jake Sigal, the founder and CEO behind Myine Electronics, said he

This view of the MyFord Touch shows the display on the right side of the steering wheel, an MP3 player-originated song.



system is shipping and available from Myine and Amazon. It lists for \$249.99.

Sweden-based Popcatcher says its technology "can be integrated with almost every kind of media player that contains a radio." It's pursuing deals to integrate its technology in cell phones, portable MP3 players and car stereos. Popcatcher says it can detect repeat songs and skip those, too.

Sync will stream audio over Bluetooth and control the application on a cell phone using vehicle controls, application engineer Joe Ross said. Users can use voice commands or the buttons in the center stack to make or receive a call, play music from a CD or MP3 player or listen to the radio, in addition to listening to Internet radio through Pandora.

(continued on page 5)

Digital Radio Cranks Up the Juice

The FCC Knows a Good Compromise When It Sees One

The Federal Communications Commission did well when it decided on Jan. 27 that most U.S. FM stations airing HD Radio signals may now increase their digital power.

The breadth of industry backing for a carefully managed increase is impressive and includes numerous radio owners and transmitter manufacturers. The

move will help broadcasters deliver a better product to the new class of HD Radio receivers, particularly portable devices and indoor radios, without causing undue harm to neighboring stations.

Further, no one can argue that this power hike is being done willy-nilly, thanks to the cautionary effect of NPR's testing and the FCC's care in how it

is adopting most of the compromise recommendations it eventually received from iBiquity Digital and NPR. Though I do have some worries about the interference remediation, overall this ruling is appropriate.

The gist is that FM stations running HD Radio may, if they choose, increase their hybrid digital effective radiated power from the current limit of 1 percent of analog ERP, which is 20 decibels below carrier. Most will be able to increase by 6 dB, a four-fold digital power hike, to -14 dBc, right away; further, some will be able to seek approval to increase digital power as much as 10-fold, to 10 percent of a station's analog power, or -10 dBc.

The FCC also set up interference mitigation and remediation steps to resolve cases of digital interference to full-service FMs resulting from this power hike.

Here are major points I take away from the much-anticipated order, released by William T. Lake, chief of the FCC's Media Bureau:

"Virtually all" of the 1,500 or so FMs using HD Radio have concluded that their digital coverage doesn't match that of their analog, and that indoor and portable reception "are particularly and significantly diminished," the FCC wrote. Both iBiquity and NPR support that conclusion, as you know from past issues of Radio World.

The FCC is well aware that the HD Radio rollout is stalled and thinks that's a bad thing: "The number of notifications of the commencement of hybrid FM digital operations has dropped significantly over the past two years," it wrote. "Based on these findings, we conclude that it is important to increase FM digital ERP to improve FM digital coverage and to eliminate regulatory impediments to FM digital radio's ability to meet its full potential and deliver its promised benefits."

FM digital in more than five years' time has not produced a mess of interference (despite self-assured predictions from some critics, I would add). In fact, the FCC stated flatly: "Since the commencement of 1 percent FM IBOC power operations in 2004, the bureau has not received any well-documented complaints of interference to analog FM stations from digital signals."

It further noted that since 2006, it

FROM THE
EDITOR

Paul McLane



had issued 15 experimental authorizations for operations at the highest contemplated digital power level, including authorizations for 10 grandfathered short-spaced stations with as many as four first-adjacent channel short spacings, some severe.

Even though most now have spent three-plus years at the higher digital power, "the bureau did not receive any complaints of interference to analog FM stations from licensees of analog FM stations or the listening public as a result of the experimental operations." (It acknowledged that Rhode Island Public

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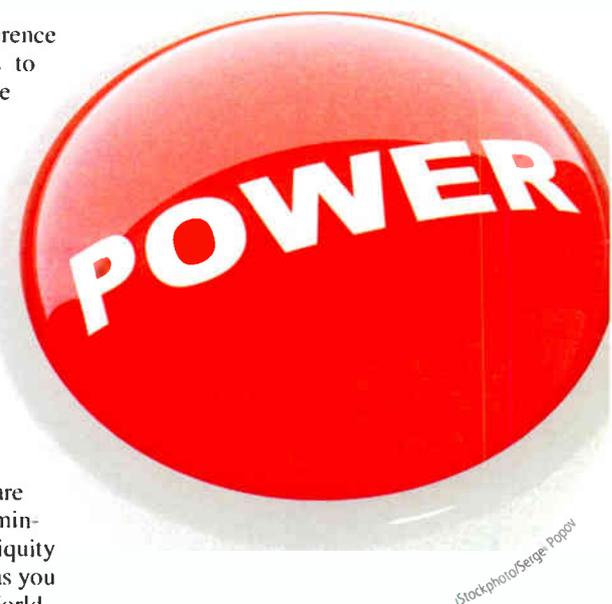
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Radio, in filed comments, did mention interference to the analog of WRNI from higher digital power at WKLB in Massachusetts.)

Based on the data available to it, as well as "five years of interference-free FM hybrid digital operations by approximately 1,500 stations," the commission approved the immediate 6 dB increase for all FMs except super-powered stations.

The latter may still be able to increase power under certain circumstances. (Super-powered FMs enjoy effective radiated powers or reference contours in excess of the usual maximums for their class. Fewer than 200 stations are super-powers. Not sure if you are a super-powered FM? Go here: www.fcc.gov/mb/audio/digitalFMpower.html.)

The commission felt it was "imperative for us to implement a power increase promptly" and believes its digital power

(continued on page 12)

THIS ISSUE

FEBRUARY 10, 2010

NEWS

- Alaska Test Helps Next-Gen EAS 1
 Internet Radio Expands Reach 1
 Digital Radio Cranks Up the Juice 4

DIGITAL RADIO NEWS

- FCC Order Lays Out the Steps 10
 NewsWatch 14

16**FEATURES**

- Workbench: Take This Quick Visual
 Quiz 16
 Com One Phoenix Still Impresses 20

NRB SHOW PREVIEW

- Fertilize Growth, Don't Subsidize It... 22
 Christian Broadcasters Seek
 Economies 24

22**BUYER'S GUIDE**

- Handhelds Offer More Power 26

OPINION

- Reader's Forum 33-34
 Be Careful What You Wish For 34

26**CES***(continued from page 3)*

The iPhone connected to the vehicle via USB port is controlling the Pandora service and other choices; the driver uses the big screen in the center console or two somewhat smaller screens on either side of the steering wheel. To use Pandora, drivers choose "Mobile Applications" from the menu. It displays song, title and artist. The user can listen to the current song, skip to another track using voice commands or continue deeper into the menu until hearing an audio confirmation of the choice.

Asked how the driver can be sure there's enough bandwidth in a particular area to use Pandora in a moving vehicle, Ross said Pandora varies the bitrate based on connection speed, and that's controlled by the user's phone.

To listen to talk Internet radio content, the driver would need to use the Stitcher application.

AM/FM radio is still part of the entertainment choices in Fords, and RDS messages can be displayed. HD Radio is being added to Sync this calendar year for 2011 model vehicles.

PIONEER ADDS PANDORA CAPABILITY TO NAV SYSTEM

Starting this spring, Pioneer will sell a navigation and entertainment device that allows Pandora users who stream the service on their iPhones to access the Internet music service in their cars.

The touch-screen AVIC-X920BT navigation system will detect iPhones and iPod touches that have Pandora installed and put the consumer's Pandora settings on the navigation screen so drivers can hear Pandora channels.

In an interview with Radio World, Pioneer Corporate Communications Manager Jaed Arzadon said Pioneer is actually providing a Pandora link by supplying a cable with an iPhone connector on it to use with the in-dash unit. "The link enables you to get everything Pandora is doing within an iPhone device — and now you're getting that on a larger screen on the dash."

Using Pioneer's navigation system with Pandora will require an application that users will download onto their iPhones.

In addition to built-in navigation capabilities, the AVIC-X920BT features 4 GB of flash memory, a large 6.1-inch WVGA touch screen display, a 3D graphics accelerator, DVD playback, built-in Bluetooth for hands-free calling and music streaming, USB connectivity for iPod/iPhone connectivity, micro SD card slot and back-up camera input. It is compatible with Pioneer satellite and HD Radio tuners.

NEWS

The AVIC-X920BT navigation system will ship to retailers in March/April and cost about \$1,200.

ALPINE TOO GETS TO KNOW PANDORA

Apple iPhone users who are also Pandora fans will be able to get a taste of Internet radio during their commutes when the Alpine iDA-X305S is released this spring. Alpine Electronics has added Pandora Internet radio support, but omitted a CD drive, in the new

iDA-X305S car stereo. The company says the unit is optimized for users who keep their music libraries on an iPod or iPhone.

The iDA-X305S is able to control the Pandora app on a connected iPhone 3G or 3GS, streaming user-created radio stations over a 3G data connection and out of the vehicle's speakers.

Its high-resolution 2.2-inch color TFT screen is used to display audio source information. The unit has a double-action encoder knob that is used for volume control plus iPod or iPhone

(continued on page 6)

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The ability to simultaneously record and broadcast means delivering the news faster than the competition to your remote unit or the studio. Just like the renowned Flashman I, the new Flashman II is tough as nails and yet easy to use.

Two switchable mic/line inputs are equipped with a phantom supply and with the support of 3G, Ethernet and WLAN, the unit makes live reporting possible from anywhere. Data storage is accomplished with a USB stick and SD card.

Flashman II utilizes the legendary MAYAH FlashCast Technology and the EBU standard on Audio-over-IP for automatic recognition of the desired audio codecs and coding formats. And of course the unit supports standard file formats, such as linear wav and Layer 2 BWF.

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CES

(continued from page 5)

music file access as well as viewing album artwork and tracking metadata, changing stations, skipping tracks, giving a song the thumbs up and down and bookmarking songs.

Optional tuners are available to add HD Radio reception with iTunes Tagging support or satellite radio services.

Alpine has a suggested price of \$400 for the iDA-X305S.

PURE INTRODUCES FIVE FM/INTERNET RADIOS

U.K. radio designer Pure is introducing five Internet radios to the North American market. They should be available later this year, according to spokeswoman Vicky Deacon.

For the U.K., Pure designed Internet and DAB radios; the U.S. devices will include FM analog and Internet radio.

The Sensia units feature a large high-resolution color touchscreen. Stereo sound plus an input for iPod/MP3 players and access to applications such as Facebook and Twitter offer consumers the ability to access and control their digital content from a central interface. Users can listen to streamed content



The Sensia units feature a large color touchscreen. Users can listen to streamed content when within range of a Wi-Fi network.

anywhere within range of a Wi-Fi network.

Partnered with its elliptical shape in four color options — red, yellow, black and white — is a tilting stand and remote control. Users may also take the unit off the stand and use it in their laps, much like a laptop keyboard, Deacon noted.

The product will list for \$349. Favorites and settings can be saved using the Pure Lounge media portal.

The company describes Evoke Flow as a kitchen radio. The wireless portable unit features FM with RBDS. The company says the unit, to list for \$229, gives consumers access to digital content from almost anywhere.



Pure says the aluminum surround and rubberized seal of the Oasis Flow offers Internet connectivity with portability.

The bedside Internet and FM radio Siesta Flow features touch-sensitive controls, up to 365 alarm settings and a USB PowerPort, which provides power for USB accessories. A Wi-Fi connection lets you listen to Internet radio, podcasts and Pure sounds or stream

music from a computer. Siesta Flow will list for \$139. In its booth, Pure showed this radio on a nightstand beside a tiny bed display.

For those who want to take their radio camping or to a picnic, the aluminum surround and rubberized seal of the Oasis Flow combines Internet connectivity with portability. The rechargeable Internet and FM radio will list for \$249.

Pure describes the Sirocco as a micro-sized home hi-fi shelf unit that combines access to Internet content with the ability to play digital music from portable iPod and iPhone devices, USB memory drives, SD memory cards and CDs. The Sirocco will list for \$449.

LIVIO PROMOTES PANDORA, NPR-BRANDED INTERNET RADIOS

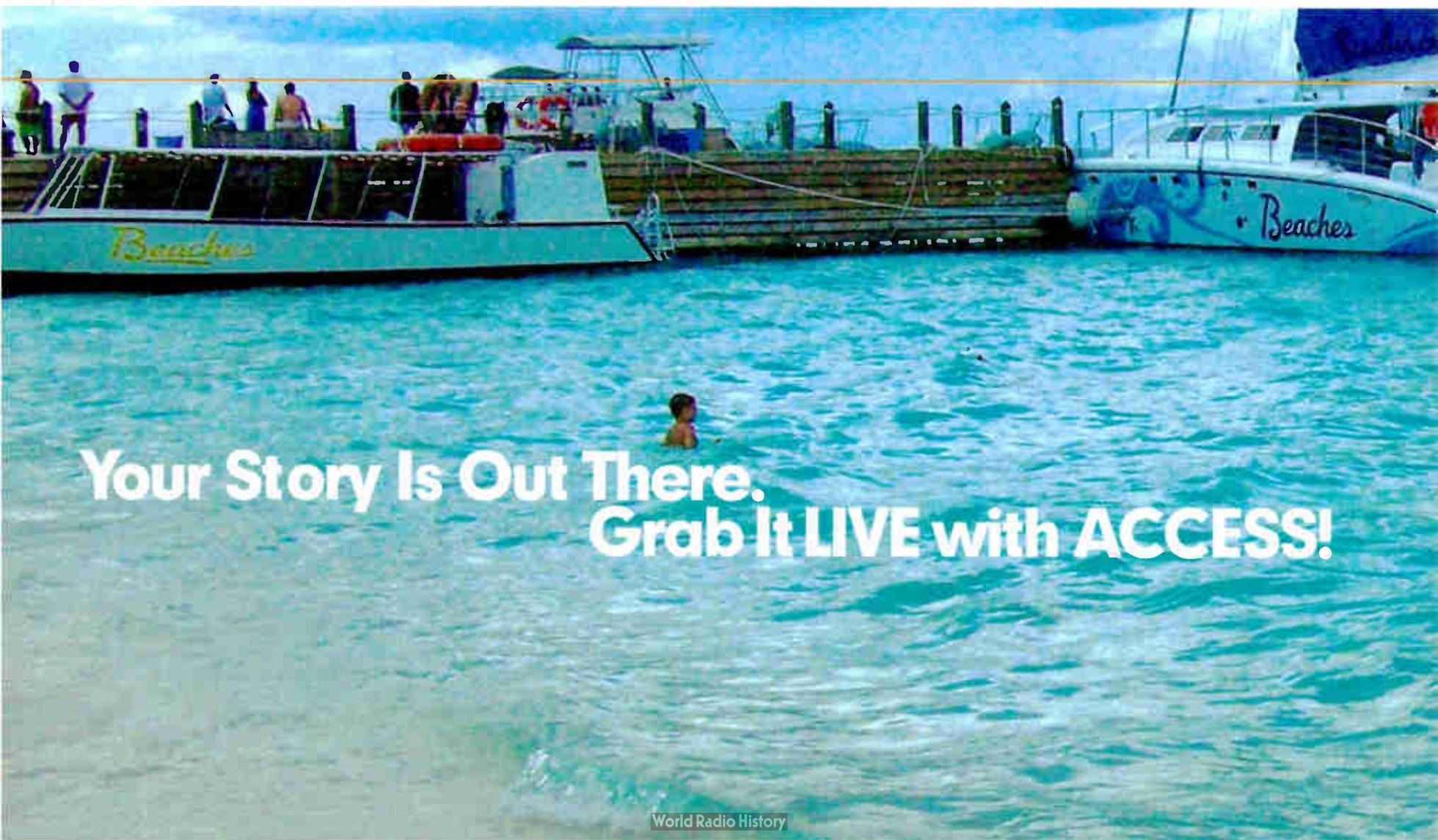
Livio says it tries to make Internet audio streams accessible to more people in more places by designing audio products that work fast without complicated menus.

The company showcased its Livio Radio, designed to let users listen to Pandora Internet radio in the home "without a Ph.D. in consumer electronics," according to CEO Jake Sigal.

The Livio Radio, which offer Pandora's "thumbs up, thumbs down" controls on the front panel and via remote, helps users customize the music and programming they receive.

If you have a power source and a Web connection, the unit connects quickly and plays some 11,000 Internet radio stations through its own speaker, without needing access to a computer interface to operate, according to the maker. The Livio Radio lists for \$199.99 at the company's Web site (where in late January the unit was listed as sold out).

The new NPR Radio by Livio, the first branded NPR consumer electronics device, is an Internet radio that features NPR stations, programs and content in a special NPR menu. The menu allows users to search, find and bookmark their



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NPR stations, podcasts and content, by topic or by program. In addition to approximately 800 NPR stations, the unit features the Reciva database of Internet stations and receives an additional 16,000 Internet streams.

While the user does not need to have a computer to use the NPR Radio by Livio, he or she must have an Internet connection with a wireless router (or an available Ethernet port for a wired connection).

Livio also plans to add a branded AARP radio to its lineup.

GSS, SILICON LABS WORK TO GET FM ALERTS IN CE DEVICES

Global Security Systems and its partner Silicon Labs are speaking with consumer electronics manufacturers and wireless companies about alerting. We've reported that the Federal Emergency Management Agency is moving forward with implementation of public alert via broadcasters as well as devices such as cell phones.

GSS Executive Vice President Matthew Straeb heads a Consumer Electronics Association working group addressing implementation of Common Alerting Protocol-based alerts among consumer



GSS sells the Alert FM system, which delivers alerts using FM RBDS, SMS (text) and e-mail. GSS is working with other companies to get FM chips in cellphones and other devices for alerting purposes.

electronics devices that process CAP-encoded data, independent of delivery method — whether consumers receive the alerts from a broadcast station, over the Internet from their computer or via their cellphone or other CE device that contains an FM chip.

Wireless carriers are also a part of the CEA's "R6 WG16" working group, though another working group is focusing on cellphone alerting as well.

The group that's working on fixed and mobile alert warning devices comprises cell carriers, TV set manufacturers,

weather radio, broadcasters, data service providers and receiver manufacturers.

"We're providing a road map for companies that want to provide alerting capability, but don't know what to do," Straeb said in an interview on the show floor. Members are looking at the behavior of the alert, how it would be displayed and the interaction of that alert with other features of the device.

"We want commonality, which leads to more consumer adoption."

Straeb and Silicon Labs Marketing Director Wade Gillham noted that FM radio chips in cellphones, for example, are capable of receiving audio EAS messages with FM-based data alert messages. The committee's work would incorporate FM RBDS. "The reason having cell phones that incorporate an FM receiver is now you'd have a ubiquitous point-to-many multi-points for a proactive alert," said Gillham.

SiLabs makes FM chips. GSS sells the Alert FM system, which delivers alerts using FM RBDS, SMS (text) and e-mail.

SLACKER RADIO HIGHLIGHTS MOBILE CAPABILITIES

Slacker Radio, another competitor in the online "personalized radio" game, demonstrated new mobile capabilities

including station caching for a range of devices that will enable listeners to get the Slacker experience without a network connection. Slacker also showed a new Slacker app for the Palm Pre and Palm Pixi, in addition to announcing plans to integrate ABC News into the Slacker Personal Radio offering.

Slacker Personal Radio enables listeners to create personal radio stations based on any artist or mix of artists, or listen to and personalize 120 "expert-programmed" genre stations.

The company said the wireless station caching capability will enable iPhone, iPod touch, Android and BlackBerry smartphone users to save their favorite Slacker stations, storing the music on the device or SD memory Card, to listen anywhere whether they are connected to a wireless network or not.

FRAUNHOFER SHOWS CONSUMER HARDWARE USING HD-AAC

Fraunhofer introduced consumer hardware using its lossless HD-AAC codec, the Logitech Squeezebox Touch, available for \$199.99. This enables consumers to download or rip one file that

(continued on page 8)

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World Radio History

ALASKA EAN

(continued from page 1)

Commission personnel and was deemed a success by most involved despite a few glitches. The Alaska Division of Homeland Security and Emergency Management, the Alaska Broadcasters Association, the Federal Communications Commission and FEMA officials coordinated the event.

The overall success of the exercise will be measured in part by a statewide followup survey of radio and TV broadcasters by the Alaska Broadcasters Association.

The FCC has since proposed an annual nationwide test of the national alert capability of EAS in a subsequent rulemaking proposal and is asking for comments to EB Docket 04-296 (Radio World, Feb. 1).

INTERPRETATION

There are 104 radio stations and 26 TV stations in Alaska, all of which must participate in EAS and be able to air an EAN. Planners said the January test involved sending a test EAN data alert issued by the FEMA Operations Center in Washington down the daisy chain from the state's one Primary Entry Point station to all radio stations.

Among factors the agencies tracked were audio levels and whether encoder/decoders functioned properly. The EAN test was limited to Alaska by sending the test to only that state's PEP station. Planners were able to contain the test to the state because of its relative isolation from the lower 48.

The test produced minor technical difficulties, most often with equipment or audio levels, according to observers.

For instance, one of the state's largest cable providers failed to receive the EAN message initially. At least several radio and television stations allowed the three-minute test message to pass through twice because of a programming error in their EAS encoder/decoders, according to Darlene Simono, executive director of the Alaska Broadcasters Association.

Broadcast stations and cable operators across Alaska employ a variety of encoder/decoder makes and models. One of the key goals of the test was to see how the universe of installed equipment handled the EAN.

Simono said DASDEC model encoder/decoders malfunctioned at several stations because of a "programming malfunction within the unit."

The manufacturer of the PC-based product, Digital Alert Systems, a division of Monroe Electronics Inc., agreed with Simono's assessment but said its coder/decoder is programmed not to ignore any EAN alert, even duplicates.

"The (FCC's) Part 11 rules really do not address how to handle EAN alerts," said Jim Heminway, vice president and general manager of Monroe Electronics. "The FCC has left that interpretation up to the manufacturers. It's really not defined. That's why we have been very supportive of a national EAN test, to uncover situations just like this and open up discussion of how we should handle them."

In its recent announcement of a proposed national test, the FCC noted concerns about how EANs are interpreted by station hardware. It said encoder/decoder manufacturers may have programmed their devices to receive and transmit EANs in different ways, which may affect the ability of some devices to relay an EAN properly.

FEMA also added a 15-minute duration to the header of the EAN alert, which "should not have occurred," Heminway said.

State emergency officials said the Alaska test dem-



The Alaska Broadcasters Association provided this image for TV and cable systems to use during the test.

onstrated the "daisy chain" nature of the current EAS architecture, which has been criticized for possible "single point of failure" concerns.

'AUDIO LEVELS A CHALLENGE'

"We had some issues of course. We had six smaller markets that never did receive the alert message. That was unacceptable. Audio levels were a challenge," said Bryan Fisher, chief of operations at the Alaska Division of Homeland Security and Emergency Management.

"However, that is why we run tests. This gives us a chance to go and remedy some of those issues."

Dennis Bookey, co-chair of Alaska's State Emergency Communications Committee, was aware of only one radio station reporting audio level difficulties.

"The audio level in that case was so low it didn't trigger the test, but that was the result of his level setting and not characteristic of the exercise."

Fisher credited Alaskan broadcasters for their preparation and participation. Broadcasters ran public service announcements for several weeks prior to the EAN alert to help avoid public panic.

Alaska was chosen as site of the test because

CES

(continued from page 1)

will play on existing AAC devices, such as most mobile phones and all iPods, and also playback "losslessly" through their living room stereo using the Squeezebox Touch connected to their PC or the Internet.

Fraunhofer says its new MPEG HD-AAC codec offers music quality superior to the CD and compatibility with iPods and AAC-enabled mobile phones. Based on the MPEG-4 SLS and AAC-LC standards, Fraunhofer's HD-AAC provides lossless compression of 16/24-bit and up to 192 kHz quality music content.

The company also demoed MPEG Surround, a new standard delivering iPod-compatible surround sound at stereo bitrates. Attendees experienced MPEG Surround from a legacy iPod through a Fraunhofer-designed iPod docking station prototype.

ALSO OF INTEREST

— Audiovox added Pandora to its next generation of Wi-Fi-equipped tabletop Internet radios. They also feature Slacker Radio, Weatherbug and MP3

of its "geographic location, leadership and experience in transmitting severe weather alerts," stated Jamie Barnett, chief of the FCC's Public Safety and Homeland Security Bureau.

Barnett stated afterwards that results would be evaluated and used to improve the system.

Many within the EAS community were pleased to see the Alaskan EAN activation and credit FEMA for taking proactive steps by running it, said Gary Timm, broadcast chairman of the State Emergency Communications Committee for Wisconsin.

"A lot of us have been riding both FEMA and the FCC about never having done an EAN test. FEMA may have realized with what happened in Illinois several years back that testing was needed."

Timm cited an incident in 2007 when a closed-circuit test of a presidential alert by FEMA inadvertently was relayed through EAS and affected hundreds of stations across the Midwest, including stations in Illinois, Indiana and Michigan. According to the FCC, some EAS participants' equipment did not pass the alert. The commission also cited numerous anecdotal reports of problems with EAS delivery architectures and PEP station readiness.

Timm listened to January's EAN alert on the online stream of public station KSKA(FM) in Anchorage. He said FEMA's testing indicates a desire to "get it right" when the new Integrated Public Alert and Warning System is launched.

Adrienne Abbott, chair of the State Emergency Communications Committee for Nevada and a field engineer for the Nevada Broadcasters Association, said, "The [Alaskan] test was a success if for no other reason than it started a lot of discussion among broadcasters about how EAS would work in the event of a national emergency and whether the EAN event code would work as theorized by the FCC and FEMA."

To comment on this or any story, e-mail Radio World at radioworld@nbmedia.com with "Letter to the Editor" in the subject line.

tunes services, as well as access to individual Internet stations.

— The first Internet radio from iLive is the iRP800B, a tabletop model with no AM/FM. It includes an iPod/iPhone dock on the top, embedded Wi-Fi and Ethernet port. The unit lists for \$149.

— Audiovox says the Xmp3i is the smallest portable satellite radio and MP3 player in the Sirius XM line. The device records up to 100 hours of live XM programming including 10 hours of songs, and gives users the ability to pause, rewind and replay up to 30 minutes of satellite radio. With an optional kit, users can enjoy satellite radio through a vehicle's FM radio. Xmp3i will list for \$229.95.

— The Bluetooth Special Interest Group chose apt-X Creative Inspire S2 Wireless Speakers as the winner of its 5th Annual Best of CES 2010 Awards, an event to highlight Bluetooth-enabled products. The group said the products exemplified functionality, innovative design and a user-friendly experience.

— CEA had been estimating 110,000 attendance prior to the show, compared to 113,000 from 2009. However CEA President/CEO Gary Shapiro said total attendance was more than 120,000.



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FCC Order Lays Out the Steps

Also Specifies Your Options if You Get Hit by New Digital Interference

BY LESLIE STIMSON

The FCC order allowing an FM IBOC power increase (see page 4) outlines how a station can determine whether it can increase its digital power and by how much; it also sets out interference remediation procedures.

Most stations are covered by the blanket increase of 6 dB, to 14 decibels below carrier. (Super-powered FMs are an exception; see below.) To increase FM digital effective radiated power beyond that, a station would need to submit an application to the Media Bureau.

The bureau said its experience with higher-powered digital experimental authorizations suggests that the formula developed by NPR and endorsed by iBiquity in their compromise agreement is "over-predictive of the potential for interference." However the bureau will use that formula because it believes "the protection this methodology provides to first-adjacent channel stations can be used to establish an expeditious 'go-no go' mechanism."

Stations that want to raise their FM digital power beyond 6 dB must calculate the station's analog F(50,10) field strength at all points on the protected 60 dBu F(50,50) contour of a potentially affected first-adjacent channel analog FM station. This calculation must be done using the station's licensed analog

| Proponent Analog F(50,10) Field Strength at Protected Analog 60 dBu F(50,50) Contour | Maximum Permissible FM Digital ERP |
|--|------------------------------------|
| 51.2 dB μ and above | -14 dBc |
| 50.7 dB μ - 51.1 dB μ | -13 dBc |
| 50.3 dB μ - 50.6 dB μ | -12 dBc |
| 49.6 dB μ - 50.2 dB μ | -11 dBc |
| 49.5 dB μ or less | -10 dBc |

Before applying for digital power beyond the -14 dBc just approved for most FMs, you must calculate your analog field strength along the protected 60 dBu contour of a potentially affected first-adjacent analog FM. Once you determine the most restrictive analog field strength of your station, use this table to determine your maximum permissible FM digital ERP. Where this method is not applicable, the FCC will evaluate case by case.

facilities and the standard FCC contour prediction methodology. Once the most restrictive analog F(50,10) field strength of the proponent station has been determined, the licensee will use a table, shown, to determine the proponent station's maximum permissible FM digital ERP.

In situations where this simple method isn't applicable because of unusual terrain, environmental or technical considerations, or when the method produces anomalous results, the Media Bureau will accept applications for FM digital ERP in excess of -14 dBc but these must include a detailed showing containing an explanation of the prediction methodology used as well as data, maps

and sample calculations. The bureau will evaluate these applications on a case-by-case basis.

"Super-powered" FMs are treated separately in the order. The FCC went beyond the compromise recommendation and restricted all superpowers, not just Class Bs, from the blanket hike. It

also noted that less than 2 percent of the approximately 9,600 licensed FM stations are super-powered.

FM digital ERP for such stations will be limited to the higher of either the current -20 dBc level, or 10 dB below the maximum analog power that would be authorized for the station's class, adjusted for antenna height above average terrain.

Super-powered FMs must file an informal request for any increase in digital ERP.

INTERFERENCE REMEDIATION

Also in its order, the Media Bureau said it anticipates that widespread FM IBOC power increases "will provide valuable coverage and interference data that will be useful in developing a prediction methodology. We are convinced

A complaint must contain at least six reports of ongoing, rather than transitory, objectionable interference.

that it is imperative for us to implement a power increase promptly and that the record establishes that the digital power limits set forth in this order will provide the necessary protection to analog FM stations."

However, it continued, "out of an abundance of caution" it is adopting interference remediation procedures to address instances of loss of analog service within a full-service FM's protected contour.

In cases of alleged interference, the FCC will look for sustained and verifiable instances. If a full-service analog FM is receiving verifiable listener complaints of interference within its protected contour from digital FMs operating at higher than -20 dBc, the affected station should contact the interferor. The stations should try to resolve the issue by first verifying interference and trying to eliminate it by lowering the digital power of the interfering station by degrees. Both stations must agree how much to reduce the digital power; then the interferor needs to notify the FCC of the lowered digital ERP.

If the stations cannot agree, the affected licensee may file a complaint with the Media Bureau.

In their compromise agreement, iBiquity Digital and NPR had proposed that at least three interference reports would have to be received before station could

(continued on page 14)



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POWER

(continued from page 4)

limits will protect analog FMs properly. But it rejected arguments that *all* stations should be allowed a blanket 10 dB increase, that the “structured increase” compromise is cumbersome or that grandfathered, super-powered stations should also enjoy a blanket increase.

As I write, the FCC order is awaiting regulatory paperwork to take effect; but stations can request an STA to raise power if they don't wish to wait. Once the order takes effect, eligible FMs can make the increase in digital power up to -14 dBc and must notify the Media Bureau within 10 days using a form in the CDBS filing system.

In considering this decision, the commission heard suggestions that it approve or reject a digital power hike flat-out. It heard backing as well for incremental or limited approaches. It should decide case by case, some people argued, or on the basis of minimum distance separation or contour protection standards.

Some commenters talked about the potential of using asymmetrical side-band power levels to limit the impact on first-adjacent analog stations or of using single-frequency networks and synchronous boosters to improve FM digital coverage instead of hiking digital power. Again, these are all issues familiar to Radio World readers.

The commission ultimately set up a mechanism for a station to seek an increase beyond the blanket 6 dB; and it established a formula to determine maximum allowable FM digital ERP, following the idea proposed by NPR. (See page 10.)

If anything, the formula is conservative, but the commission feels the resulting protection to first-adjacent stations lets it set up “an expeditious ‘go-no go’ mechanism for many FM stations to obtain significant digital power in excess of the 6 dB for which most stations will qualify.”

The commission was not swayed by arguments that it should set up protection rights for low-power FMs, despite the possible impact of HD Radio signals on nearby LPFMs.

“Adoption of these recommendations would constitute a dramatic change in LPFM licensing rules and the relation-

ship between LPFM and full-service stations,” it decided. Because analog LPFMs and FM translators are secondary services, they are not entitled to protection from existing full-service analog FMs.

“One aspect of secondary service licensing would make this change particularly problematic,” the Media Bureau continued. The rules now permit

The FCC and digital broadcasters need to make sure cases of interference are handled quickly and fairly.

LPFM stations (unlike others) to operate at locations where they may receive interference from other stations. “The ability to ‘accept’ received interference is enormously beneficial to the LPFM service, providing greater flexibility in choosing transmitter sites and, in many instances, permitting the licensing of stations that would not be possible under full-service rules.”

If LPFMs operate at “substandard spacings,” the commission said, it's because of voluntary decisions they made to accept interference.

“Out of an abundance of caution,” the FCC also adopted steps to deal with interference resulting from the digital power hike, as Leslie Stimson reports on page 10.

The FCC promises that action on valid complaints will be relatively swift. Notably, if the FCC doesn't respond right away to your legitimate interference complaint, your station can demand that the other guy back the digital power down — and you presumably can expect the commission's support until the matter is decided officially.

None of this affects digital AM stations. The FCC made no mention of AM IBOC, an entirely separate ball of wax with its low penetration and history of interference concerns.

Given the whole IBOC debate and HD Radio's relative lack of uptake by smaller broadcasters, I also was interested in a note I spotted among the “small print” language in the order regarding the possible impact of the FCC decision on small entities:

“We acknowledge that an argument could be made by smaller entities that they could face an unacceptable disproportionate burden because of a comparative lack of capital and other resources. This argument suggests that the adopted rule changes place smaller entities at

a resultant disadvantage in relation to larger entities.

“However,” the commission staff stated, “we reject such an argument because allowing such voluntary upgrades will ultimately provide: (1) improved digital coverage; (2) the advancement of digital radio technology; (3) increased listenership; (4) greater regulatory certainty; (5) flexibility to licensees in the tim-

ing and scope of the rollout of their digital radio services; and (6) the facilitation of informed decisions regarding equipment purchases that will best serve licensees' needs. Allowing licensees to voluntarily increase their digital ERP will, in the long run, prove to impose a lesser burden on smaller entities than alternative measures, such as making digital power increases compulsory or prohibiting increases altogether.”

Last, the commission left itself an out: “We believe that the FM digital ERP increase and the FM digital interference remediation procedures that we are adopting will not result in numerous or non-resolvable cases of objectionable interference to analog FM stations. Nonetheless, if implementation of the adopted increases in FM digital ERP results in a widespread level of interference to existing analog FM stations that we deem unacceptable, we will promptly revisit the maximum permissible FM digital ERP values in the future.”

In all, I feel the FCC took a moderate path here and acted wisely.

The outcome also further demonstrates how influential the work of NPR Labs has become within engineering and regulatory circles in the few years since it was created. When I hailed NPR and Mike Starling at the time for developing that concept, I could not have imagined a better example of the salutary role of an engineering-based radio broadcast R&D organization. Witness how NPR Labs has helped mold what might otherwise have been a flat-out rush to approve an unlimited 10-fold digital power hike.

I do hope that while celebrating their “win” and spinning up their power dials, HD Radio backers pause to acknowledge that strong anti-IBOC feelings remain in the marketplace, and that

many good, well-intended, intelligent broadcasters remain worried about interference despite the confident language from proponents and the FCC.

Some broadcasters frankly also feel steamrolled by what they view as a digital radio bandwagon driven by big forces beyond their reach or control. That's unfortunate; industry engineers and executives who have worked in good faith to build a success out of IBOC understandably feel that such sentiments are grossly unfair. But I'm here to tell you, for some broadcasters that taste, fair or not, is bitter and long-lasting.



So the worst thing that could happen now would be for valid interference complaints to end up in a bureaucracy, for the remediation steps laid out by the FCC to end up as window dressing.

HD Radio proponents got what they wanted when they won FCC approval of the system as a de facto standard, at the digital injection levels they requested. They later won approval to use their extended hybrid mode. Now they've won approval to crank up the power dial a lot. They have been given, and have earned, remarkable support from our nation's regulators.

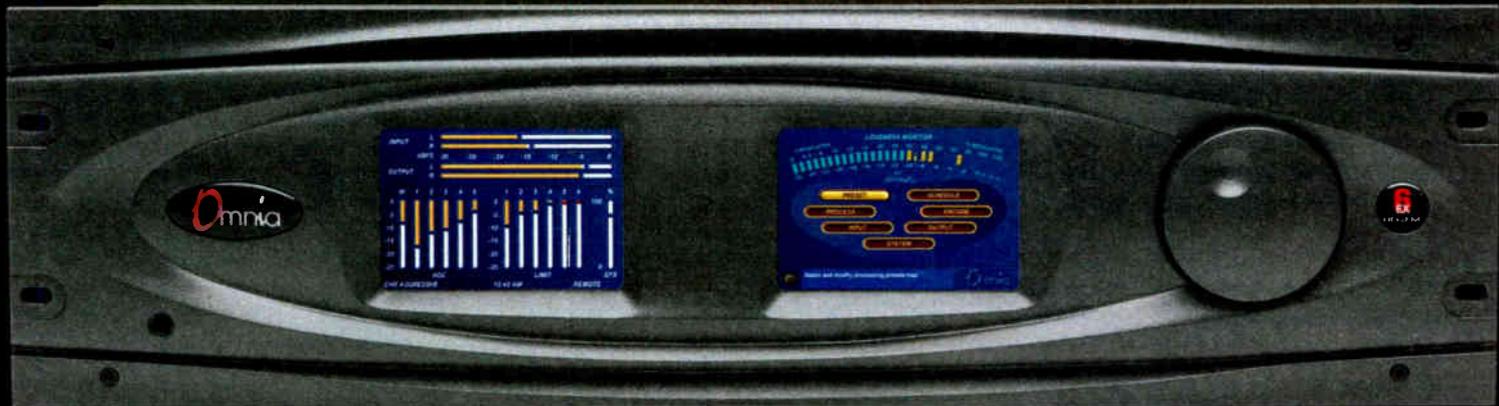
Now both the FCC and digital broadcasters need to make sure cases of interference are handled quickly and fairly. I'm dubious that the commission can respond fast to interference complaints — this is an organization that sometimes takes years to issue decisions in public file cases — though I appreciate the good intentions and its recent attempts at being more responsive.

And we'd better hope the FCC is serious about being ready to revisit this power hike if it suddenly starts hearing about widespread interference to existing analog FM stations. The day has not yet come when digital FM has earned priority over analog.

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STEPS

(continued from page 10)

seek recourse to the FCC; the commission increased that minimum to six, citing the effects of varying terrain, tall buildings and other FM.

So in order to be considered by the bureau, a complaint must contain at least six reports of ongoing, rather than transitory, objectionable interference. For each interference report, the affected FM must submit a map showing the location of the reported interference and a detailed description of the nature and

extent of the interference being experienced at that location. The FCC also said it needs a complete description of the tests and equipment used to identify the alleged interference as well as the scope of the unsuccessful efforts to resolve the interference.

Interference reports at locations outside a station's protected analog contour will not be considered.

The Media Bureau will review each complaint and "order appropriate action" by the interferer within 90 days of the date on which a "complete and sufficient complaint" has been filed (this is as

recommended by iBiquity and NPR). If the bureau doesn't act within 90 days, the interfering station must immediately reduce its FM digital power.

In those cases, stations operating with FM digital ERP in excess of -14 dBc must immediately reduce to -14 dBc. If ongoing complaints of objectionable interference persist, the FCC may require subsequent 3 dB reductions to -17 and -20 dBc, respectively, until it acts on the pending complaint.

Stations operating with -14 dBc or less must immediately reduce to -17 dBc. If interference complaints persist,

the bureau will order the station to reduce to -20 dBc and require it to remain there until the bureau acts on the complaint.

And while it believes its procedures won't result in "numerous or non-resolvable interference cases," the FCC stated that if increased power results in "a widespread level of interference to existing analog FM stations that we deem unacceptable," it will revisit the maximum permissible values.

NEWSROUNDUP

IPAD LAUNCH: Apple's newest product, the iPad, promises to let consumers browse the Web, manage e-mail, look at pix and watch videos, listen to music, play games and read e-books. It is "thinner and lighter than any laptop or netbook" and works by touch. The basic version comes with Wi-Fi; it will be available in March and list for \$499 for the 16 GB model, \$599 for 32 GB and \$699 for 64 GB model.

JIM QUELLO: Former Federal Communications Commissioner Jim Quello died in January of heart and kidney failure at the age of 95. The Democrat was a Nixon appointee who served at the commission from 1974 to 1997 and was interim chairman for a year in 1993. The NAB board passed a resolution stating: "NAB is grateful for Jim Quello's unwavering support for free and local broadcasting and applaud his bipartisan approach to public policy debates. We have lost a true friend."

RADIO SHOW: The fall NAB Radio Show will be at the Grand Hyatt in Washington.

SAFE DRIVING: In addition to the resolution about Quello, NAB board members pledged to work with the federal government and private sector to promote and encourage safe driving practices. "NAB believes that text messaging on portable devices while driving is incompatible with safe driving," it stated.

BE SOLD: Broadcast Electronics has a new majority owner. President/CEO Joseph Roark said GE Capital, the lead bank among BE's investors, sold its debt position for cash to FirstCity Crestone, a private equity firm that has "deep experience with corporate restructuring and distressed debt," according to its Web site. Price was undisclosed. Though the acquiring private equity company specializes in special situations, BE's chief executive said the 51-year-old company sees itself in a strong position due to the sale.

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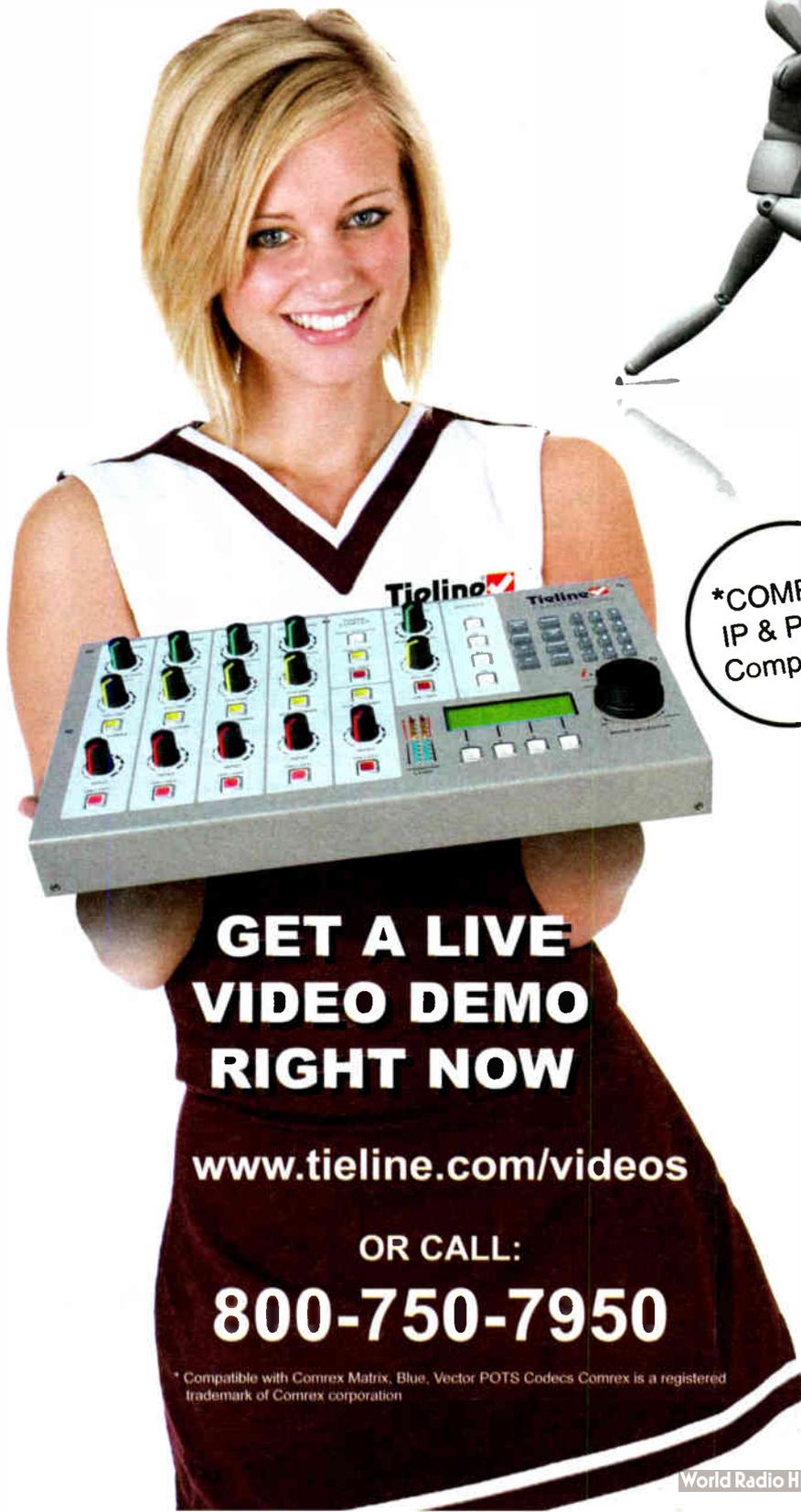


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WORKBENCH

by John Bisset

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Richard Wood is with Resonant Results Ltd. in Wisconsin. Take a look at a site he visited, shown in Fig. 1, and comment on how well it conforms to good engineering practice.

I'll come back to this image in a moment.

Ira Wilner is a principal with Wilner Associates, a broadcast engineering and technical services company here in the Northeast.

After seeing pictures of burned contacts in the Dec. 16 *Workbench*, Ira offered tips for wiring antenna switch interlocks.

Simply wiring the switch interlocks to the transmitter external interlock circuitry may not prevent hot switching damage completely.

Unfortunately, the interlock micro-switches in most RF switches typically do not operate until the RF contacts have started to move.

Some movement of the RF contacts while energized will not result in a catastrophic arc-over but will cause avoidable contact wear and pitting, which, over time, could result in disastrous failure.

The best way to prevent accidental hot switching is to automate the process.

There are two methods. The first is to use the remote control system macros to sequence the changeover by first shutting off the transmitter(s). Then incorporate time delays to permit the RF to decay fully to zero before giving the switch a command to move. Finally, delay the restart of the RF carrier long enough to permit the switch contacts to settle down.



Fig. 1: Test your knowledge. How well does this site conform to good engineering practices?

An alternative is to use an intelligent standalone antenna switch controller such as those made by Tunwall Radio, Dielectric or Kintronic Labs. A Dielectric dual controller is shown in Fig. 2. These panels have this sequence of events built in and will prevent hot switching when wired properly.

Finally, Ira says be careful with new switch installations. He has seen misaligned limit switches cause the controllers and motor drives to hunt! The additional motion might not be healthy when the switch is again carrying RF power.

Drop by Ira's Web site for another interesting dis-

cussion on improving FM reception. The site is www.wilnerassociates.com. Ira can be reached at bdcst@vermontel.net.

Ira's comments about RF transfer switches weren't the only replies I received to our Dec. 16 column.

More than one engineer speculated about the identity of the transmitter site shown in the photo of an air hood placed over the transmitter to exhaust the rig.

Longtime engineer Milton Holliday started the line of questions as to whether that site was WLW(AM). Actually, the transmitter site we depicted is the home of Bonneville's WFED(AM), Federal News Radio 1500, the former WTOP(AM), in Washington, where Dave Garner is director of engineering.

Those older transmitters really do catch your eye!

Got an oldie but goodie? Snap a high-resolution picture and e-mail it to me with the particulars. My address is johnbisset@myfairpoint.net. It just might show up in a future column.

So with reference to Fig. 1, how many things did you spot that could have been done right the first time?

Let's start with the location of the nitrogen tanks right by the front door — next to the light switch, no



Fig. 2: A 'smart' antenna controller, properly wired, ensures against damage caused by hot switching.

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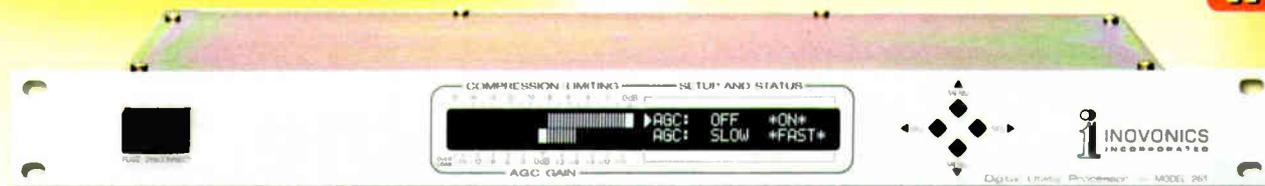
The 261 can tame a mic channel, normalize levels between

music and voice tracks, protect an STL, and give yeoman's service as a standalone LPFM processor. Basic processing parameters are adjustable through quick and easy menu-driven setup, yet not to an extent that will ever get you into trouble. The 261 just can't be made to sound bad.

The 261 accepts analog or digital inputs, and both analog and digital outputs are available simultaneously. Its

straightforward DSP design uses processing algorithms that are sonically colorless. Front-panel alarms and rear-panel tallies give warnings of dead-air and out-of-limits operation, and firmware updates are easily installed in the field.

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less. This is a safety concern; arriving late at night, in a hurry, you easily could knock a tank over while reaching for the switch.

These tanks need to be secured properly to the wall. Remember, the gas is under extreme pressure. Knock a bottle over, snap off the regulator and you have a rocket in your building.

The nitrogen line is run in a haphazard way, another accident waiting to happen. Secure the tanks and then secure the poly tubing feeding your manifold or coax line.

In my opinion, a manufacturer should slope the top of a transformer so users aren't tempted to turn it into a shelf, like the step-down unit in this picture.

I am reminded of a story I heard years ago about an engineer who had to get to the top of his transmitter. He used the flat top of an externally mounted high-voltage transformer as a stepladder. Unfortunately the hot AC terminals were right under the flimsy sheet-metal top and were pointing up. The top couldn't support his weight, and he was electrocuted.

Not a pretty thought. Be mindful.

That piece of equipment in the rack atop the transformer is the strobe light controller. "Of course these were designed to be cooked on top of a transformer!" Bad idea.

If there's no room for a stand-alone rack, look into the selection of wall-mount racks at a source like *rack-mounts.com*, Middle Atlantic Products or your preferred broadcast equipment dealer.

Someone did take time to do some things right here; take a close look at other things in the room, like the disconnects and conduit runs.

However, the absence of labels on the breaker boxes isn't wise. You may think it's obvious that the breaker goes to the transformer; but in an emergency, you or someone else may not have time to try to trace electrical conduit to the appropriate box.

On the positive side, the floor does look clean; and it's smart to keep a bottle of Formula 409 or similar brand cleaner handy to check for leaks.

Did you spot other practices, good or bad? Drop a note to johnbisset@myfairpoint.net.

Richard Wood can be reached at rwoodsky@verizon.net.

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

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

MARKETPLACE

ERI OFFERS AXIOM MASTER FM

Electronics Research Inc. recently issued a new version of its Axiom Master FM Antenna.

This four-bay side-mounted antenna covers the entire FM band and is intended for use as a multiplexed master FM antenna or as an auxiliary FM antenna for multiple stations in single market, it stated.

ERI says the antenna is cost-effective, lightweight and presents a low area to the wind. It can cover the FM band (88 to 108 MHz) and is available in configurations capable of handling RF power input levels from 39 kW to 112 kW. It can accommodate single-channel operation or multiplexed signals.

Shown is an Axiom antenna owned by American Tower in Miami.

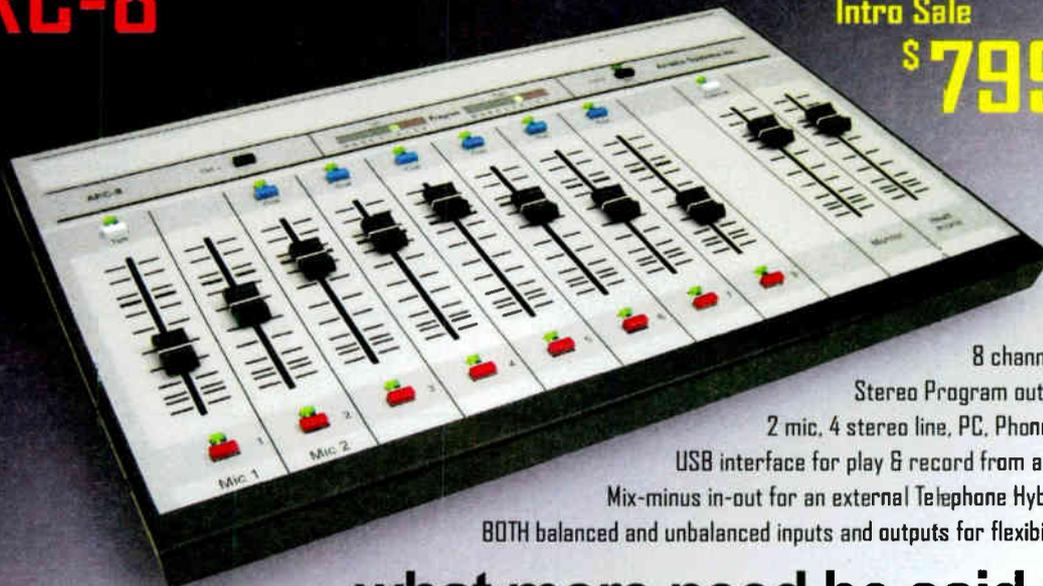
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PowerStation: the new console system from Axia.



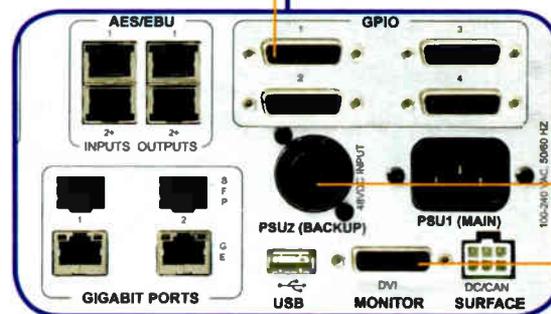
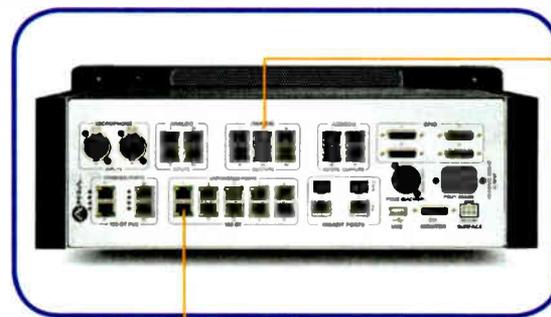
Because there's no such thing as too much uptime.

All stops removed • Twenty years from now, you'll have forgotten this ad. But you'll still have your PowerStation, the full-featured one-box IP-Audio console/router system hardened with **industrial-grade components** and redundant power capabilities. Tough enough to take a football to the groin and keep on going. PowerStation **minimizes setup** and **maximizes "bang for the buck."** Engineered without compromise for broadcasting without interruption.

Easy as π • PowerStation combines a console DSP engine with audio and logic and a network switch, **all in one box**. As its name implies, there's a whole lot o' muscle inside that burly frame, but that doesn't mean it's complicated. In fact, setting up PowerStation **couldn't be easier**: connect your studio gear with standard CAT-5 cables, connect your console with just one cable, name your sources and set preferences with a browser, and you're ready to rock. PowerStation makes building studios about 3.14 times easier than ever.

GPI Oh! • **GPIO ports are built in** to PowerStation — no breakout boxes or add-on converters needed. One day, you might not even *need* logic ports: more and more products from companies like 25-Seven Systems, Audio Science, ENCO, Google Radio Automation, International Datacasting, Omnia Audio, Radio Systems and Telos (to name just a few) use the Livewire™ standard to send their audio and logic control directly to Axia networks over a **single CAT-5 connection**.

Everything's included • Yeah, we said *everything*: PowerStation combines half-a-dozen essential tools into one compact unit. No hidden extras to buy, no "gotchas" after purchase. Inside that muscular chassis you'll find a **bulletproof mixing engine** capable of handling consoles up to 40 faders, a beefy power supply (with optional **redundant power**), machine control ports, and **audio I/O**, all in one box. And of course, since it's from Axia, the IP-Audio experts, a studio built with PowerStation can stand alone — or it can become a part of a large network quite easily. Thanks to **PowerStation Simple Networking**, you can daisy-chain up to 4 PowerStations directly for easy multi-studio installation without the need for a separate core switch. Just another way Axia makes IP-Audio easy.



E-I-E I/O • Finding space in the equipment racks is like living in a barnyard: too many chickens, never enough coops. So our team of obsessive designers fit **an entire studio's worth of inputs, outputs, logic and network connections** — plus an advanced DSP mixing engine and a massive console power supply — into just 4 RU. There's inputs for 2 mics, 4 analog inputs and 2 AES/EBU inputs, with 6 analog and 2 AES outputs. 4 GPI/O logic ports round things out. Want even more? Just connect the PowerStation Aux to instantly *double* the I/O — or plug some Axia Audio Nodes into its **built-in Ethernet switch**.

Fan free • PowerStation is **silent and fanless**. Because studios today are already full of PCs, laptops and playout servers clicking, whirring and generating heat — who needs more of that? Not only is there no in-studio noise with PowerStation, those **big extruded heat sinks** are just plain cool. No pun intended (or maybe it was. We're like that, you know).

Built like a tank • Remember when consoles were built to last? We do. At Axia, we're all about the long haul. **There are no compromises**: PowerStation uses only best-of-the-best components. Like studio-grade Mic preamps and A/D converters. A rigid, steel-framed, EM-tight chassis that shrugs off RF like Walter Payton brushing off tackles. An industrial CPU designed for high reliability in harsh environments. Beefy extruded heat sinks. Big, brawny handles to make rack-mounting easy. (And it looks cool, too.)

Redundant power redundancy • The power supply is the heart of any broadcast equipment, right? That's why PowerStation is **hardened against failure** with a **super-duty power supply** that sports enough amps to power an arc welder. And for those of you who like to wear a belt *and* suspenders, there's even a connection for **redundant auxiliary backup power** — with automatic switchover, naturally — that kicks in if it's ever needed.

Screen play • Yep, that's a DVI connector. **Your favorite monitor** — standard or widescreen — plugs in to present the console operator with Axia's "so easy an overnight jock could do it" **info-center display**. Meters, timers, fader assignments, mix-minus settings and more, all on-screen, on-demand.

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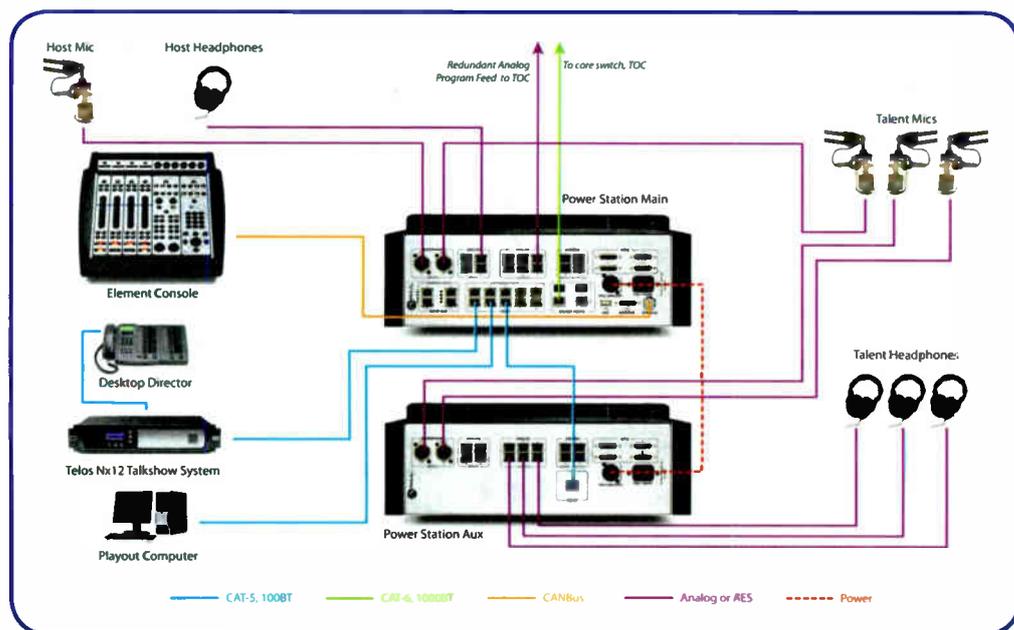
Axia has the most comprehensive warranty in the industry — **5 years parts and service**. And (not that you'll need it), **free 24/7 technical support**, 365-days-a-year. We've got your back, my friend.





Element 2.0 • With more than 1,000 consoles already on the air, Element is a huge hit. And now, thanks to suggestions from our clients, it's better than ever. Element 2.0 has cool features like Omnia™ **headphone processing** presets to give talent that “air sound”, **super-accurate metering** with both peak and average displays, **one-touch phone recording** with automatic split-channel feed, **automatic mix-minus** for every fader, an eight-channel **Virtual Mixer** that lets you combine multiple audio streams and control them with a single fader, and metallic bronze or silver module overlays. And we haven't even begun to tell you about Element's **Show Profiles** that instantly recall talent's favorite settings, its **built-in Telco controls**, fully-integrated **talkback/IFB** and **Mic processing** by Omnia. And durable? Element is nearly indestructible, ready to take whatever pounding ham-fisted jocks dish out and keep going. You want examples? Element's **avionics-grade switches** are rated for more than two million operations. What look like ordinary rotary controls are, in reality, **bullet-proof optical encoders** — no wipers to wear out or get noisy. The silky-smooth **conductive-plastic faders** actuate from the side, not the top, so dirt and grunge stay out. The **high-impact Lexan** module overlays have their color and printing applied on the back, where it **can't wear or chip off**. The frame is made from **thick aluminum extrusions** that are stronger than truck-stop coffee. To find out even more about Element, visit AxiaAudio.com/Element/. Grab some coffee and prep for a good, long read — remember, our marketers get paid by the word.

Come together, right now • Now that you know what you can do with PowerStation, let's build a studio. The diagram below shows how a typical Talk Studio might look. Mics and headphone feeds plug into the built-in Mic inputs and Analog outputs... your playout PC, using the **Axia IP-Audio Driver** for Windows®, connects to a built-in Ethernet port... and so does the Telos Nx12 Talkshow System (which sends 12 lines of caller audio, mix-minus and take/drop/next commands over **one skinny CAT-5 cable**). Send a **backup audio feed** to your TOC for extra peace of mind. And after all that, there's still plenty of I/O left to plug in the turntables for the Saturday night Oldies show.



The standalone network • You want your console to be more than just reliable — you want it **built like a battleship**. You want the absolute peace of mind that comes from knowing your gear will **never let you down**. And if you take one studio down for maintenance, you want the rest to be completely unaffected. So we designed the **first networked broadcast console that doesn't need a network**. It plays nice with others, but unplugs itself from the network when you need it. At any pace you choose.

Note to people planning studios:
 Have you read the new book **Audio Over IP: Building Pro AolP Studios with Livewire** by Steve Church and Skip Pizzi? If not... Axia can save you 30% when you purchase a copy. Just visit AxiaAudio.com/book/



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Com One Phoenix Still Impresses

At \$149, It's an Affordable Way To get Into Internet Radio

BY JAMES CARELESS

The Com One Phoenix Wi-Fi Radio is available for just \$149. By Internet radio standards, it's a steal worth considering, even now three years after the model was introduced.

INTERNET RADIO

Com One was purchased several years back by French company Baracoda Media, which is active in Bluetooth barcode scanning and RFID products. The Web site that supports the Phoenix is <http://wifi-radio.biz>.

NUTS AND BOLTS

The Com One Phoenix I tested was an all-white model encased in a L-shaped plastic shell. (I have seen them sold on the Web in black cases as well.)

Functionally, this is a simple device: The angled flat front features a basic monochrome LCD screen, flanked on

each side by a 1.5-inch speaker. Below the LCD screen, on the left, is an iPod-style "Navigation Pad" with four directional arrows and a center push button; these support various functions such as Pause, Go Forward, Go Back and so forth.

On the other side is a volume knob that — wait for it — actually controls the volume! (So few Internet radios have this feature.) Underneath all of this on the front are eight buttons for Presets, plus a Home button and a Bookmark button; the latter marked with a heart and music notes.

On the back of the Phoenix, you'll find a power connector for the included AC adaptor, an Audio Out mini jack, a Reset button and a USB connector for accessing music stored on a USB stick of FAT32 format hard drive. The radio also comes with four rechargeable AA batteries inside. These charge automatically, although the little door that holds them in place has a tendency to pop off.

The Phoenix connects to your home network by wireless only; there is no



An image from the company's Web site.

Ethernet port on this unit. That said, the setup for entering the WEP password is relatively user-friendly and fast; much better than some other radios I've tested.

The audio, as you might expect, is not that great given its diminutive speakers. It's much better heard through quality headsets or when ported into a stereo system. The lack of a remote control is a bit of a nuisance; the saving grace being that drilling down using the Navigation Pad is quick and easy.

Operationally, the Phoenix uses a series of menus to let you listen to Internet radio stations, podcasts, music stored on your PC, or any "Other Services" (their words) that you may have access to. In the Internet Radio section, the radio first lets you choose either the Location or Genre of music you want, then takes you further into a list of stations you can choose from. One nice feature is that the Phoenix lets you designate your "local market" — i.e., city — and then provides fast access to all the streaming stations from that location.

Like many Internet radios, the Phoenix comes with clock alarm features. But that's not all: This radio will let you specify which language you wish to work in (English or French); how fast you scroll through the pages, the contrast/brightness of the backlight, and view the unit's serial number.

This serial number can be used at <http://wifi-radio.biz> to establish a unique identity for your Phoenix. Once you register it at this site, you can customize the offerings received by this radio. You customize your station list on the Web; then your Phoenix radio accesses the updated list the next time you use it.

This is a "good thing" because compared to other Internet radios like the CCrane CC Wi-Fi Radio, Logitech Squeezebox Boom, Sangean WR-1, Tangent Quattro or the Tivoli Audio NetWorks, the Com One Phoenix's

default lineup of Internet stations is relatively sparse.

Compared to other, more expensive Internet radios, the Com One Phoenix looks a bit cheap and plasticky. This is not surprising: Its "retro styling" (the company's words) hearkens to a time at the turn of the century, when Internet technology was supposed to look futuristic. In comparison, today's wood-and-metal Internet radios generally are crafted to look like high-end AM/FM receivers.

Although I like the classic appearance of these radios, I also appreciate the simple honest functionality of the Phoenix. This is a radio that, once you study its features, is actually simple to figure out. Navigating through its many menus is intuitive, and the Phoenix grabs incoming audio streams with alacrity.

The fact that the Phoenix comes with rechargeable batteries (and a built-in recharger) means that this is a truly portable Wi-Fi radio ... as long as you are within range of your home wireless network! (Theoretically, the Phoenix should be able to operate anywhere where it can get access to an unprotected Wi-Fi connection.) To see just how useful this feature is, I unplugged my Phoenix from its AC adaptor, then walked throughout my house and then into the backyard. Listening carefully through my headsets, I did not hear a single dropout as I monitored Beethoven.com. There was also no disruption at all when I plugged the adaptor back in. Impressive.

Worth noting: The Phoenix's Web site says that it has access to 7,000 stations online. In contrast, Internet radios using the popular Reciva system (such as the Tangent Quattro) can access around 17,000 radio stations on the Web, plus many more online audio streams.

Will this affect you? The only way to know is to look at the stations offered at <http://wifi-radio.biz> and see if they have what you like; bearing in mind that this site will let you add station URLs once you've signed up.

VERDICT

The Com One Phoenix is not as pretty as its competition, nor does it come with remote controls or high-quality speakers. But at \$149, the Phoenix is a solid performer that tunes Internet radio stations accurately, easily and reliably. With good headsets, I am hard-pressed to find any audio difference between this unit and more expensive receivers. Pluses include this unit's portability, and the car-style preset buttons on the front.

For those wanting to break into Internet radio on a budget, I recommend the Com One Phoenix. You can find it online at <http://wifi-radio.biz>.

James Careless has written hundreds of articles for *Radio World*, including many about Internet and shortwave radio.

MARKETPLACE

JUMP2GO RAMPS UP TAGGING OFFERINGS

Allen Hartle, a proponent of both RDS and tagging as tools to help stations generate revenue, is promoting his next generation of "datacasting" tools.

The RadioTag Plus radio tagging system is Jump2Go's offering to help a station interact with its audience via iTunes and Zune tagging.

"With iTunes Tagging-capable radio receivers such as the new iPod Nano, listeners simply press a button to save information about the songs they hear and like — no pen or paper required," it states. "The iPod Nano stores the song information and when the iPod syncs to a computer, iTunes builds a tagged playlist so listeners can preview, buy and download those songs."

Stations can earn commissions on songs sold; each song that a station refers to an iTunes Tagged playlist qualifies for a commission, paid if the customer purchases the song.

Jump2Go sells a box, the JumpGate, that comes with one or three serial ports and an Ethernet connection. It runs an RDS application and talks to automation systems, iTunes and Jump2Go's data center. It processes RDS song tagging, tags

commercials, generates RT+ and interfaces with Ando ad insertion and streaming audio encoders.

"Say goodbye to .ini files, e-mailing config files to vendors and standing in a noisy rack room for hours on end," the company states. Hartle says more than 600 radio stations in the United States and Europe broadcast the Jump2Go tagging protocol to enable iTunes and Zune tagging.

The new RTmessenger uses RT+ to create content-specific presentations; Jump2Go says this can power up the way stations use RDS and HD Radio text displays. "Now that it's possible to have unique messages for every song, ad and day-parted general station message, your sales department will waste no time capitalizing upon ways to monetize these new information streams."

Stations can charge advertisers a premium and have specific text messages display when their ad plays, or sell a block of messages that play during a daypart. "You can even sell a message that will play a specific number of times and then expire."

The tagging system and the message creation tool that helps monetize it are sold in the United States by Broadcast Supply Worldwide.

For information contact the company in Washington state at (425) 641-9043 or visit www.jump2go.com/.

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Fertilize Growth, Don't Subsidize It

A Christian Radio Leader Looks Back at Year One of the Obama Administration

BY CRAIG JOHNSTON

A year ago, just prior to the inauguration of President Barack Obama, Radio World asked Craig Parshall, senior vice president and general counsel of the National Religious Broadcasters, about the incoming administration. He described NRB's attitude at the time as "cautiously observant."

On the cusp of NRB's annual convention in Nashville, we asked again. Parshall says many of the organization's fears have been realized after the first year of Obama's term.

"We have been surprised, if not shocked, about the degree of federalization that has been brought to bear on so many avenues impacting the media."

Parshall pointed in particular to the Federal Communications Commission, which has a Democratic majority and a new chairman in Julius Genachowski.

NRB President/CEO Frank Wright, Vice President of Government Relations Bob Powers and Parshall have met with Genachowski and his staff.

"I was very interested with how carefully he listened, how well he understood a lot of the technical aspects of the issues, and that he is at the vanguard of some monumental changes in media and media control from a regulatory standpoint," Parshall said of the chairman.

NRB is watching the commission's staff appointments and initiatives. As one

example, Parshall cites FCC Associate General Counsel and Chief Diversity Officer Mark Lloyd, a focus of controversy for some FCC critics. NRB is among those who describe Lloyd as "diversity czar."

"A lot of the folks who are being appointed are coming from an academic background," he said. "Mr. Lloyd was from the Center for American Progress, he was a scholar over there." CAP is a progressive think tank.

When an academic goes to work for a regulator, Parshall said, "They usually come with a very firm theoretical outlook on what the media ought to look like, and then they feel like the federal government is the way to bring that to bear."

WHAT GOVERNMENT DOES WORST

Parshall offered examples, beginning with attempts to stem a decline in journalism standards.

"The federal government — and by that I mean the FCC and the Federal Trade Commission — have both said that, come spring of 2010, they're going to get together and figure out how to solve the decline in journalism standards.

"And as I understand it, they're going to be looking not only at the economic problems behind print newspapers,

which are beginning to disappear, but also how to imbue higher and better journalism standards among media outlets. And the federal government's going to have a role in this."

Is there a legitimate role for government in this arena?

"I think what we need to do is have a conversation between the federal government and media on how the government can facilitate, but get out of the way of, the growth of media — rather than coming in and saying, 'We'll be another form of bailout for you, we'll set standards, we'll have a new level of governance over media, we'll define journalism standards and figure out how to fix it.'

"That is what the government does least best of all."

Parshall thinks the best step the federal government can take is "to figure out how to fertilize the growth, rather than subsidize the growth. And that's a big difference."

NO 'FAIRNESS'

One item on NRB's watch list a year ago was speculation that Democratic leaders would seek to reinstitute the Fairness Doctrine. Parshall credits NRB, the National Association of Broadcasters and media talk shows with pushing that discussion out of political favor.

Two years ago, he said, two thirds of the public supported reinstatement of the



Craig Parshall, shown speaking on Capitol Hill.

NRB IN NASHVILLE

NRB 2010 will be held in Nashville Feb. 27–March 2 at the Gaylord Opryland Resort & Convention Center.

Dave Keith, vice president of operations for the organization, said Christian media professionals need to stay engaged, "not only to advance their own work and ministry but to also share the burden of defending our



rights to speak freely and openly about the gospel of Jesus Christ to a generation in desperate need of answers."

Among events of note are Saturday Boot Camps on Feb. 27 that focus on radio, television, Internet, church media, leadership and international issues. The radio Boot Camp includes a discussion of raising money for ministries through digital media with lessons from the Obama campaign, and another on tips for coaching air talent. The Internet Boot Camp explores topics like how ministries can use mobile devices like iPhones and Android to communicate their message, and the role of Twitter and Facebook.

NRB is launching an "International Exchange" on Feb. 28. The concept is to pull together people who may be ministering in certain regions, such as the Middle East, with others interested in those areas. Tuesday morning's Innovation Exchange is similar but broken down by industry groups, such as Internet, radio, TV, etc., rather than region.

The "Broadcast Essentials" track on March 1 includes discussions about online evangelism, pornography, search engines and media relations; what the Dave Ramsey organization is doing with social media and radio; crisis communication; how the Web can "save and empower" a ministry; funding broadcast ministries; things to know to direct a worship service; the impact of litigation threats; and how Jesus and Paul might minister to your listeners.

The opening session features remarks by Del Tackett and Jim Garlow; the closing session features Chuck Colson. Prominent convention speakers include Phil Cooke of Cooke Pictures discussing how to turn a dream of ministry work into a successful venture and Bob Lepine, co-host of "Family Life Today," on ways to connect with readers, listeners and viewers online.

Show information is at www.nrbconvention.org.

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Fairness Doctrine while one third were against it. "After a year of informing the American public, those polls showed an exact opposite result: a third of American people thought it was a good idea, two thirds thought it was a bad idea."

Those polls were enough to take the Fairness Doctrine off the political agenda, he believes. "I think if politicians in general can only do one thing, they can see which way the wind is blowing." However, critics of the Fairness Doctrine also worry that ongoing talks about ensuring broadcast "localism" might serve as a back-door way to accomplish the same thing the Fairness Doctrine sought to do.

Another issue Parshall warned about a year ago was legislating hate speech within a hate crimes bill. Parshall said he and Powers "worked for three years on behalf of NRB, spending a lot of time on Capitol Hill, warning legislators that they had to be careful of creating a new federal crime bill that had free speech implications for religious communicators and so forth."

NRB 2010 takes place Feb. 27-March 2.

When the Matthew Shepard and James Byrd Jr. Hate Crimes Prevention Act passed in the fall as a rider to a defense authorization bill and was signed into law by President Obama, it included an amendment by Sen. Sam Brownback, R-Kan., to strengthen protections for free speech and religious exercise.

"Our job on hate crimes now is to make sure it's enforced in the way that the sponsors of that bill, and the supporters and those who voted for it on Capitol Hill, intended," Parshall said.

"I've put my comments down in written form to the attorney general's office suggesting how they should inform their U.S. attorneys on how to enforce that, with civil liberties issues in mind, because federal prosecutors have a huge amount of discretion on how they prosecute and who they prosecute."

FREE MARKET

Regarding diversity of media ownership, another issue that often echoes around Capitol Hill, Parshall said NRB's position depends on the definition.

"If by 'diversity' you mean quotas, we're against them. If by 'diversity' you mean equal opportunity for all comers, then we're all for it."

A subject that also keeps knocking at the media regulatory door is relaxation of media ownership limits.

"We want to make sure that local broadcasters, including Christian broadcasters, small broadcasters, are not squeezed out of markets," Parshall said.

"On the other hand, we're also believers in a relative free market outlook, and we do believe that what's good for most media is going to be good for us in terms of the economics of the broadcast community."

How is the economy affecting Christian broadcasters now?

"Not getting any worse, that's the new success story. If you can hold your losses to what you had the year before, you're not losing."

"I think we're in just about the same fix we were in last year. But I am sensing that more of our ministries are making cuts in terms of staffing and budgets," which is difficult. "Remember, the non-coms started this period with very small, skeletal, modest staffing."

Many religious broadcasters also are affected by the debate over performance rights, which Parshall called "a huge problem. That, in addition to the copyright royalty board rulings on the Web streaming rates, is an attack on the survival of radio."

Still, there's growth in Christian radio.

"I've seen modest expansion, enough so that I'm able to say that I've not seen universal stagnation. I'm seeing growth, but it's very geographically based, and it's very modest — growth in the Southeast, but [in] other areas, the Rust Belt and some other places, we've seen less growth."

Another issue that popped onto broadcasting's radar screen was the FCC's Notice of Inquiry in December titled "Data Sought on Uses of Spectrum," which grew out of an earlier public notice about management of spectrum

(continued on page 24)

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Christian Broadcasters Seek Economies

Technical Challenges Include the Broad (Platforms) and Narrow (Profanity)

BY JAMES CARELESS

Christian radio is different from broader commercial and noncommercial radio in its mission to propagate the faith. But it faces many of the same challenges of its radio brethren, and then some.

Like their secular counterparts, some in Christian radio are pushing the technological envelope, perhaps migrating AM or shortwave broadcasts to FM radio or adding HD Radio broadcasts where money and markets justify the move.

Consider the example of Crawford Broadcasting Co., which was established by evangelist Dr. Percy B. Crawford in 1958, and owns and operates 24 stations in 10 U.S. markets, including Chicago and Detroit.

"Our company is a mixture of secular and Christian stations, and I can't really think of anything that stands out as being a special need for the Christian stations," said Cris Alexander, CBC's director of engineering, who is also a columnist for Radio World and a recent recipient of the Society of Broadcast Engineers' Broadcast Engineer of the Year award.

"All but two of our stations are HD; several of the FM stations have multicast channels; all but one stream on the Web."

Upgrades cost money, which is why another notable broadcaster, Adventist World Radio, is taking a "wait and see" view towards digital media.

"Because our reach is global via satellite, the Web, shortwave radio and local AM/FM stations, we tend to be con-

cerned with changes that will affect the bulk of our audience — which is outside of North America," said AWR President Benjamin D. Schoun.

"Although HD Radio may prove to be significant in the United States, I believe it will be some time before masses of



The exposition floor at NRB will be open for three days, Feb. 28–March 2.

people have digital radios in Africa and Asia."

This said, AWR is moving away from its reliance on shortwave signals from its Guam transmitter farm.

"Shortwave still matters, but fewer regulations in many countries is making it far easier for us to acquire local FM stations there. As a result, we now have FM stations in the larger cities of Africa, Asia and Eastern Europe. This makes it easier to reach many more people on

should consider an effort to 'reclaim spectrum devoted to lower valued uses from the existing licensees, to allocate it to higher valued uses.'"

The issue of value is one that particularly worries Parshall and NRB. He wonders if the word refers to the value of programming, the value of the number of people using the service on the spectrum ("regardless of how trivial the use"), the economic value or some other meaning.

Many NRB's members, he said, while perhaps not measured by Arbitron or listed on NASDAQ, "provide, we would suggest, an invaluable service to the American society."

"That is the first order of business that ought to be debated. Instead, the FCC's saying, 'Well, we'll decide between competing values, depending on how we define value.' And they haven't told us how they're going to decide it."

their existing radios; they don't have to buy shortwave receivers."

MONEY CRUNCH

Christian radio has taken its lumps during the recession, as secular radio has.

"Of our member stations, it is the commercial Christian stations that have had the hardest time, due to the decline in ad sales that all broadcasters have been facing," said Craig Parshall, SVP and

general counsel of National Religious Broadcasters.

"The noncommercial stations get their money from donors and churches, groups that are more consistent in keeping up their contributions than advertisers are."

To survive the money crunch, Christian broadcasters are "tightening their belts," Parshall said.

AWR has taken to piggybacking its audio streams on its TV satellite feeds as part of the trend towards convergence, and moving its African and Asian production offices from England to the regions they serve.

"It just makes sense to produce the content where it is heard," said Schoun. "Besides, it is much cheaper, in terms of labor and overhead, to produce programming in Africa and Asia."

In the United States, Crawford Broadcasting sees HD Radio as an economical way to improve Christian radio's reach.

"AM on FM certainly holds promise for many daytime and smaller-market AM stations," said Alexander. "Our company is utilizing our multicast (HD-2 and HD-3) streams to extend the reach of some of our more challenged signals, effectively extending the coverage of those signals to the limits of the digital coverage of their sister big-gun FM's."

THE DUMP BUTTON

And then there's the profanity question. While not necessarily a headliner among technical challenges, it's always a consideration.

TECH TALK

The NRB Show includes a Tech Lab track that promises "three days of first-hand, peer-to-peer advice on all technical aspects of running your media ministry."

Among sessions of interest: On Sunday Feb. 28, David Pierce and Frank Scales of EMF/K-Love talk about how to use ProTools as a marketing tool to respond to what your audience is doing; they explore how to create podcasts, story songs and promos. Then on Monday March 1, Pierce and Scales talk about how radio stations can produce compelling video content using ProTools and Final Cut.

Other Tech Lab sessions explore data analytics, digital television, lighting a church sanctuary as a stage or studio, open-source Web technologies and Christian gaming.

Callers to radio stations can be problematic; that's why the seven-second delay was developed for talk radio. But according to Alexander, Christian radio's unabashed morality makes it a particular target for malicious callers armed with F-bombs.

"It would seem that this wouldn't really be much of a problem for religious broadcasters, but it is an even bigger problem for us than many of the secular folks for a couple of reasons," he said.

"One is that there are people out there who occasionally work hard to deliberately get past the screener for the sole evident purpose of letting fly the F-bomb on the Christian radio station. The other has to do with our audience, which is much more likely to take notice of an expletive on a station that they believed it was safe to let their children listen to.

"So we have to work much harder to screen this stuff, first with a hyper-diligent human screener and then with 40-second profanity delays that we test and log weekly," he said.

"Even with all that, it's impossible to categorically state that a fleeting expletive won't make it on the air, but at least we can in good conscience say we've done our best."

Despite the economy and the occasional F-bomb threat, Christian radio is persevering, just like its secular cousins.

While AWR continues to move into local FM radio, Crawford has "a couple of studio moves in the works," said Alexander.

"We are also upgrading one of our AM stations with a nighttime power increase. And we just wrapped up another transmitter site project.

"Despite the economy, life — and the useful life cycle of equipment — goes on."

A version of this story appeared in the NRB Daily News.

PARSHALL

(continued from page 23)

for broadband uses.

The idea that TV licensees might lose at least a portion of their spectrum set off a firestorm within the broadcast industry. In mid-January, the commission clarified that any spectrum give-back would be voluntary, but Parshall remains cautious.

"Until we get a more definitive explanation from the FCC on exactly what they mean when they say their spectrum plan gives broadcasters 'flexibility' in making choices about their spectrum, NRB remains guarded about whether this spectrum allocation is truly voluntary.

"The concept of true, non-coerced 'choice' by broadcasters seems to collide with the theories of recently-appointed FCC broadband guru Stuart Benjamin, who has written that the FCC



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 KRBE, Houston, TX



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Handhelds Offer More Power

Our Road Warrior Surveys Steadily Shrinking, Increasingly Powerful Digital Recorders

BY PAUL KAMINSKI

Recent years have brought extraordinary changes in the footprint and battery consumption of handheld solid-state memory digital recorders, the tools of my trade.

RADIO ROAD WARRIOR

Columns are archived at radioworld.com

The first generation used removable Compact Flash (CF) media cards or onboard (not removable) solid-state memory.

These are not obsolete by any means and still used as primary recorders by radio reporters; they will continue to provide profitable, reliable service to their owners, especially with manufacturer software/firmware updates.

However, the rise of Secure Digital (SD) removable media audio recorders of the next generation are providing the same capabilities in smaller, lighter packages that consume fewer disposable batteries and in some instances at a much lower initial cost.

SD cards are now available up to 32 GB (16 GB for microSD cards) making

the limitations of "recording capacity" a thing of the past. At these numbers hours of uncompressed WAV files and "days" of MP3 recording become possible. You'll more likely exhaust the batteries before you run out of recording room.



Yellowtec iXm

It should be noted that a number of these recorders use onboard dual microphones for actual stereo recording. In fact almost every recorder here has a built-in microphone of some kind. The old-fashioned "portable" recorder that required a separate microphone (and cable!) looks to be a dying breed.

There are handheld digital audio recorders to fit budgets from the \$150 range upwards. What's out there? I hope my own experiences with three units, combined with other devices mentioned

in this survey, will help if you are contemplating an audio field recorder.

ON HANO

Recently AEQ and TASCAM separately loaned me handheld recorders to take for a spin.

I used them for, among other things, producing auto racing coverage for my Motor Sports Radio Network program



Korg Sound On Sound



Yamaha Pocketrak C24



AEQ PAW-120

"Race-Talk" and news coverage for CBS News, radio coverage of Jimmie Johnson's historic fourth consecutive NASCAR Sprint Cup Championship in Homestead, Fla., coverage from a community Thanksgiving dinner put on by Binghamton, N.Y. high school students and Black Friday coverage of shoppers in Tannersville, Pa.

The AEQ PAW-120 (street price \$743) is likely the oldest recorder in this survey. It has the footprint of a small cell phone (4.74 x 2 x 1 inches). It has 2 GB of onboard memory and can record in BWF/WAV, MP2 and MP3 audio formats with variable sampling rates.

It uses a proprietary connector for an XLR microphone. It also has rudimentary cuts-only editing. A USB port (only USB 1.1) allows for direct digital offloading of files. An OLED screen allows for easing reading.

I used this with my Audio-Technica AT897 shotgun mic to record natural sound and a newsmaker actuality from the Thanksgiving dinner in Binghamton, blocks from the American Civic Association, where 13 people were killed in April, 2009.

The TASCAM DR-1 (street price \$299) is a palm-sized recorder (2.8 x 1.1 x 5.3 inches). It's powered by TASCAM's Li-Ion cell phone battery and charged by a USB connection. An AC charger is optional. I found that a BlackBerry wall wart worked just fine.

The DR-1 uses SD cards for WAV or MP3 files. It has 1/8-inch TRS mic and line and 1/4-inch mono mic jack inputs. Users navigate the set-up menu with a jog wheel; the recording parameters are set with a separate control. Advanced

users can use the overdub feature to incorporate natural sound into a report. If natural sound is recorded in a WAV file at a lower level, a vocal track can be recorded over it without having to lay tracks down in a computer-based editing program. I used the DR-1 for Black Friday early morning coverage from Tannersville and for voice tracks in Homestead when putting deadline reports together for CBS.

The TASCAM DR-100 (street price \$499), also an SD card recorder, is larg-

er than the DR-1 (3.2 x 1.4 x 6 inches) and has features that make working in the field easier. Like its little sister it too records WAV and MP3 files. The standard infrared remote control seems a gimmick but is nice if you need to start a recorder from your seat, up to 30 feet away. It runs on the TASCAM Li-Ion battery (rated for five hours of recording or playback) and two AA batteries (NiMH rechargeables are rated for four hours, AA alkalines for two hours). It has two sets of onboard microphones, a unique wind sock for the directional onboard condenser mics and XLR inputs with phantom power.

The DR-100 gives the user the ability to overdub, like the DR-1. The DR-100 was the voice track recorder for "Race-Talk" and the news conference recorder for the pre-race news conferences as well as the all-important post-race interview with Jimmie Johnson.

TASCAM recently debuted two handheld digital recorders at the NAMM show.

The DR-2d and DR-08 are 24-bit/96 kHz recorders that record WAV and MP3 files. The DR-08 (1.45 x 5.4 x 0.6 inches) records to microSD cards while the DR-2d records to SD cards. Both offer USB ports and can operate off of battery power: DR-08 (AAA), DR-2d (AA) or an optional power adaptor. Prices are not yet stated but expect them to be in the "value" range.

Sony's latest player in this arena is the PCM-M10 (street price \$275). The unit is palm-sized (2.5 x 4.5 x 7/8 inches). It has onboard microphones, a 1/8-inch TRS mic jack and USB file

(continued on page 28)

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Gab On Gab Off • We believe only Hula dancers should need their hands to talk. Broadcast communications ought to be natural and hands-free. That's why the Axia Intercom incorporates **Advanced Echo Cancellation** by Fraunhofer Labs. It literally eliminates open-mic feedback without speaker muting. Just open a channel and start talking. You can use your hands for more important things, like endorsing checks, signing autographs, or Wii bowling.

Buzz Off • The last thing you need during a breaking story or transmitter failure is hum and buzz getting between you and the guy you need to talk to. Like all Axia gear, our intercom system is **completely digital** inside and out. Other systems try to make you think they're digital by piping their analog signals over CAT5 cables, but we think that's a bit like putting an abacus app on an iPhone.

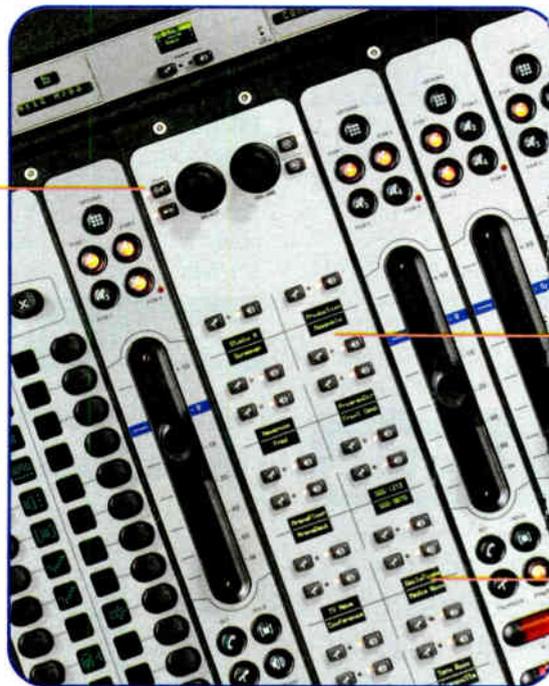
Intercoms Everywhere

Axia SoftCom software allows anyone with a networked computer to have a virtual intercom station. Just think: you'll never again lose track of who's where when you need them to get on-air or get you coffee.

We hear you • As always, Axia has free 24/7 technical support, 365 days a year (**the loneliest support team on earth**). And our warranty is the most comprehensive in the industry – 5 years parts and service. (Really, you should call the technical support guys once in awhile just to say hi.)



Where there's a wire • The advantages of IP and Ethernet – low cost, easy installation and maintenance, **efficient infrastructure** – are a given. IP links everything, and now this includes your intercom system. Installation is a simple single-click connection. And you can expand it like breeding rabbits. Plug as many stations into your switch as you want and add on from there. Then start talking. And if you move to a new location, no biggie — just pick up the gear and take it with you. IP-Intercom is portable so there's no expensive hard-wired custom-cable multi-pair infrastructure mess to deal with.



Plays well with others • Don't have an Axia system? That's OK. You can still save money, increase efficiency, and decrease the hard-wired infrastructure hassle by choosing IP-Intercom. It's a stand-alone system with I/O that will accommodate multiple consoles. But if you do have an Axia system, you'll get more operational goodies like **seamless console integration** with these nifty drop-in modules. We're just sayin'.

Touch that button • So you've gotta be a genius to use it, right? Actually, any acne-challenged intern with an index finger can operate this system with ease. The web interface makes setup simple. Sharp, **high contrast OLED** displays are easy to read from anywhere in the room. And our clever callback feature makes sure you'll never miss a call, no matter what you're doing. Come to think of it, that intern doesn't even need a finger.

Family ties • In the world of Axia audio products, think of IP-Intercom as the talkative little brother. It's an integral part of the family, so of course it **link, with existing Axia networks and consoles**. Just connect to the Ethernet with one RJ-45 cable and the intercom is ready to play. In fact, the intercom audio is ready to go directly to air. Or you can feed IFB board audio to intercom callers. The possibilities are endless.

Matrix: terminated • Imagine a digital intercom system with **no central matrix**. Actually, don't bother. We've already built one that saves on cost, installation time, special plug-in cards, and space. It's real plug and play that works every time — even when you need to add a station, or reconfigure the ones you've got.

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AxiaAudio.com

RECORDERS

(continued from page 26)

transfer and comes with AC, rechargeable Ni-MH batteries (optional) and AA alkaline power choices. The PCM-M10 has 4 GB of onboard memory (a whole bunch if recording in MP3; a bunch if recording in WAV) and a Memory Stick/microSD card slot for memory augmentation.

Zoom has redesigned its H4 into the **H4n** (street price \$299), while its **H2** is a value leader (\$169) on the market. Both use SD cards with WAV and MP3 file formats, up to 24-bit/96 kHz.

from the original R-09 (still carried by NASCAR reporters and producers from the Performance Racing Network and the Motor Racing Network).

A small speaker is built in for preview and review purposes. The other change is a redesign of microphone input circuit, which isolates the mic input (3.5 mm) from the main circuit board. The form factor is 2.5 x 4.5 x 1.1 inches. WAV and MP3 formats are used.

The **Olympus LS-10** (street \$299) is a mid-priced value-packed recorder. I own one and take it in a waist pack or in a jacket pocket literally anywhere I may need to record audio. It's only 5.2 x 1.9

and line inputs, along with internal stereo condenser microphones. It operates on a single AA battery and records WAV and MP3 files.

The new **Yamaha C24** (street \$199), shares the same size, I/O and transfers WAV files via USB 2.0 as the W24. The C24 tips the scales at less than two ounces with its single AAA alkaline battery — which takes portability to another level.

The **HHB FlashMic DRM85** (street \$999), now practically a long-serving veteran, is popular with radio journalists (more than 10,000 shipped). The units come with a Sennheiser condenser cardioid or omnidirectional microphone,

INFO

| | |
|-----------|--|
| AEQ | www.aeqbroadcast.com |
| Edirol | www.rolandsystemsgroup.com |
| HHB | www.sennheiserusa.com |
| Korg | www.korg.com |
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| Marantz | www.d-mpro.com |
| Olympus | www.olympusamerica.com |
| Sony | www.sony.com |
| TASCAM | www.tascam.com |
| Yamaha | www.yamaha.com/usa |
| Yellowtec | www.yellowtec.com |
| Zoom | www.samson.com |



TASCAM DR-1



M-Audio MicroTrack II



Marantz PMD661



Olympus LS-10



Sony PCM-M10



HHB FlashMic

The H2 (2.5 x 4.3 x 1.25 inches) has 3.5 mm TRS mic and line input jacks, plus an onboard microphone. The H4n (2.75 x 6.2 x 1.4 inches), sporting a redesigned shell, buttons, LCD, etc., records in two-track and four-track multitrack. The H4n offers XLR and 1/4-inch inputs. Both H2 and H4n have USB ports for offloading files and can throughput their mic audio to a computer via a USB for live recording to a DAW.

FEATURE-PACKED

Edirol recorders are popular with those producing NASCAR audio coverage.

The redesigned **R-09HR** (street price \$280) has all the features expected in this class of digital SD card recorder (USB file transfer, 24-bit, 96 kHz sampling rate audio, onboard electret microphones) and a couple of design tweaks for field users

x 0.9 inches.

With 2 GB of internal memory and SD memory card augmentation, long battery life with AA alkalines or NiMH rechargeables and the ability to record in WAV, MP3 or WMA audio formats in 24-bit/96 kHz sampling rate, onboard speakers, a real-world workable limiter and cute little mouse ear windscreens that really do work, the LS-10 is a full-function backup or primary audio recorder for a radio journalist. Input is via a 1/8-inch jack and another 1/8-inch jack for headphones/earbuds. Olympus has introduced the LS-11, which upgrades the LS-10 to 8 GB of onboard memory.

Yamaha's new **Pocketrak W24** (street \$299) builds on a small size form factor and records to microSD/SDHC cards. The W24 is 1.75 x 5.1 x 0.9 inches and has a shared 3.5 mm input for mic

and WAV and MP3 recording capability. There are models with a line input recording option. All can be monitored with earbud or 3.5 mm TRS headphones, and transfer files from the SD card through the USB 2.0 port. I used one a few years ago at the NAB Show and could see where journalists would like the microphone-sized (9.6 x 2 inches) form factor.

From Germany comes the **iXM** (street \$990) by **Yellowtec**. It too is more a microphone with a built-in recorder rather than a recorder with microphone heads attached. The 10 x 2 inches iXM uses SD cards. It offers a 1/8-inch headphone output and a 1/8-inch mic/line input. A mini USB

port allows for digital offloading of files. A nice feature of the iXM's microphone complement are optional interchangeable mic heads (cardioids, omni and supercardioid) made by beyerdynamic. The iXM has an onboard Li-Ion battery (which can be recharged by the USB port) and can be run with three AA batteries. File formats are BWF/WAV and MP3.

Marantz has two units in the SD card category, the **PMD661** (street \$599) and the **PMD620** (street \$329). The PMD661 (3.7 x 6.5 x 1.4 inches), the only recorder in this survey without a built-in microphone, takes the best qualities of the older Compact Flash PMD660 and puts them in a smaller,

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faster (USB 2.0 v 1.1) less energy intensive package with longer battery life and a 24-bit/96 kHz sampling rate. The 661 has an excellent complement of inputs and outputs with dual XLR mic/line and 1/8-inch input. Outputs include RCA and a 1/4-inch headphone jack. The PMD620 (street \$329) is Marantz's palm-sized SD recorder, with much longer battery life (two AA vs. four AA). Two onboard electrets mics facilitate audio capture on the PMD620 (2.5 x 4 x 1 inches). It uses a 1/8-inch mic and line inputs and 1/8-inch line and headphone outputs.

The **MicroTrack II** (street \$169) is M-Audio's take on the Compact Flash



Zoom H4n

handheld audio recorder, with both 1/4-inch microphone and line inputs and 3.5 mm microphone input/RCA outputs. It records in mono and stereo up to 24-bit/96 kHz sampling rate, WAV and MP3s and transfers that audio by USB 2.0 interface. The MicroTrack is equipped with an internal battery, which lasts from three to five hours before needing a recharge (three hours if using 48 V phantom power). The AGC and limiter will mellow a hot feed from a mult box, or loud recording to ensure usable audio in those situations.

Korg's main entry in this market is the **MR-1** (street \$329) with 20 GB of onboard memory. It records 1-bit (e.g. DSD) digital audio, PCM digital audio with sampling rates up to 24-bit/192 kHz, and MP3 audio. The MR-1 (2.5 x 4.7 x 0.95 inches) has 3.5 mm balanced mic and line inputs, and also transfers files via a USB 2.0 interface. It has an internal rechargeable battery and is supplied with an AC power supply that charges the battery. The MR1 has been recently joined by Korg's **Sound on Sound (SOS)** pocket-sized microSD card recorder (expected price around \$400). The SOS records WAV format and allows for overdubs of existing tracks (handy if one is trying to lay narration over natural sound or a musical bed). The SOS (2.7 x 5.3 x 1.3 inches) has a 1/4-inch input for a guitar, and 3.5 mm inputs for mic, line and a headphone output. It runs on AA batteries and transfers files by a USB 2.0 interface.

What's your field recorder of choice? Tell us at radioworld@nbmedia.com.

Paul Kaminski is news director for the Motor Sports Radio Network. E-mail motorsportsradio@msrpk.com.

TECHUPDATE

MAYAH MOBILE CODECS ALSO RECORD

Mayah Communications has introduced its second generation of portable recorder codecs, the Flashman II and Sporty. Both Flashman II and Sporty are able simultaneously to record and transmit audio back to the studio as well as recoding/play back to SD cards and USB sticks.

Both units support most modern networks and interfaces, e.g. WLAN, UMTS/3G and



Ethernet along with a range of coding algorithms, including two new formats MPEG 4 HE-AAC v2 and MPEG 4 AAC ELD.

The Sporty adds ISDN, POTS along with a mixer and more I/O. Both Flashman II and Sporty have the new ability to record locally while feeding live. That gives a reporter control over material and the ability to edit it after the transmission for subsequent reuse. FlashCast technology means Flashman II and Sporty are able to recognize and connect to most audio codecs and formats.

For information, contact Mayah Communications in Washington at (360) 618-1474 or visit www.mayah.com.



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TECHUPDATES

YELLOWTEC SHIPS IXM MICROPHONE/RECORDER



The Yellowtec iXm combines microphone and recorder and is designed to support modern ENG workflow.

The company promises reporters hours of trouble-free operation. Its memory uses SD (SDHC) cards. The dual power layout is unique among field recorders; iXm sources power from either a built-in rechargeable Li-Ion battery or three AA batteries. The iXm's memory and power layout overcomes the bottleneck of limited operating time.

Yellowtec offers six interchangeable microphone heads differing in manufacturer and polar pattern.

Capsules made by German microphone specialist beyerdynamic are available at the top end for those interested in the best sound. The beyer microphone heads are optimized for speech intelligibility and low handling noise. The heads are exchangeable to suit various recording environments. Capsules branded Yellowtec are dynamic and offer good quality with lower price.

Omnidirectional, cardioid and supercardioid pickup patterns are available for both lines. Mic heads can be changed out in the field. Capsules are detected automatically for gain and DSP adaptation.

The iXm offers an intelligent levelling scheme that boosts the recorded audio and allows a reporter to concentrate on the interview. Audio files are mono and stored on exchangeable memory cards as WAV, BWF or MP3.

A headphone output is available for quick monitoring. The balanced line input can be used at press conferences when the modulation is obtained from a mic splitter. The mini USB port is used for accessing audio files from a PC, to recharge the built-in Li-Ion accumulator battery and to configure the iXm.

For information, contact Yellowtec in Germany at 011-49-2173-967-315 or visit www.yellowtec.com. Find U.S. dealers at www.yellowtec.com/USA.

JK AUDIO UPGRADES PORTABLE BLUETOOTH PRODUCTS

The JK Audio BluePack and Daptor Three use Bluetooth wireless technology to get audio in and out of cell phones. A new feature adds the ability to connect these two products to Bluetooth headsets or other JK Audio Bluetooth-equipped products.

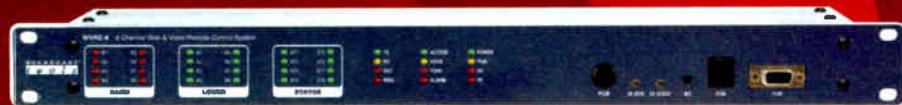
In a typical connection scenario, a cell phone acts as the master, initiating the connection to a headset, which in this case is operating as the slave device. There must always be at least one master and one slave device. Users cannot connect a cell phone (master) to another cell phone (master) or connect two headsets together. Nor can a cell phone connect to more than one slave device at a time. A new feature of these two JK Audio products is the ability to switch roles, acting as either a master or slave.

The master/slave role of a product also affects the A2DP transmit direction. Common to cell phones and headsets, the "hands-free" profile offers a full-duplex mono, 8 kHz sampled voice path. More common to music players and wireless headphones, the Advanced Audio Distribution Profile (A2DP) offers 44 kHz sampled stereo audio, but only in one direction, from master to slave. Bluetooth A2DP-equipped cell phones, sound cards and music players are typically configured as the master, while wireless headphones act as the slave. Switching BluePack or Daptor Three to master mode will allow users to transmit A2DP Stereo audio into Bluetooth wireless headphones or other JK Audio Bluetooth-equipped products.

For information, contact JK Audio in Illinois at (800) 552-8346 or visit www.jkaudio.com.



Site Control



WVRC-8 Web-enabled and Voice Dial-up Eight Channel Remote Control



Site Sentinel™ 16 Web-enabled Sixteen Channel Site Remote Control System



WVRC-4 Web-enabled and Voice Dial-up Four Channel Remote Control



Site Sentinel™ 4 Web-enabled Four Channel Site Remote Control System



VAD-2 Plus

Dual channel Voice alarm Dialer Web-enabled dual channel stereo silence monitor



AUDIO Sentinel™



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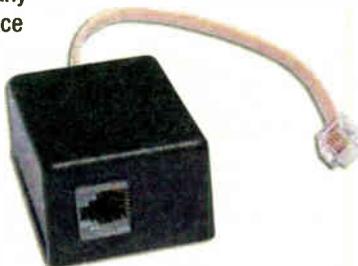
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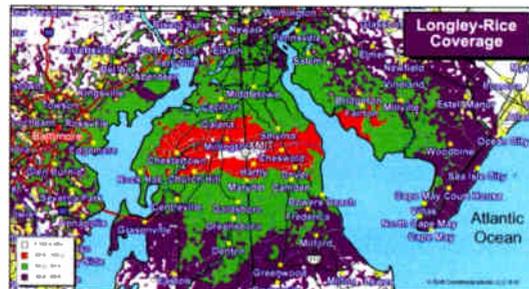
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READER'S FORUM

INTERNET RADIO PROGRAM CHOICE

I had one item a year ago on my Christmas wish list: an Internet radio. My Logitech Squeezebox Boom radio arrived and I was not disappointed.

Internet radio is the future of radio, even more than HD Radio. For me it was simply a matter of program choices. Nobody locally plays big bands or beautiful music, let alone polkas. Try finding any of these formats on HD Radio.

One local radio station had a four-hour weekly program, "Melodies of Germany and Austria," which was cancelled when the station was sold in 2008. The program had been on the air for almost 30 years. So far no other station has jumped at the opportunity of putting it back on the air. What we find on HD Radio is more of the homogenized mainstream radio formats.

Look at the success of 24/7 PolkaHeaven.com. Recently they had a "The Best of" ballot, which chooses polka music in several categories. There were more than 7,000 ballots cast. I got a personal e-mail from the network operations manager letting me know that my vote had been registered and counted. The network keeps growing, with more than 30 "IJs," or DJs as most people call them.



Tom Nornhold says program choice — including sites like www.247polkaheaven.com — demonstrate why Internet radio appeals to him so much.

The Internet radio quality sounds every bit as good as HD Radio, if not better, when listening on my big stereo speakers and throughout the house on a 70 Volt constant impedance system.

Looking at the problems plaguing the broadcast industry — the high cost of land, steel, utilities and building costs — the Internet makes a lot of sense, especially for daytimers trying to reach a nighttime audience. The investment is basically a computer.

Given time, with Wi-Fi, satellite and cellular technology, Internet radio could be available in our cars, cellphones, etc. If you are the typical 18-to-35-year-old who likes the homogenized mainstream radio formats, they too are available on Internet radio — in fact, more and more variety than over the air.

Tom Nornhold
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| 21 | SCMS | www.scmsinc.com |
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Be Careful What You Wish For

Change the Rules, But Don't Lose Sight of Radio's Responsibilities

BY CHARLES S. FITCH

Tom Osenkowsky brings a wonderful clarity to broadcast issues in his commentary ("Terrestrial Broadcasting: The Next Generation," Oct. 21, 2009), with

COMMENTARY

suggestions for simplifying local station operational procedures, including elimination of the main studio, public file and chief operator rules.

Times have changed since the introduction of those requirements. Rules, policies, ownership structures and the public's concept of "community needs" have evolved.

Community need is the essential point here. Tom, I love you like a brother and respect your years of local radio commitment; but as long as the fundamental policy of the Federal Communications Commission is to allot and license station facilities to *communities*, we require a system of input that addresses the satisfaction of those needs.

The archaic written public file was a laborious solution. With the "Internet village" we can now save some trees. I suggest that the FCC give licensees no option. Require that stations provide consumers a single path of access to their public files via the Internet; and eliminate the requirement of a local phone number, which no one answers in real time anyway.

THE TYRANNY OF CASH

Tom is correct that there is no walk-in trade in broadcasting; people in 2010 make contact by e-mail and texting. We do not need a studio and office with a big oak door on Main Street any more.

A simple link at the FCC Web site, via the station's facility number or community of license, should take any interested party directly to the station's public file. The visitor can post comments, inquiries and thoughts about issues; the station can publish its responses and actions; the commission can observe the station's conduct.

Managers, does it really take a lot of time to evaluate what you are doing for your community of license? Fifteen minutes a quarter? How much of your airtime does it take to meet those needs? Less than 1 percent? With so much in the balance, why do so many of us feel this minimal effort is a drag on station resources?

Be careful what you wish for. At present, radio's *raison d'être* is community service; your station's grant is based on

a commitment to provide an optimal public service to a defined section of America. Eliminate that commitment and you also lose the reasonable anticipation that your license will be renewed.

The tyranny of the cash register will be your new master because the FCC's taxi meter will be running. Let's pull some not-so-fantastical numbers from the mindset of the congressional cosmos. You want to serve New York City? Pony up \$2 million a year. Danbury, Conn.? A bargain for such a fine city at \$100,000. Forget 20 years of excellent programming and service. Someone is willing to pay more, so the frequency is theirs.

UNFUNDED MANDATES

As to Tom's pragmatic suggestions such as eliminating the chief operator: I agree that much can be done to improve economies and effectiveness; but the pendulum swings both ways. If chaos and shabby station performance result, we can anticipate unfunded mandates — maybe a return to annual proofs of performance, mandatory quarterly checks or expensive "third-party verifications."

About EAS: If the communications system of America is a house, broadcasting provides the footings. Over a century, whenever our energy-based society has broken down or been threatened by hurricane, ice storm, tsunami, civil disturbance or wildfire, broadcasting has been the last strongest link that holds us together. It's the only one that can reach us reliably,

wherever we are, whether we are trapped or have been forced on the move.

EAS is not only a warning system but an information distribution system. When consumers are without power or have lost other connections to public communication systems, broadcasters remain on the air thanks to our RF connection structure and flexible reconfiguration abilities.

Pending changes in EAS standards offer us the chance to remove a point of failure. EAS equipment should be maintained not at the station but at a central depot. Every station should have a federally supplied CAP box online as well as one in a sealed shipping case, programmed and ready to go immediately if the one online fails. The failed unit should be returned via overnight shipment and a replacement for the spare shipped as soon as it is programmed and tested.

EAS is so important that I think stations that participate voluntarily at the state and local level should pay no spectrum fees. Perfect performance means no fees. Screw up from lack of attention and you pay the fees (and face a license renewal issue).

Under these terms we'd have a near-perfect EAS system. More important, your community and the nation would have the viable, reliable warning and information distribution system it needs.

Tom Osenkowsky has gone to the core of the matter with excellent points regarding station operations in a difficult economic time. Let's start the dialog and make meaningful and positive changes without bringing down the roof on ourselves.

The author is a frequent contributor to Radio World. Opinions are his own.

MONEY AND POWER REIGN

I happen to believe Tom Osenkowsky is on the right track; but in Washington, D.C. (the District of Criminals), money and power reign supreme over practical commonsense regulation.

The 1934 act that created the FCC was a milestone in eliminating interference on the medium-wave band because of no engineering standards. There were also the goozy fingers of the lawyers busily writing a lot of rules and regulations with respect to general operations to foster the "public interest, convenience and necessity."

Through the years up to Mark Fowler, the FCC rules stayed pretty much the same. However, changes came quick after 1981, some good, some bad.

The "bad" ones came after the commissioners dismissed engineering aides in favor of "economists." The lawyers

remained and Michael Powell promptly hired an army of them, which was the dumbest thing I can imagine.

Today, we have basically an "anything goes" mentality on technical issues but an intense legal machine collecting big money for all sorts of things that the commission shouldn't be doing at all.

The terrestrial broadcasting industry can easily survive if government (and the lawyers) would get out of the way. Keep the allocation engineering standards, open up or expand bands to accommodate new stations, freeze the current number of stations that the media monopolists own and promote localism in the application process.

I have always believed in "The more, the merrier." With this, true competition can win out in the end.

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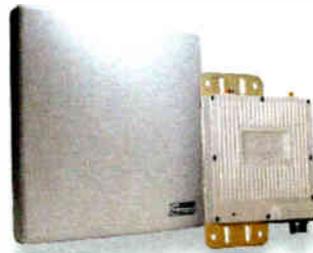
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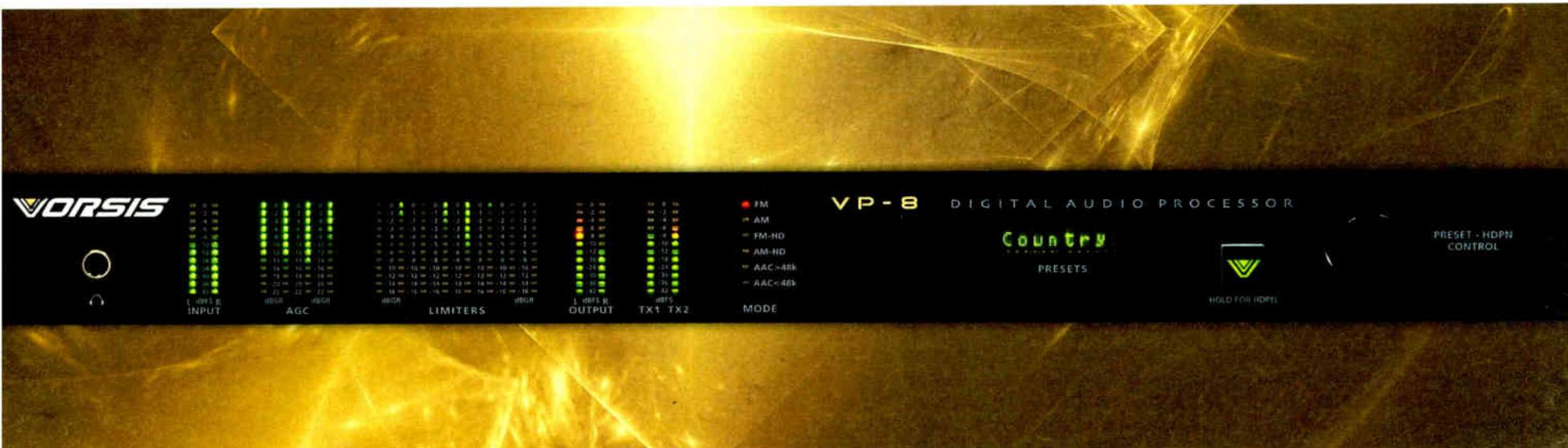
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