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A sampler of the latest tools for audio over IP.

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Internet Radios Gain Ground

Terrestrial Radio Pushes to Get FM Chips on Devices; Mobile DTV Gets Going

by Leslie Stimson

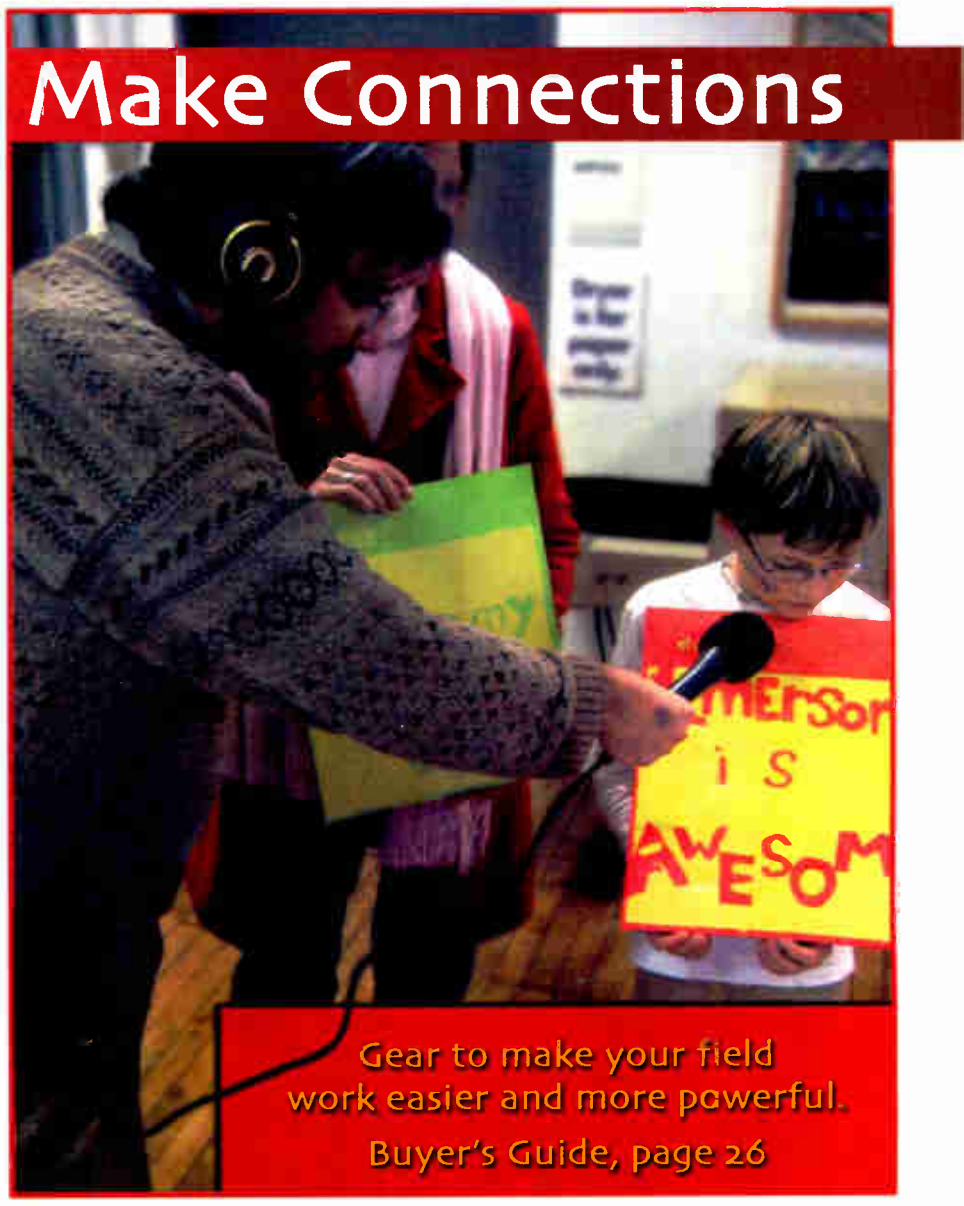
LAS VEGAS Car Internet and car TV are gaining ground. While this development is seen by many radio broadcasters as threatening, there is at least a glint of good news: Some versions of the new products include radio features.

That will be welcome to broadcasters who are struggling to keep radio relevant amid proliferating entertainment delivery platforms in a shrinking economy. The trends were among the developments of note at this year's Consumer Electronics Show.

Attendance was dramatically lighter. The Consumer Electronics Association pegged attendance at around 110,000, a drop of about 15 percent compared to 130,000 last year.

Like broadcasters, the companies that make up the CE industry are trying to at least maintain market share in tough times. Several manufacturing reps told Radio World that while consumers are certainly curtailing spending on big ticket items like cars, people seeking entertainment remain willing to pay for inexpensive

See CES, page 5 ▶



WINNING THE RATINGS WAR

VORSIS: THE TECHNICAL STUFF

The loudness wars are over. The winner? Nobody. Why? Because when everyone became as loud as possible, using the same limited tools, the personality of every station got lost. We call it "the sameness syndrome."

We hate the sameness syndrome and believe it's a good part of the reason ears are turning to alternate sources. They are just plain tired. Fatigued.

Imagine, then, scanning a radio dial and finding an aural oasis – sound that's breathtaking in its natural quality, but loud and still retaining a sense of dynamic range. Impossible? If you think so, you haven't heard Vorsis.

Vorsis is the first line of air-chain processors designed for today's 21st century radio listener. It's a complete ground-up rethinking of the tired and traditional approach that is inescapable with those well-known processors. Here we talk about a few of the innovations that make the flagship AP-2000 Spectral Dynamics Processor the incredible tool that it is. Many of these advances are shared among the entire range of Vorsis solutions.

Intuitive Interface and Operation

No processor can meet its full potential if it's not something that's easy to use or if the full palette of controls are not accessible. The Vorsis GUI is designed for intuitive operation, from the front panel or remotely on your PC. No control is more than two clicks of the mouse away. The screens offer a logical layout with a virtual control surface above and monitoring graphs and meters below. You can see and hear the results instantly. Nothing is easier.

Think about having the full engineering control you've always dreamed of – being able to find the whispers as well as the screams in your station's sound, crafting an aural signature that's so good, so transparent, you will have people calling to find out how you do it.

Vorsis Dynamics Control

Vorsis completely rethought dynamics control – AGC and compression – and came up with a design that's intelligent AND amazingly flexible to control and shape your station's "sound."

Five-band AGC (four-band in the VP-8) ensures a consistent spectral balance. Vorsis' exclusive SST™ Sweet Spot Technology manages the behavior of the AGC in real-time so that it always operates in its "sweet spot." The multi-band compressor, operating in concert with the AGC, provides unprecedented dynamics control. All operate in sum and difference – the highest signal controls the amount of processing. This is a completely new way to manage multiband dynamics to maximize the consistency of your station's on-air presentation – no matter what the incoming level or era of the music.

Powerful Bass, Incredibly Clean Voice

Vorsis Bass Management System extracts and reveals the nuances in the program that are simply not heard in any other radio processor. It puts deep pristine bass on the air without the distortions of common bass clipper technologies. VoiceMaster is a special Vorsis clipper management tool that has its own automatic processing chain dedicated to detecting and specially processing live speech signals, giving you the loudest and cleanest on-air voices ever.

Superior Stereo Enhancement

In rethinking Vorsis, it became clear that stereo enhancement HAS to be integral to the processing. It is, after all, a manipulation of the amplitude of the L/R difference signal that creates the perception of a wider sound field. With Vorsis, you'll get smear-free enhancement of the stereo image that can be as wide as you desire. But that's only the beginning – you can also control the stereo image width on a frequency-conscious basis and use L+R to L-R signal ganging to prevent the image from wandering uncontrolled. It's already field-proven to manage wide discrepancies between the recording techniques of various eras (oldies to the over-mastered music of today) and even reduce multipath interference.

Surgical Limiting and Clipping

To some the idea of 31 bands is scary. Not to us. It's simply amazing what can be done with it. Limiting and clipping's primary purpose is peak control to increase loudness; the less audible in its action, the better. 31 bands allow surgical limiting – its dynamic operation is nearly inaudible to the ear so the resulting sound is louder AND cleaner. It also provides unprecedented opportunity to further fine-tune the sound. FM and HD/DAB have entirely different transmission characteristics, so Vorsis processors have completely separate limiting and final peak control sections for analog and digital broadcast.

Welcome to the 21st Century

Vorsis is the first processor designed for the needs of a modern radio station and its listeners. Visit the web to learn more and read our application notes and white papers. Call us to set up a demo today.

It'll make a HUGE difference in your station's sound AND your bottom line.

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FIRST PERSON

A CES Show Floor Sampler

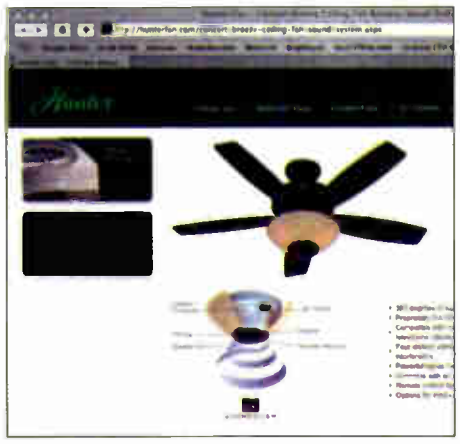
by Dave Wilson

The author owns WHDX(FM) and WHDZ(FM), Buxton, N.C., on Hatteras Island. He is senior director, technology & standards at the Consumer Electronics Association, and his commentaries are a recurring feature of Radio World's opinion section. Views are his own and do not necessarily represent those of CEA or its member companies.

There were a number of things at the 2009 International CES that should be of interest to radio broadcasters. Two big themes related to radio were further developments in HD Radio and the latest in mobile television.

On the HD Radio front, the iBiquity booth was filled with numerous products, including a small wearable receiver with a built-in MicroSD slot that can be used for playing recorded music. It's called the KRI Armband Portable HD Radio Player. And speaking of portable HD Radio, SiPort was displaying its HD Radio chipset, which was designed with particular attention paid to power consumption so it would be useful in portable and handheld devices.

SiPort was also showing off a system that allows consumers to record HD Radio programs. I found this particularly interesting because I firmly believe that radio needs to have storage capability in its receivers in order to compete effectively.



This Hunter Concert Breeze Fan & Sound System with integrated Soundolier wireless technology comes as an indoor or indoor/outdoor fan.

A receiver that could gather and organize content even when the consumer isn't listening would provide consumers with a much better selection of programming. Radio needs to offer consumers a better selection to compete more effectively with MP3 players and satellite radio.

Several companies were displaying mobile DTV receivers, and the Open Mobile Video Coalition announced that 63 TV stations in 22 markets have plans to deploy this technology. Mobile DTV is made possible by adding some additional digital coding to standard DTV broadcasts, enabling moving receivers to decode the DTV signal.

Mobile DTV

This is critically important to radio because it won't be long before we start seeing TV receivers in cars, where radio has traditionally had an advantage. People may not be able to watch TV while they're driving, but they can still listen.

It's easy for me to believe that many of the people who watch "Today" or "Good Morning America" and similar TV shows will remain tuned in to those programs during their morning commutes once they have that capability in their cars. This direct assault on radio morning shows would have a dramatic impact on the radio industry.

Some other things of interest to radio broadcasters at CES included Safe Volume headphones and earbuds from iHearSafe. The cable that connects these headphones to an audio device has a built-in limiter that limits the audio level to 85 dB SPL.

Audio at levels above 85 dB is reduced to 85 dB, while other audio passes through

See WILSON, page 5 ▶

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Photo by Leslie Stimson

You Have a Responsibility to Visit

A friend of this column, a former radio chief who sells equipment for a living, has a concern.

"I have just come back from a state broadcast show and, as with many other shows, spent much of the time talking to other vendors. Over time, I have developed the impression that there is way too much 'vendor bonding' time." The reason: Attendees aren't making the effort to visit booths.

"We don't expect people to skip sessions to talk with us, but even when there are breaks, there is often a dearth of attendees at the booths. It was apparent at a show like this, where there were only a handful of vendors present."

To make small shows work for everyone, he feels, attendees have a responsibility to talk to the vendors.

"Even if they don't have a project that involves that specific product, attendees could tell the vendor that and just ask for a brief overview of their new gear. This would make the vendors feel like there was a reason to be there. One of my colleagues describes it as 'meaningful conversations with significant people.'"

Vendors who attend small shows don't come expecting to close orders, he continues. "But we do expect that someone will visit the booth for a talk. Often what happens is the attendee will stop by a dealer that he buys from and never stops to talk to others — the 'my friend' scenario."

It costs an average of $3,000 for his company to participate in these shows. That's a lot for many vendors, especially multiplied out over many conferences.

"These shows should be more and more important as many stations can't afford to send engineers to the NAB," he said. "The state shows are good places to see and hear about new technology. But they won't be if the vendors stop showing up. I can't justify the cost when one person stops by my booth; nor can many of us in this economic climate. I can present at an SBE meeting and sponsor the refreshments, and I have the full attention of a group of responsive engineers; I don't have to spend as much as $950 a table for booth space."

This isn't just a vendor griping because no one wants to buy his products. I know the man, and he is concerned about the vitality of the marketplace. He doesn't want to see fewer vendors at shows.

Photo by Bob Kovacs

'Face time' in convention booths is critical, according to one participant. (Here, Daniel Mansergh of KQED(FM) tries his skill at punching down a wire at a past convention while Larry Shore of AVP supervises.)

"The attendees need to remember to stop by the booths to talk, even when they don't have an immediate need. They might find out about something they can use in the future, or even for that emergency when they won't have the time to shop around. They are the reason vendors show up. If they don't make us aware that they know that, we will stop going."

He raises a thought-provoking point. Now, having been involved in small conventions and conferences myself — as an exhibitor, speaker, journalist and adviser, over the years — I know how well intentioned planners are and how they try to balance the needs of exhibitor, attendee, presenter and board member. Even such details as when to schedule an event vs. another and when to leave time for attendees to mingle are critical to success.

I also know that the role of traditional conventions is under siege. Travel budgets are cut; the time to attend them is limited; information is readily available at your desk via Webinars, virtual conferences and other media.

Having said that, I agree that if an attendee is going to take advantage of a show's offerings, he or she should make time to visit booths and talk to those exhibitors whose fees helped make the event possible.

Your thoughts to *radioworld@nbmedia.com.*

★ ★ ★

On page 12, Skip Pizzi mentions the site StreamingRadioGuide favorably.

The scope of this directory is full-power, FCC-licensed stations — no satellite, no "Internet only" or LPFM stations, no desire to become a global directory of all stations in the world. The number of radio stations confirmed as streaming content has gone from several hundred to more than 6,500.

I wrote to founder Fred Stiening to learn more about his online resource.

"I'm the only person directly involved with StreamingRadioGuide," he replied. "It's not a business venture, which is why you see no ads. There is no revenue stream, no employees. Volunteers are encouraged to help with testing listings and identifying streaming problems and programming changes, but the content is all my work."

Stiening describes himself as a lifelong listener to talk radio, "going back to Ed and Wendy King on KDKA(AM), Larry King, Bruce Williams, Sally Jesse Raphael and the early days of talk syndication." He's never worked in radio and has no financial interests in the business.

"Starting in the late 1990s, I added radio station information in the dialup internet access directory called FindAnISP.com to provide local content in each city (FindAnISP is still online, but minimally maintained). When the first terrestrial stations began experimenting with streaming, I added 'Listen' links for radio stations I found, to make people aware it is something they could do with their new Internet access. Streaming radio over the Internet made sense to me as something people would use regularly after they tried it.

"When dialup Internet access started its inevitable decline around 2003, I adapted the research tools, server hardware and revenues from FindAnISP to spin off StreamingRadioGuide on its own and it became my full-time 'job' to locate and add Web site and streaming information for all terrestrial radio stations that I could find."

The site lists programs and frequently a current day's topic. His goal though isn't to list every program on every station. Listings appear in popularity order, with the programs and stations that most people have listened to first. Stations that preempt programs with sports, lower-quality streams and those that force pre-stream advertisements or popup ads sort to the end. Shows for which there is no interest after several months expire and no longer appear.

On a typical weekday, Stiening sees 8,000 to 10,000 visitors. Since he started keeping detailed records three years ago, some 4.8 million attempts have been made to visit the streams of the stations listed. The two biggest days were the one after Election Day 2008 and Jan. 20 of this year, inauguration day. The metrics of which shows and stations are getting the most traffic are available without registration under the Streaming Popularity link.

StreamingRadioGuide, he says, is a place listeners go to find something they already know about. It isn't a place for a local radio personality to generate interest in their show or catch the eye of a syndicator.

Why does Stiening, who essentially is retired, do it? "It's a lot more interesting than going to a senior center and playing Bingo."

From the Editor

Paul J. McLane

Wilson

▶ Continued from page 3

unchanged. This is a terrific invention and of great use in an industry that relies so much on headphone audio. It's also great for your kids. The limiter is built into the headphone cable and can't be removed without ruining the headphones.

There was also the Dice Electronics Digital AM/FM receiver, designed with blind people in mind. When you change stations there's an audible announcement from the receiver telling you what frequency you've tuned to, or what control setting you just changed. While it was designed for the blind and visually-impaired, it could also help you tune your radio and keep your eyes on the road at the same time.

I also liked the duo wireless speaker lamp from Soundolier. It's a floor lamp with a long stem that looks like a typical halogen lamp. What's cool about it is that the top of it is not only a light, but a speaker too.

It has a receiver for a wireless system in it and you connect the associated transmitter to your favorite audio equipment. The result is a hidden speaker in your room that doesn't require any separate wires.

This device won an Innovations award at the 2007 CES and has been such a hit that Hunter has now come out with an accompanying ceiling fan that has a speaker disguised in the light assembly. These two products let you disperse sound throughout your home without running any wires, or seeing any speakers. Pretty cool.

Finally, there was the Rock-Ola Music Center. Imagine this, an Apple iPod-like touch screen device that's as big as your flat-screen TV, comes loaded with something like 9,000 songs, and works like a modern jukebox. You install it on your wall, or on a piece of furniture, and you and your party guests can walk up to it and slide songs into the playlist, create new playlists, and so on.

It also includes album art, cross-fading capability and a five-band graphic equalizer. It's meant to be like an iPod, but in a much larger package that invites other people to use it. In contrast, many people wouldn't touch another person's portable MP3 player because it's considered too personal.

Those are some of the cool things I saw at the 2009 CES. Hope to see you there next year.

The Rock-Ola Music Center is meant to be like an iPod but in a much larger package that invites other people to use it.

The cable that connects these headphones to an audio device has a built-in limiter that limits the audio level to 85 dB SPL.

CES

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audio devices.

Here are some of the more notable radios coming on the market this year, as well as information about technologies or devices that compete with our medium. For HD Radio news from the show, see page 22.

BLAUPUNKT, MIROAMER COLLABORATE ON INTERNET CAR RADIO

Blaupunkt plans to release two versions of an in-dash Internet radio, developed with miRoamer, in the second half of the year to the U.S. and European markets. The companies showed prototypes, single DIN and double DIN units, named the Hamburg 600i and the New Jersey 600i, respectively.

(The DIN standard was established by a German standards body, Deutsches Institut für Normung and is commonly referred to as "DIN car radio size." It was adopted as an international standard in 1984. Head units generally come in a single or double DIN size.)

The radios come with phone capabilities so the user can dial a number for hands-free calls; it will also connect via Bluetooth to the Internet. Blaupunkt is adapting existing models with Internet capability, said miRoamer founder and CEO George Parthimos, in an interview.

By pushing a button, users can switch from AM/FM to miRoamer's aggregated content from some 30,000 Internet radio stations — without third-party devices or plugging in cords. Users can customize their content on the MiRoamer Web site from home or in the car, though the company believes most customers will want to customize content before getting in the vehicle, Parthimos said.

Users can browse genres or stations and customize preferences, providers and search options online at *miroamer.com*. Users also can add their own MP3 content

See CES, page 6 ▶

The Hamburg 600i, a Blaupunkt miRoamer prototype single DIN in-dash Internet radio, comes with phone capabilities so the user can dial a number from the radio for hands-free calls and also connect via Bluetooth to the Internet.

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to their Internet station. In ancitipation of this debute, last year at this show the Torian Wireless-owned miRoamer debuted a redesigned version of its miRoamer Internet radio portal.

In addition to the Internet radio, drivers also can use other features in the radio such as the phone, address book and navigation.

Because the customer uses Bluetooth from a cell phone to actually connect to the Internet in the car, the price for that connection depends on what the cell phone carrier charges for a data connection. When connecting to the Internet via an external device such as an iPhone, the customer's existing mobile service provider is the default network. The cost of the actual radio was undetermined at press time.

An Internet radio from iLuv, the iNT170 Internet Dual Alarm Clock lets users access 15,000 Internet radio stations as well as podcasts.

MiRoamer claims its products are the first Internet car radios. However, Autonet, another CES exhibitor, has offered in-car Internet since last year that could potentially be used for music streaming from several providers. San Francisco-based Autonet Mobile has built a network that turns the car into a WiFi hotspot, allowing multiple passengers to connect their own WiFi-enabled gadgets to the Internet at the same time. The autonet router runs over 3G and 2.5G cellular data networks.

But miRoamer and Blaupunkt's prototypes appear to be the first models to offer *in-dash* Internet radio.

CAR COMPUTER OFFERS INTERNET, RADIO

Another company to offer car Internet is Dashboard Devices.

The company, specializing in infotainment for vehicles, unveiled a $2,700 in-dash computer for the car that features several flavors of radio, WiFi, navigation and DVD playback. The ENV computer runs Windows XP with an automotive interface and has a 160 GB hard drive. The device reads aloud the users' e-mail and uses voice activation for other functions. Dashboard Devices says the device will have Internet radio and optional satellite radio capability, USB iPod control and FM radio.

Planned for spring production, the ENV computer series initially will be sold through computer resellers and then to CE car audio retailers, said the company.

AT&T CRUISECAST TO BRING SAT TV TO CAR

Sirius XM satellite radio now has competition from AT&T. The telecom company plans to launch its CruiseCast mobile TV/radio service later this year.

Developed with antenna maker Raysat, the Ku band-delivered service will use spectrum and transponders leased from Intelsat to deliver 22 satellite TV channels from networks including Disney, Nickelodeon, CNBC, Bravo, Comedy Network and Cartoon Network.

The system will also provide 20 satellite radio channels, though AT&T has not yet specified a programmer.

The product has a compact, low-profile antenna for use on cars, trucks and SUVs, and a technology that AT&T says overcomes line-of-sight obstacles such as overpasses, buildings, trees or tunnels.

It will be sold through auto dealerships and other automotive product vendors where buyers can have the compact antennas and receivers installed to link into rear-seat entertainment systems. Subscription involves the purchase and installation of a $1,200+ equipment package and an ongoing $28 per month service fee.

The service competes with Sirius XM's Backseat TV that delivers three mobile TV channels at an additional subscription cost of $6.99 per month.

OTHER MOBILE VIDEO ON THE WAY

Audiovox and Qualcomm's MediaFLO plan to deliver 20 channels of live video into the car using an add-on device from Audiovox that links to an existing car video screen; the Audiovox device is expected to retail at around $500. The device is expected to launch in nine months; the companies have not named a carrier service. MediaFLO TV is now offered on cell phones.

Also, Kenwood demonstrated a prototype car stereo system receiving live TV over the proposed ATSC mobile DTV standard; Harris Broadcast and LG also demoed such equipment. Broadcasters

See CES, page 8 ▶

The Metropolitan Opera sets the standard for great sound.

And it's chosen ACCESS to let the world listen in.

Photo: Jonathan Tichler/Metropolitan Opera

"Opera is one of the most challenging musical genres to do complete justice to in a broadcast, but ACCESS makes it easy."

—Matthew Galek, Broadcast Engineer for The Metropoiltan Opera

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said they intend to launch mobile DTV on 63 stations in 22 markets. While most observers believe mobile video will compete with radio in the car, a Kenwood spokesman says to look at it another way: two audio channels are planned for the service, and, rather than seeing mobile video as a competitor, radio should be looking at this as a new channel on which to provide its content.

MORE COMPANIES DEBUT INTERNET TABLETOPS

Not only is Internet radio growing in the car, several manufacturers plan to introduce their first tabletop Internet radios this year.

Cobra plans to ship two tabletop Internet radios in March. The CIR 1000A, retailing for $199, includes WiFi, Internet access, audio streaming from a PC and Internet station presets. It decodes MP3, WMA and Real Media streams. The CIR 2000A at $299 is a three-piece unit with separate speakers, FM tuner, single-CD player, music playback from an SD card and includes a USB drive. It accesses ShoutCast and World Station portals to offer more stations.

Grace Digital is debuting two Internet radios. The GDI-IR3020 is an iPod-docking Internet radio with built-in WiFi and Ethernet port and ability to stream music from a networked PC. The user can access more than 15,000 Internet radio stations using Revica. The unit streams multicast HD Radio stations, Internet services from Pandora and Sirius Internet Radio. The GDI-IRP600 is a portable AC/DC Internet radio with FM tuner, WiFi and access to some 11,000 Internet radio stations. Price was not set at press time.

The first Internet radio from iLuv, the iNT170 Internet Dual Alarm Clock lets users access 15,000 Internet radio stations as well as podcasts. The unit includes 40 presets that can be used for Internet radio as well as FM stations. The unit lists at $199.99.

From Netgear, the Digital Entertainer Elite EVA9150 is a combination digital media adapter and digital media player that streams audio and video to an A/V system from a networked PC or network-attached storage device. The unit streams media directly from the Internet such as YouTube, Internet radio, Flickr photos, RSS, and podcasts. The product includes a 500 GB hard drive for extra storage of movies, photos, and music. An HDMI port, two USB ports for iPod and USB drives are included. The unit, due this month, will list at $399.

The Sonoro Elements W tabletop radio can access 13,000 Internet radio stations. Users can find more stations through *www.mysonoro.com*.

Danish brand Tangent Audio has entered the Internet radio market with the Quattro WiFi Internet/media player/FM-clock radio. The unit access Internet stations through the Reciva portal and lists for $399. For the same price, the Cinque AM/FM/CD clock radio adds a single CD player. It also features MP3/WMA CD playback.

INTERNET MEDIA DEVICE ALLIANCE GROWS

Some 70 companies joined a new alliance for Internet media devices at the group's meeting at CES.

That's according to Frontier Silicon Marketing Director Mark Hopgood. Frontier Silicon is a founding member, along with the BBC, Global Radio and others.

In an interview, Hopgood said the companies paid $500 each to join. New members include Clear Channel Broadcasting and Microsoft, he said.

The Internet Media Device Alliance aims to define technical standards, functions and profiles to encourage development of Internet media devices. Other objectives include promoting Internet-connected device technology to consumers and retailers and to provide a consistent user experience between products.

"Retailers are confused about what Internet radio means," he said.

Further information is available at *www.imdalliance.org*. Membership is open to consumer electronics OEMs, retailers, radio broadcasters, content aggregators, online music service providers, device manufacturers and technology providers.

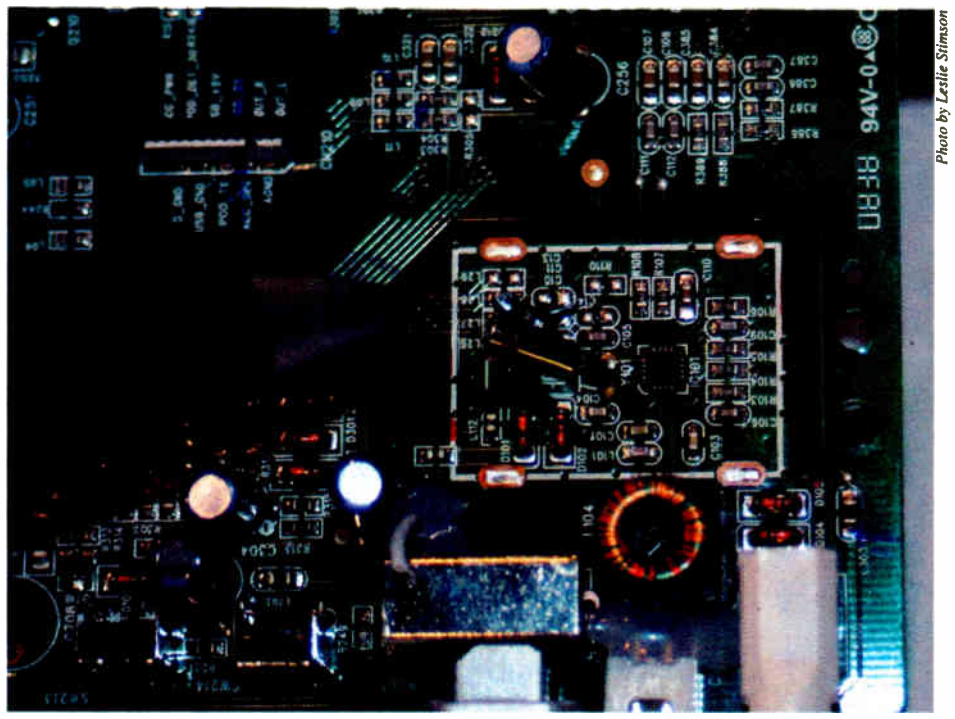

Photo by Leslie Stimson

Silicon Labs has reduced the size of its FM chip from six inches to about one inch. The company is working with Global Security Systems and Northrop Grumman to encourage the use of FM chips in cell phones so they can distribute emergency alerts using RDS.

FRONTIER SILICON TARGETS U.S. INTERNET RADIO MARKET

Frontier Silicon says it has some 85 percent market share of DAB Internet radios and now is aiming at the U.S. Internet radio market.

It plans to work with manufacturers to bring new Internet radios to the market for less than $150.

While WiFi-based Internet radios are no longer a novelty, Frontier claims its Venice 6.2 hardware/software-based platform will allow a new generation of products to retail well below current prices that average above $200.

The company provides modules containing the RF and baseband chips for audio decoding and demodulation to make the manufacturing process easier for Chinese radio makers, said Marketing Director Mark Hopgood.

Frontier launched the Venice 6.2 module in European markets as a single solution for receiver manufacturers looking for an integrated approach to build DAB/DAB+, FM-RDS and Internet streaming functionality into their audio products. The platform is said to provide support for AAC+, MP3, Real, WMA and FLAC codecs.

Frontier Silicon says this company has worked with online content providers such as Pandora, Last FM, Rhapsody and Sirius XM online to assure support for those services.

NORTHROP GRUMMAN, GSS, SILABS PARTNER ON WARNINGS

NAB and iBiquity aren't the only organizations that want cell phone carriers to install or turn on FM chips in their handsets.

Global Security Systems, Silicon Labs and Northrop Grumman would like to see FM chips in cell phones as well as a way of distributing emergency alerts using RDS.

While GSS said stations in parts of 10 states are using its AlertFM system. It would like to see more broadcasters and states sign on. It's enlisted the help of Silicon Labs to shrink an FM chip so they consume less power and improve their signal-to-noise ratio — all in an effort to convince cell phone carriers to install FM chips on their devices, company representatives told Radio World.

Silicon Labs Senior Marketing Manager Wade Gillham said his company has reduced the size of the materials that make up its FM chip dramatically, from six inches to about an inch. Its FM chip is in the top-selling five cell phone and media players, he said.

Northrop Grumman recently joined this effort to deploy national, state and local alert and warning systems that use the wireless and non-wireless communications infrastructure as well as consumer devices such as cell phones, music players and GPS devices.

GSS has been working on an integrated alert system it hopes will be deployed by homeland security officials. Northrop Grumman manages the emergency information technology infrastructure in 80 U.S. cities.

The GSSNet AlertFM system uses an FM chip that can be inserted into many common consumer devices to enable them to receive weather, homeland security and local alerts including traffic emergencies and Amber alerts. The devices receive content from broadcasting partners, as well as state and local agencies to ensure distribution of NOAA, DHS and Federal Emergency Management Agency content.

GSS, Silicon Labs and Northrop Grumman have formed a coalition and invited NAB, more broadcasters and cell phone carriers to join, to address implementation of public alert and warning systems.

FRAUNHOFER DEMOS MPEG FOR IPOD, IPHONE

Fraunhofer IIS, a provider of MPEG audio technologies, announced new mobile platform-optimized (e.g., 3G and WiFi) versions of some of its codecs. The main mobile target, according to Fraunhofer, is the iPhone.

Top of the list for mobilization are the MPEG-4 HE-AAC, MPEG-4 HE-AAC v2, MPEG Surround, MPEG AAC-LC, MPEG HD-AAC and MPEG AAC-ELD. These are being optimized for use with low resource consumption devices such as the iPhone and similar devices.

Fraunhofer also demoed MPEG Surround through a prototype iPod docking station and a car.

Harald Popp, head of the Multimedia Realtime Systems department, said the company believes MPEG Surround will become a major online distribution format when downloading music, movie and TV content, and offers the music industry a way to sell iPod-compatible surround content through the existing stereo download infrastructure.

THX, NEURAL FEATURED IN 2010 LINCOLNS

THX II Certified Audio systems, featuring THX Slot Speaker and Neural Surround technology, will be available in the 2010 Lincoln lineup. The companies said the Lincoln MKT, which debuted in January at the North American International Auto Show, is one of the first automobiles to feature Neural Surround, a home theater technology to improve the way surround sound is experienced from MP3s and other compressed digital music formats.

The 2010 Lincoln vehicles feature THX II Certified Audio systems, available with 5.1 surround sound playback and Neural Surround for up-mixing stereo tracks. The Neural Surround technology is designed to improve how Lincoln owners experience compressed digital music stored on their iPods and mobile phones, as well as HD Radio and satellite radio.

NEURAL AUDIO SOLD TO DTS

DTS Inc. has acquired Neural Audio Corp. It plans to expand its offerings in the broadcast, satellite radio, automotive and gaming markets. DTS makes decoders for surround sound processors.

The California-based DTS paid $7.5 million in cash and may pay up to $7.5 million more over five years if certain conditions are met. The transaction closed on Dec. 31. DTS President/CEO Jon Kirchner announced the purchase.

While Radio World readers know Neural for its work in surround sound audio for HD Radio, the Kirkland, Wash.-based company also developed surround audio for music, movies, broadcast video and video games.

Among those moving to DTS with the deal are Geir Skaaden, chief executive officer; Mark Seigle, president and chief operating officer; Jeff Thompson, director of engineering, and James "JJ" Johnston, chief scientist.

Can do.

CODECS

NEW

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Zephyr / IP (Mixer)

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Tinkering Brings Its Own Dangers

Tempted to 'Roll Your Own'? Consider the Liability Issues Before You Do

by John Bisset

Seeing the picture of that relay in the Nov. 5 *Workbench* brought a chuckle to Steve Vanni of Technet Systems Group (*www.technetsystems.com*).

The photo reminded Steve of something he once found while inspecting a transmitter site for a prospective purchaser.

You can see Steve's "find" in Fig. 1. The photo does ours one better; this was plugged into a live outlet, with the relay cover missing as well.

"Seeing this, it's hard to figure out what the installer was thinking," Steve writes. He was glad he didn't fumble around in the dark that day feeling for a light switch.

By the way, Steve's prospective buyer never did close the deal. Readers can imagine why.

Steve Vanni can be reached at *svanni@technetsystems.com*.

★ ★ ★

Here's a word of caution regarding all these relays from Nick Markowitz.

Nick is a part-time fire investigator as well as a broadcast engineer. Nick notes some real-world concerns when it comes to tinkering.

In yesterday's world, tinkering was a perfectly acceptable way of solving problems. But as we have gone from carefree days to a world of rules and regulations — and litigation — the tinkerer's days may well be at an end.

The AC loss relay we showed is a perfect example. First off, Nick says, it is a violation of the National Electrical Codes to have open 120V voltages on a relay like this. It is required to be mounted within a grounded metal enclosure.

Fig. 1: The bizarre relay widgets just keep on coming.

Just putting it inside a rack or cabinet does not cut it, and if OSHA would happen to walk in and find it, which has been known to happen, well, better get out your wallet.

Worse yet, should there be a fire in the studio and an investigator find something like this, you are just giving an insurance company an excuse not to pay or deduct payment from a claim.

The same is true when, in the good old days, a switch went bad on a piece of equipment. We just drilled a hole, mounted a new switch and bypassed the old one. Not anymore. If this equipment has a UL label, you just violated it. Again, you are giving OSHA and a fire investigator carte blanche in coming after you.

There's nothing wrong with tinkering, Nick continues, but we must use common sense when it comes to how we do it — and make sure we are not violating codes or regulations. To do otherwise, we leave our stations open for legal complications.

In bad economic times, insurance companies are looking at every way possible to not pay claims. "Tinker on we must," but we must also follow safety rules or end up spending our time defending our actions.

To be fair, most readers understand that kludges like the power failure relay shown in the November column are just that and not an example of good engineering practice. As many have pointed out to me, this kind of circuit is useful but best mounted on a panel, with a fuse and line cord.

However, it's a sad commentary that many readers like Steve Vanni and our engineer who removed the power failure relay have come across such contraptions in the first place.

Nick Markowitz can be reached at *nick-markowitz@verizon.net*.

See COOLING, page 12 ▶

Fig. 2: Wall-mounted air conditioners are an excellent cooling choice for rack rooms.

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There's Something Happening Here

How Long Will Internet Radio Remain a 'Secondary Service'?

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Many of us can still remember when "Digital Audio Equipment" was a separate category in equipment catalogs, convention listings and other reference guides.

After the major entries for Microphones, Mixers, Turntables, Recorders, Audio Processors and Transmitters, somewhere down around Wire & Connectors or Racks & Cabinetry, we'd find a "Digital Audio" category, where things like early CD players, DAT machines and other such exotic devices were listed.

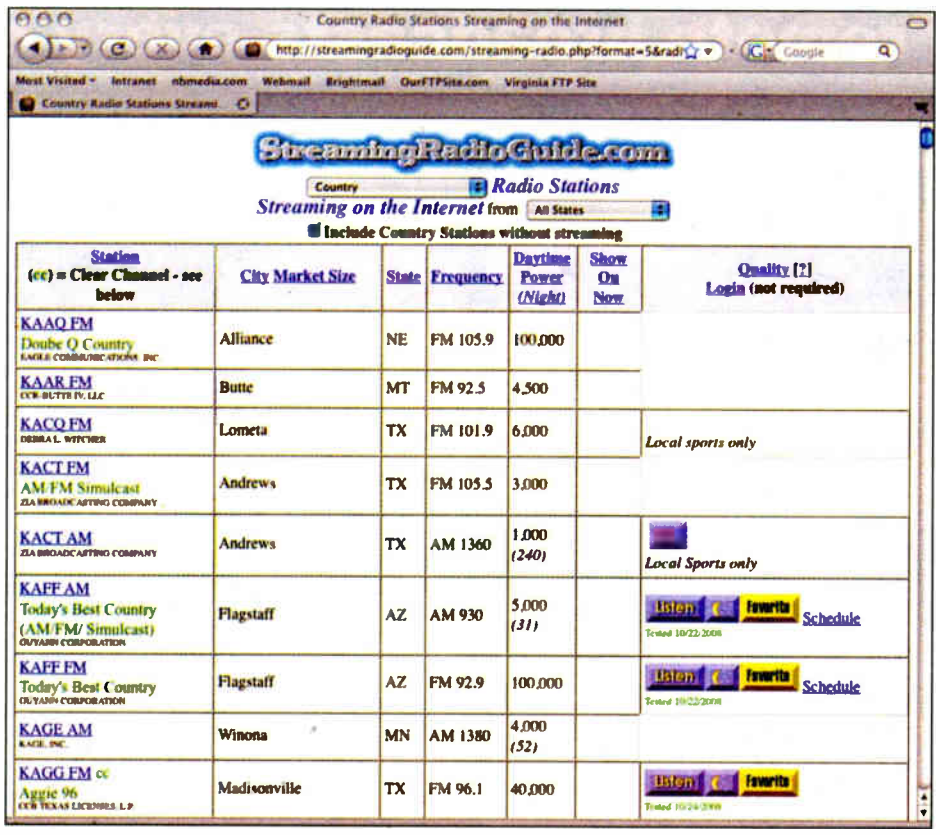
Over time, of course, "digital audio" equipment gradually migrated into most of the other mainstream categories, and that separate bin for this novelty stuff disappeared. Taking its place in the nether categories of those listings we now find retro items like Turntables, Tube Mics and Analog Audio processors — sometimes even listed under a slightly ironic "Analog Audio Equipment" category.

Looking back, we see that this listing process became inverted relatively quickly, in a classic case of paradigm shift. What was once at the fringe became mainstream and vice versa.

There's somethin' happenin' here

Could a similar phenomenon be affecting our radio services themselves? It seems unthinkable today, but consider what happened in the above example. Check out the following wake-up call I experienced recently:

In searching for a radio station listing online, I consulted one of my favorite sites for this purpose, *streamingradioguide.com*. While hunting around this rich resource, which comprehensively lists broadcast radio stations that stream on the Internet, I noticed in the sort-by-format view an innocuous little check box (default unchecked) that said



StreamingRadioGuide.com keeps an eye on just that.

"Include <Format name> Stations Without Streaming."

Checking this box expands the current listing to add the broadcast stations of that format nationwide that are *not* currently streaming any content online. Let's see ... Click ... Wow.

It really shouldn't have surprised me so much, I suppose, but viewing the results in such empirical and graphic terms was quite an eye-opener.

Checking that box made *very little difference* to the population of most format listings. The results depended somewhat on what format you were looking at — for example, more non-streaming stations appeared on the "Nostalgia/Standards" or "Oldies" page than on the "Dance/Party Music" or "Young Urban/Hip Hop" listing, as you might expect. In *every* format, however, the site showed that *most* stations were already streaming, and for some formats, only a tiny handful of stations were added to the list when non-streamers were included.

'Oh, look — this "radio station" also puts one of its streams on FM ... how quaint.'

A closer look also indicated that most of the non-streamers appeared only in the smallest markets, regardless of format.

The perspective of this site is net-centric, of course, but nevertheless this experience made me realize that we could actually be seeing the beginnings of a polar shift.

Before too long, the user of such a site might say, "Oh, look — this 'radio station' also puts one of its streams out over the air on FM" (subtext = "Aw, how quaint."). Such a station could become the outlier rather than the other way around, with the appearance of a few radio streams duplicated on air taking the relatively rarified place that Internet streaming of some forward-looking radio stations' air signal occupied a few short years ago.

Of course, audience numbers have a long way to go before that happens — on-air listening still far outpaces online listening — but trends are moving in this direction. Overall online radio listening is experiencing double-digit increases while on-air audiences are generally flat or declining. We've seen this before, as FM audiences eventually overtook AM listening — another previously unthinkable event.

Yet this case is fundamentally different than the AM-to-FM case. Should overall online listening eventually eclipse the broadcast audience, it's almost certain that these listeners will be spread out over a far larger number of services, and they will not all be locally originated.

Thus while cumes might shift to majority online listening, share for any service will likely never reach what broadcast stations historically enjoyed.

In fact, those days are probably already over and will not return. (As an aside, the new metrics generated by the introduction of the PPM can actually help here, in that they introduce another disconnect from the past, so comparisons to old numbers will be inherently discounted anyway.)

... What it is ain't exactly clear

Yet another indicator of the inversion is the announcement in September by one major Internet radio provider that it now offers music programming services for radio stations.

Chicago-based Slipstream Radio, a

See ONLINE, page 14 ▶

Cooling

▶ Continued from page 10

★ ★ ★

Office buildings can pose lots of problems for a broadcast facility. Perhaps one of the biggest issues is cooling.

Not every building is wired for 24/7 air conditioning — and if it is, the management firm may want a fortune to provide conditioned air after standard business hours.

If you're looking for new studio space, this is an important consideration. At one station, the building management put a charge in the lease: $150 per hour for every supplemental wall unit used after 6 p.m. Should someone leave the A/C unit on in a studio, get ready to pay.

Separate rooftop units can be installed to handle the studios, but these compact units are ideal for rack rooms, as seen in Fig. 2. That's what Dirk Nadon of the Nassau Broadcasting New Hampshire cluster chose for his rack room. Mounted high on the wall, the unit is out of the way but dumps cool air to keep the room comfortable, and the equipment happy.

★ ★ ★

Fig. 3 is another novel approach to solving a common studio problem. How many studios have you seen where an "air chair" has worn ruts in the studio carpet? I've seen plenty. Not only does the torn carpet look terrible, but eventually, the rutted threadbare carpet will pose a safety concern.

Yes, you can place one of those plastic office chair mats on the carpet and replace it every few weeks when it cracks under 24/7 use. The alternative is to carpet the room but use a wooden laminate floor or tile under the console area. The smooth surface makes for easy chair movement and it will take awhile for ruts to form.

Fig. 3: Wooden floors permit easy movement of the talent's 'air chair.'

Dirk Nadon can be reached at *dnadon@nassaubroadcasting.com*.

John Bisset has worked as a chief engineer and contract engineer for 40 years. He recently joined Nautel as regional sales manager for Europe and Southern Africa. He was SBE's Educator of the Year in 2006. Reach him at johnbisset@verizon.net. *Faxed submissions can be sent to (603) 472-4944.*

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

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Sangean's WFR-1: Impressive, Frustrating

by James Careless

With its full-range stereo speakers, high-gloss wooden case and low-key elegant design, the Sangean WFR-1 Wi-Fi/FM radio is the most impressive Internet radio I have seen. Its performance on the Internet "band" or as a LAN-connected music player is stellar. And yes, the radio sounds good when tuned to the Web.

But the WFR-1's FM tuning is possibly the worst I have encountered on a modern digital radio. Its nicely-weighted tuning dial tunes in 0.05 MHz steps, making roaming from one station to the next tedious and time-consuming. The fact that you can hear the audio "chuffing" in staticky bursts as you tune doesn't help. As for the remote control? Even though it has a 0–9 numeric pad, you cannot punch in FM frequencies directly. The only good news is that the remote will tune in 0.10 MHz steps, at a rate of 7–8 steps a second.

Wi-Fi Radio: The Sangean WFR-1 promises access to 16,000 Internet radio stations as well as local FM broadcasts.

Nitty-gritty

The WFR-1 is a well-built, well thought-out piece of radio hardware. It has two 5 watt, 8 ohm speakers for stereo sound; jacks for Ethernet, USB input (from an iPod or other device), Line Out, Aux In and headphones; and the ability to connect to a wireless network (aided by a back-mounted, movable Wi-Fi antenna). Its remote control is full-sized and runs on two AAA batteries, making replacement easy. The controls essentially duplicate everything offered on the front panel.

The monochrome LCD display (yellow lit letters on a dark background) is easy to read in all lighting. The front layout is logical, with buttons ("Band," Volume Up and Down, EQ) clearly labeled and accessible.

Unlike many Internet radios I have reviewed, the Sangean WFR-1 does not use the Reciva radio tuning system and Web site. Instead, its technology and the radio Web sites it accesses comes from the Frontier Silicon Radio Portal at *www.wifiradio-frontier.com*.

Like Reciva.com, the Frontier Silicon Radio portal provides constantly updated links to thousands of Web radio stations and podcasts for free, with the ability to accept new listings submitted by users. Unlike Reciva, you can only access the audio online if you buy a Frontier-enabled radio and enter in the access code stored in your WFR-1's memory. This is displayed to you on the receiver's LCD screen.

Despite the use of a non-Reciva system, the WFR-1's tuning approach is similar to Reciva-driven receivers like C. Crane's CC WiFi Radio or the Tangent Quattro. Using the tuning dial, which presses inward to make selections, plus a few keys on the front, you drill down through the WFR-1's menu. All of this functionality is duplicated on the remote control, which is easy to use.

For instance, you can choose Internet stations based on their Location or Genre. The WFR-1 also will let you connect to "Popular Stations" (based presumably on the tuning of other Frontier members), or add your own from the profile you've created at the Frontier Web site. The same approach is used to access podcasts or music files on other PCs on the LAN, using the WFR-1's Music Player mode.

On the FM side, the WFR-1 lets you tune using its tuning dial or remote control TUNE- or TUNE+ keys. Once you have found the station you want, you can add it to one of 10 presets. (The Internet radio can also accept 10 presets, accessible using the remote control.) The set comes with a back-mounted extendable FM whip antenna. RDS is provided.

Pros and cons

Wow. What a schizophrenic receiver.

On the "pro" side of the equation, the WFR-1 is the answer to an Internet radio listener's dream. Finally, a receiver with stereo speakers; no longer must I plug in headsets or a pair of external speakers to

See SANGEAN, page 20 ▶

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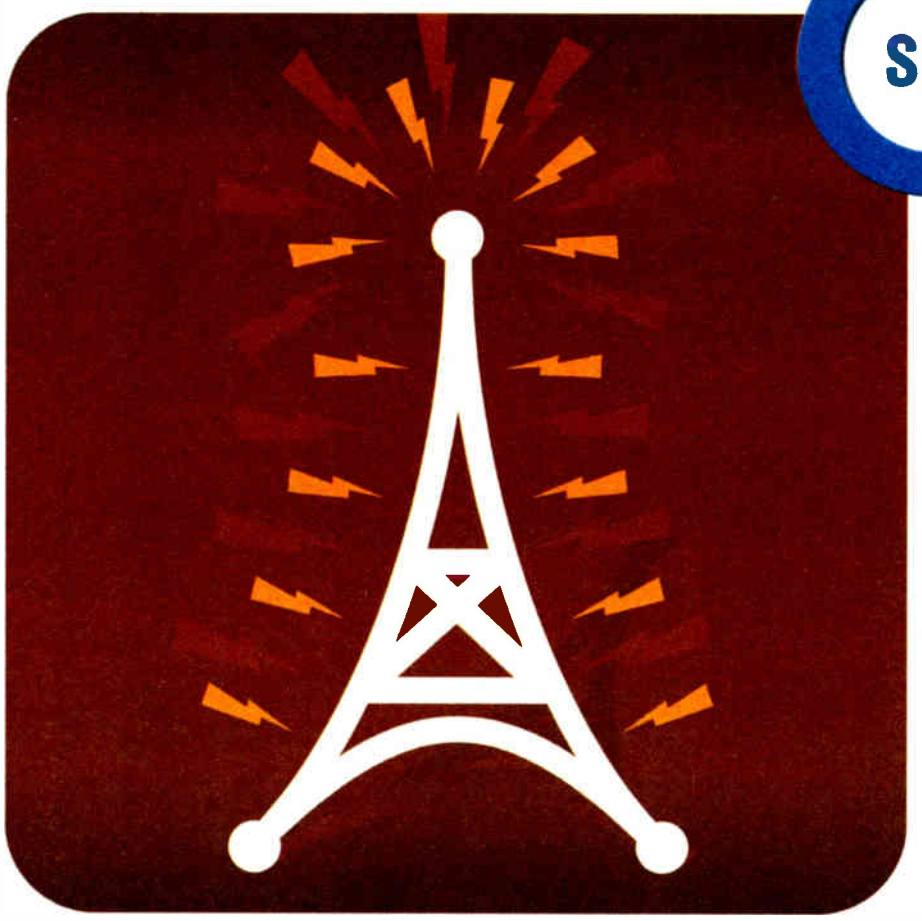
How to Produce Good Models

There Is a Right Way, and Many Wrong Ones, to Model AM Antennas

by W.C. Alexander

The author, a contributor to Radio World, writes here in his capacity as chairman of the Society of Broadcast Engineers Education Committee. RW regularly provides space to SBE as a service to the industry.



In January we opened The SBE University with three online courses. Regular readers are aware that this was a long time coming. The Education Committee has been working on this for almost a year now. The committee and board are pleased to see this effort come to fruition.

We launched the online university with "AM Antenna Modeling," a course designed to teach engineers how to model AM directional arrays properly in accordance with the new FCC rules and established procedures and practices.

This course was, we felt, timely, coinciding with the effective date of the new rules. It was also representative of the upper end of the kind of online training that we intend to make available, training that addresses the continuing education needs of broadcast engineers.

Proven approach

Moment method modeling is not new. It's been around for almost 30 years now and has been used widely by professional engineers, experimenters and hobbyists to good effect. Amateur radio experimenters have used moment method modeling extensively in their antenna designs, and much of what we know about modeling, its advantages and limitations comes from this group that is so often on the cutting edge of technology.

Many years ago, a few broadcast consulting engineers began using moment method computer antenna modeling for AM directional arrays in an attempt to better predict the current distribution on the array elements, find operating parameters that are representative of the far field contribution of each element and more accurately predict the driving point impedances of the towers.

These engineers found that computer modeling did indeed make their jobs easier, shortening tune-up times and allowing for better phasing and coupling system designs in many cases.

As they gained experience with the modeling art, a movement was begun to get the FCC to allow the use of moment method antenna modeling in lieu of traditional magnetic field measurements. It was a long and difficult road, but this effort has at long last paid off.

The advantages of moment method modeling of AM directional arrays have been touted exhaustively in recent articles in Short Circuits, Radio World and other industry publications, so there is no need to again list them here. It is, however, important to note that there is one right way and there are many wrong ways to properly model such antennas.

The one thing that sets apart moment method models produced for AM directional arrays from all others is model calibration.

The right way

Clearly, it is important for those modeling AM antennas to do it the right way. "AM Antenna Modeling" seeks to teach the "right way" to model. The procedures and practices taught therein are in accordance with both the FCC rules governing AM antenna modeling and the best practices of the industry. Those who use our online course to learn how to model properly will be well equipped to produce good models that are acceptable to the FCC and repeatable by those who may wish to later confirm the submitted models.

There is another side to modeling, however, that does not take place in front of a keyboard and monitor, and this aspect is every bit as important as any other part of the modeling process.

The one thing that sets apart moment method models produced for AM directional arrays from all others is model calibration.

This amounts to tweaking the model to achieve a match with real-world conditions, and the effect is to remove some of the unknowns from the equation. Assumptions are thus replaced with real-world numbers, and these numbers are obtained from careful measurement of the base impedance matrix in the field. The model is then adjusted so that its calculated base impedances match the measured impedances.

Clearly, the method of making these impedance measurements is critical to good model performance, and "AM Antenna Modeling" treats these measurements in detail.

Then there is the operational aspect of the modeling process, adjusting the antenna operating parameters to the model-predicted operating parameters to properly create the correct pattern shape. We cannot, however, confidently adjust the antenna operating parameters unless we know that the sampling system — the system of pickups, transmission lines and indicating instruments that displays the relative currents and phases of the array elements — is providing accurate indications. "AM Antenna Modeling" deals carefully with the proper method of calibrating the directional sampling system in accordance with the FCC rules.

Whether you are the one who will be doing the actual modeling or the one who will be making the field measurements and adjustments that go along with the model, this online course has something for you.

Those who work in the field providing data to the consulting engineer creating the actual model will have a much better idea of what is required for an accurate model and why. Those who do the actual modeling will learn how to do it properly and what the rules are with respect to the modeling core used and the FCC. Those who do it all will come away with a good understanding of the process from A to Z.

Flight tested

"AM Antenna Modeling" is a product of the SBE Education Committee. We created the course with the kind assistance of experts in the field of AM antenna modeling, and a number of qualified and experienced engineers took the course for a "test flight" before we released it. These individuals suggested improvements and changes, and we implemented most if not all of these. We have a high degree of confidence in the course as it now exists.

As we gain understanding of the modeling process in the context of the new FCC rules, there is no doubt that there will be some fine-tuning of the rules and procedures in the coming months and years. We will do our best to keep the course up to date with any such changes that occur.

Two other courses are presently available as part of The SBE University: "FM Transmission Systems" and "Matching Networks and Phasing." We have several other online courses in the development queue, including courses on digital television, broadcast telephony and audio processing. Stay tuned for additional releases in the coming months.

For course info, visit www.sbe.org.

Online

▶ Continued from page 12

spinoff of the well-known Accuradio service, can provide one or more customized streams to radio stations for their online use, based on whatever format(s) the station wants to offer via Internet streaming.

Typically the concept allows a station to extend its on-air brand to online, but in ways that go beyond simple streaming of the station's air signal, and in a manner that appeals to the experienced online media user.

This includes the ability to incorporate much greater variety across multiple streams, and/or allows listeners to personalize streams to their own tastes (just as AccuRadio and similar services like Pandora do), which are processes that generally exceed the average radio station's ability to do for themselves — at least today.

Specifically, Slipstream's service lets online listeners pause a stream, skip songs, eliminate selected artists from their stream and mix multiple genres together into a single stream.

The service also allows stations' on-air identity elements and promos to be integrated in their streams, along with audio and on-screen advertising sold by station staff. Slipstram offers its services to radio stations for a flat monthly fee plus bandwidth and royalty costs, or barter deals may be arranged.

These are a few of the indicators that the scales are indeed tipping in a new direction. Whether the transformation will continue until we see a complete reversal of former conditions remains to be seen. (The ultimate penetration and popularity of mobile broadband for online radio listening will have significant impact on this issue.)

In any case, it's clear that we are in the midst of an important evolutionary moment for the industry.

Skip Pizzi is contributing editor of Radio World.

Can a radio console be over-engineered?

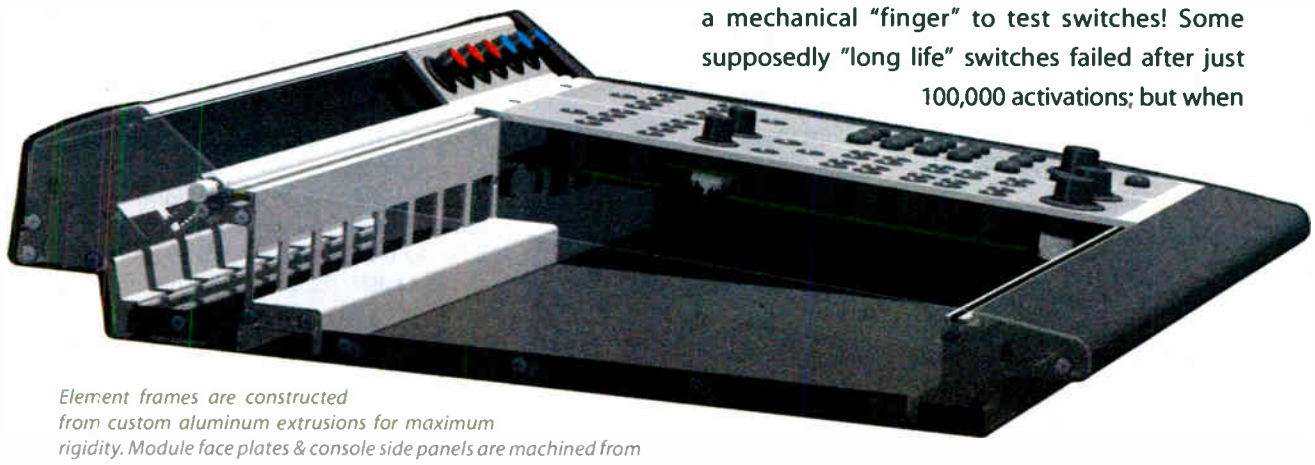
(Only if you think "good enough" really is good enough.)

The radio console, redefined.

Building a great console is more than punching holes in sheet metal and stuffing a few switches in them. Building a great console takes time, brain-power and determination. That's why Axia has hired brilliant engineers who are certified "OCD": **Obsessive Console Designers,** driven to create the most useful, powerful, hardest-working consoles in the world.

Beneath the surface

There's more to a great board than just features. **Consoles have to be rugged,** to perform flawlessly 24/7, 365 days-a-year, for years at a time. So we literally scoured the globe for the absolute best parts — hardware that will take the torture that jocks dish out on a daily basis.



Element frames are constructed from custom aluminum extrusions for maximum rigidity. Module face plates & console side panels are machined from thick plate aluminum. Even the hand rest is a beefy extrusion. All this heavy metal means even the most ham-handed jock can't dent it..

First, Element is fabricated from thick, **machined aluminum extrusions** for rigidity and RF immunity. The result: a board that will stand up to nearly anything.

With so many devices in the studio these days, the last thing anyone needs is gear with a noisy cooling fan. That's why Element's **power-supply is fanless**, for perfectly silent operation inside the studio.

Element modules are **hot-swappable**, of course, and quickly removable. They connect to the frame via CAT-5, so pulling one is as simple as removing two screws and unplugging an RJ — no motherboard or edge connectors here.

Faders take massive abuse. The ones used in other consoles have a big slot on top that sucks in dirt, crumbs and liquid like the government sucks in taxes. By contrast, our silky-smooth conductive-plastic faders actuate from the side, so that **grunge can't get in.** And our rotary controls are high-end optical encoders, rated for more than **five million rotations**. No wipers to clean or wear out — they'll last so long, they'll outlive your mother-in-law (and that's saying something).

Element's **avionics-grade switches** are cut from the same cloth. Our design team was so obsessed with finding the perfect long-life components that they actually built a mechanical "finger" to test switches! Some supposedly "long life" switches failed after just 100,000 activations; but when our guys found the switches used in Element, they shut off the machine after **2 million operations** and declared a winner. (The losers got an all-expense-paid trip to the landfill.)

Element's individual components are **easy to service**. Faders come out after removing just two screws. Switches and rotary volume controls are likewise simple to access. And all lamps are LEDs, so you'll likely **never need to replace them.**

Engineers have said for years that console finishes don't stand up to day-to-day use. Silk-screened graphics wear off; plastic overlays last longer, but they crack and chip — especially around switches and fader slots, where fingers can easily get cut on the sharp, splintered edges. We decided that we could do better.

There's a reason these board-ops are smiling. Axia consoles are in more than 1000 studios worldwide.

Element uses high-impact Lexan overlays with color and printing on the back, where it **can't rub off.** And instead of just sticking the Lexan to the top of the module like some folks do, our overlays are **inlaid on the milled aluminum module faces** to keep the edges from cracking and peeling — expensive to make, but worth it. For extra protection, there are **custom bezels** around faders, switches and buttons to guard those edges, too. Which means that Element modules will **look great for years.**

By the way, those on/off keys, fader knobs and bezels are our own design, custom-molded to give **positive tactile feedback.** The switch is flush with the top of the bezel, so it's easy to find by touch. But if something gets dropped on it, the bezel keeps the switch from being accidentally activated.

More than just products

Even the best products are nothing without **great support.** So Axia employs an amazing network of people to provide the best support possible: Application Engineers with **years of experience** in mapping out radio studios... the most knowledgeable, **friendly** sales people in the biz... Support Engineers who were formerly broadcast engineers. Plus a genius design team, software authors who dream code... one of the **largest R&D teams** in broadcast.

And now Axia has become radio's **first console company to offer 24/7 support**, 365 days a year. Chances are you'll never need that assistance, but if you do, we'll be ready for you. Our 'round-the-clock help line is +1-216-622-0247.

Proudly Over-Engineered

Are Axia consoles over-engineered? **You bet.** If you're looking for a cheap, disposable console, there are plenty out there — but this ain't it. Not everyone appreciates this kind of attention to detail, but if you're one who seeks out and appreciates excellence wherever you may find it... Axia consoles are built **just for you.**

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Sangean's WFR-1: Impressive, Frustrating

by James Careless

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Wi-Fi Radio: The Sangean WFR-1 promises access to 16,000 Internet radio stations as well as local FM broadcasts.

Nitty-gritty

The WFR-1 is a well-built, well thought-out piece of radio hardware. It has two 5 watt, 8 ohm speakers for stereo sound; jacks for Ethernet, USB input (from an iPod or other device), Line Out, Aux In and headphones; and the ability to connect to a wireless network (aided by a back-mounted, movable Wi-Fi antenna). Its remote control is full-sized and runs on two AAA batteries, making replacement easy. The controls essentially duplicate everything offered on the front panel.

The monochrome LCD display (yellow lit letters on a dark background) is easy to read in all lighting. The front layout is logical, with buttons ("Band," Volume Up and Down, EQ) clearly labeled and accessible.

Unlike many Internet radios I have reviewed, the Sangean WFR-1 does not use the Reciva radio tuning system and Web site. Instead, its technology and the radio Web sites it accesses comes from the Frontier Silicon Radio Portal at *www.wifiradio-frontier.com*.

Like Reciva.com, the Frontier Silicon Radio portal provides constantly updated links to thousands of Web radio stations and podcasts for free, with the ability to accept new listings submitted by users. Unlike Reciva, you can only access the audio online if you buy a Frontier-enabled radio and enter in the access code stored in your WFR-1's memory. This is displayed to you on the receiver's LCD screen.

Despite the use of a non-Reciva system, the WFR-1's tuning approach is similar to Reciva-driven receivers like C. Crane's CC WiFi Radio or the Tangent Quattro. Using the tuning dial, which presses inward to make selections, plus a few keys on the front, you drill down through the WFR-1's menu. All of this functionality is duplicated on the remote control, which is easy to use.

For instance, you can choose Internet stations based on their Location or Genre. The WFR-1 also will let you connect to "Popular Stations" (based presumably on the tuning of other Frontier members), or add your own from the profile you've created at the Frontier Web site. The same approach is used to access podcasts or music files on other PCs on the LAN, using the WFR-1's Music Player mode.

On the FM side, the WFR-1 lets you tune using its tuning dial or remote control TUNE- or TUNE+ keys. Once you have found the station you want, you can add it to one of 10 presets. (The Internet radio can also accept 10 presets, accessible using the remote control.) The set comes with a back-mounted extendable FM whip antenna. RDS is provided.

Pros and cons

Wow. What a schizophrenic receiver.

On the "pro" side of the equation, the WFR-1 is the answer to an Internet radio listener's dream. Finally, a receiver with stereo speakers; no longer must I plug in headsets or a pair of external speakers to

See SANGEAN, page 20 ▶

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Making Digital Radio **Work.**

TECH TRENDS

AoIP Grows Up and Sprouts Legs

Products Proliferate in Studio and Field Putting Power of Internet Protocol to Work

by Bob Kovacs

Increasingly important in the audio chain is the ability to deliver audio using an IP network. The same IP network that lets you order products from Amazon or check your e-mail quickly is becoming a necessary method for receiving and delivering programming.

With networking technology as fast and cheap as it is, new ways of handling signals are as inevitable as ripples on a rainy pond.

Howard Mullinack, director of marketing for Wheatstone Corp., said low-cost Gigabit Ethernet drives studio product design.

"Gigabit Ethernet allows an 'audio anywhere whenever you need it' system without the need for the system administrator to set up Quality-of-Service or priority levels," Mullinack said. "The affordability of Gigabit Ethernet switching allowed Wheatstone to develop the E-Square system, which was introduced at NAB2008."

Wheatstone isn't ready to turn all audio tasks over to IP networks, however.

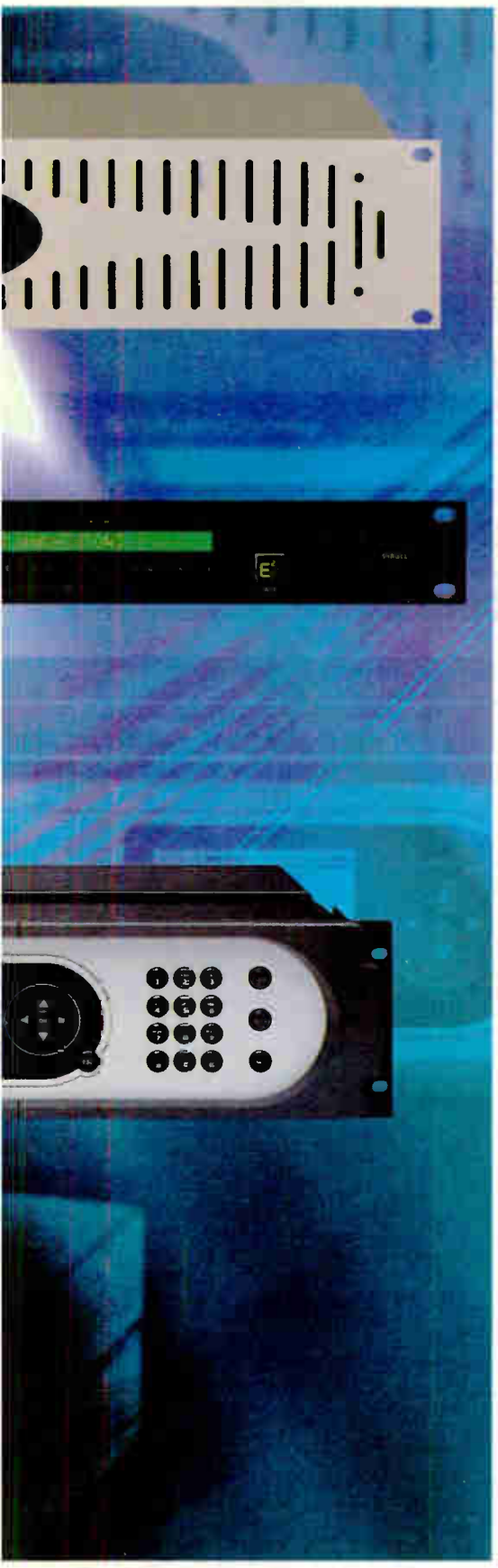
"Audio-over-IP is simply another technology to move audio within a plant; it has its strengths and weaknesses compared with traditional TDM-based routing and mixing," Mullinack said.

Analog audio ruled the radio roost for nearly 80 years but the advantages of digital origination and distribution have taken hold in the past decade. Harris has been in the radio industry for much of the past century and has seen the changes. The company's first audio-over-IP product was the IntraLink-IP in 2002.

"IntraLink-IP was a great product for its time, but as IP use grew we realized that people were ready for something new, designed from the ground up to take better advantage of the medium," said Bob Band, global business development for Harris Intraplex Products.

Its Intraplex NetXpress IP Multiplexer is a modular system that can support up to 32 simultaneous streams, each of which may comprise multiple programs,

An audio-over-IP sampler, clockwise from upper left: Mayah Flashman II portable codec, Logitek Jetstream Mini, Wheatstone E Square digital engine, Telos Zephyr IP, Barix Exstreamer 1000 codec, Harris Intraplex NetXpress. More products are shown on page 20.



in unicast or multicast format. Besides audio, it can carry many types of legacy data traffic and it also supports both T1 and E1 circuits, and can be used to bridge between different types of networks.

Axia, an early and vocal IP proponent, continues to develop enhancements to its popular IP-Audio line of networked studio products. As the company adds more capabilities to IP-Audio, the developers' eyes are focused on maintaining standards and ensuring compatibility with IP-Audio products and the larger IP universe.

"The core Axia technology is standards-based, so the very first Axia products are 100-percent compatible with our newest offerings and with off-the-shelf Ethernet switches from various manufacturers," said Clark Novak, marketing director for Axia.

Novak cautions that there are different flavors of audio-over-IP and not all are equally tasty.

"Other products' only way of interfacing with audio devices is to use analog or AES ports," Novak said. "Sure, some products still need to connect through analog or AES and of course Axia does this, but [products increasingly] can connect directly to Livewire networks, which turns them into something more than just standalone audio sources — they become integrated resources for the entire networked facility."

Broader IP universe

As soon as you venture outside of a predictable in-house network into the broader IP universe, network latency and packetization throw audio reliability into question. Products used to stream high-quality audio over the Internet must accommodate this network uncertainty.

"Moving from POTS and ISDN to IP required switching development paradigms," said Darren Levy, international marketing manager for Tieline Technology. "We had to go from simple codecs working over smart networks to smart codecs working over dumb networks that didn't care if the audio got from point A to point B successfully.

"We had to become very good at delivering maximum audio quality using the lowest possible bit rates to minimize the pressure on any one IP link," Levy said.

In the next few months from Tieline Technology, expect a new G5 IP codec targeted at the latest high-speed fixed and wireless IP networks. The new codec will offer STL quality low-latency audio at 24-bit/96-kHz sampling.

Technical capability is not enough if products are complicated and unreliable, so manufacturers focus a lot of attention on making products easy to use and bulletproof.

"We hear customers asking for easier setup and more compatibility between vendors," said Tag Borland, president of Logitek Electronic Systems.

Its latest product, the JetStream Mini, is an IP-audio mixer that provides an entire 24-fader console, or up to four smaller ones, in two rack units of space.

"With the JetStream Mini, we are taking advantage of newer IP protocols to automate most of the network setup," Borland said. "Our adherence to standards and built-in format negotiation make it possible for the JetStream to share audio with a wide variety of other products."

Stamping out complexity is a major theme in the latest audio-over-IP products. Tom Hartnett, technical director of Comrex, said the latest version of the company's Access codec incorporates simple point-and-click setup.

See AOIP, page 20 ▶

AoIP

▶ Continued from page 19

"The design goal was a highly portable, easy-to-use product that could deliver excellent low-delay audio over a range of forthcoming IP services," Hartnett said. "We've had lots of success over wired IP, BGAN satellite, 3G, VSAT and WiFi, and we've recently completed testing over even newer circuits like WiMax, 450 MHz COFDM in Europe and low-cost 5.8 GHz point-to-point radios."

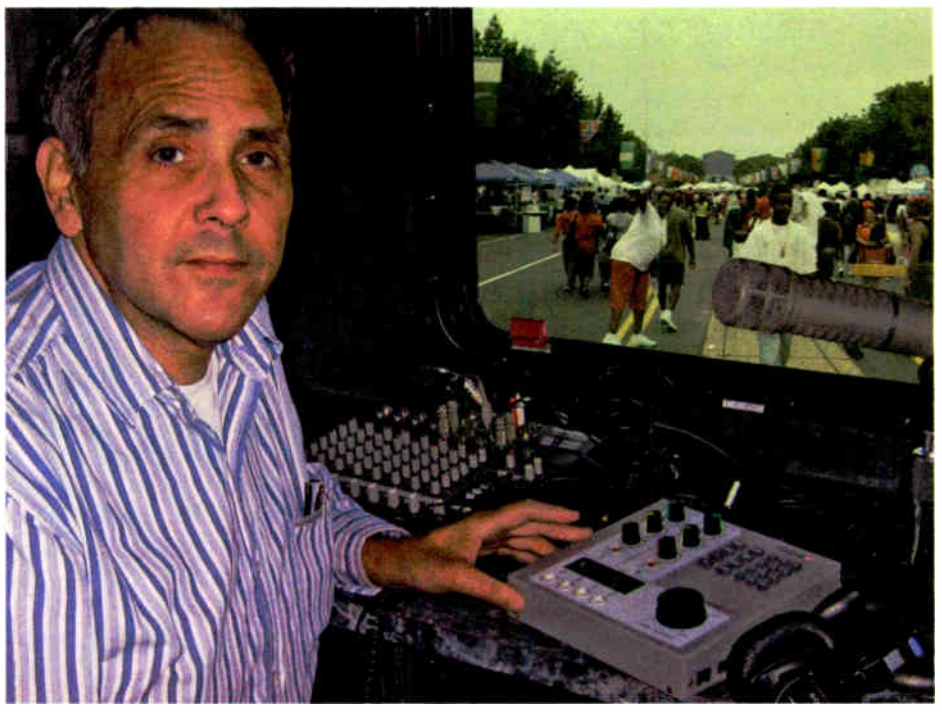
Going wireless

Now that you've become accustomed to plugging devices into standard RJ-45 jacks for an IP connection, the next step may be wireless. Broadband cellular technology is now common in most cities and it can provide wireless connections at data speeds in excess of 1 Mbps.

Wireless companies such as AT&T, Sprint and Verizon all sell some version of broadband wireless connectivity, often referred to as 3G. The latest developments in these companies' services continue to bump up the connection speed, although the fastest speeds are not always available everywhere from every carrier.

The incremental improvement from 3G is often called 3.5G, while the next generation of wireless broadband is called 4G. The only 4G network now in operation in the U.S. is called WiMax and it's currently limited to a couple of cities.

Betzy LaGatita from WNUE(FM) uses a Comrex Access portable and a 3G card to do mobile broadcasting from Sea World Aquatica water park in Orlando.



Marcus Xenakis, director of engineering and IT for Clear Channel Radio in Philadelphia, broadcasts live over IP from the annual Unity Day celebrations.

Andy Stadheim, a professional engineer and president of Barix Technology, sees wireless broadband networks in the programming chain of radio broadcasters.

"We see more and more customers use 3.5G for IP audio distribution and delivery," Stadheim said. "That has been unthinkable in the past, but with achievable, astonishing speeds and reliability [of today's wireless networks], remote real-time streaming is not a problem any more."

Barix continues to improve its Instreamer/Exstreamer line of codecs, with the latest version being the Extreamer-1000. The Extreamer-1000 can both encode and decode digital streams.

Another company targeting wireless 3G products is Mayah, which has a variety of AoIP codecs for both studio and remote operations.

"Significant trend towards [lower-cost] IP-enabled devices with reliability and increased bandwidth are the major factors for IP," said Daniel Loeffler of Mayah Communications. "All our new products come with IP/3G connectivity, including backup (redundant IP) for 24/7 operation."

Some of the possibilities for wireless 3G connectivity are highly interesting. Imagine getting a high-quality voice or music link from any street corner or in the middle of a field. Your station can broadcast a concert or Shakespeare from a park, or do a live report from practically anywhere news or sports can happen — with full broadcast-quality sound.

Looking at this quick poll of the industry, the outlook is for more of everything: more features, more reliability, more connectivity, more portability, and more forgiving setup and operation. If you're from radio's analog age, now is the time to brush up on your digital.

Bob Kovacs is a former radio announcer and engineer, now working on a nationwide television project and as a freelance writer. Reach him at pvreditor@yahoo.com.

Sangean

▶ Continued from page 16

hear stereo audio from the Web. Frankly, I am baffled as to why all Internet radios do not come with stereo speakers as a standard feature. Sangean got this right.

The sound quality of the WFR-1 is excellent. It is aided by this radio's provision of numerous EQ presets (Rock, Classic, Jazz) and its ability to accept your own personal EQ settings (limited to bass and treble). Again, this is the best Internet radio for listening enjoyment that I have found to date.

The genres offered by the Frontier Silicon Radio Portal far exceed those offered on Reciva.com. I like being able to drill down into a specific Old Time Radio channel featuring shows from the '30s and '40s rather than having to search the Reciva Oldies channel to guess which stations offer Jack Benny and which are simply playing 1950s rock and roll

The Music Player accesses sound files easily across a network. It is as simple to use as surfing the Web for audio; that's a nice change.

The finishing of the WFR-1 is gorgeous. I find myself constantly wiping fingerprints off its glossy, deep lacquered case.

However, FM tuning on the WFR-1 is nothing short of appallingly bad. Tuning in 0.05 MHz steps is agonizing, and the fact that the remote control can only speed this up to 0.10 MHz steps doesn't help much. There's no excuse for this.

Note to Sangean: Add a variable tuning speed button on the front of this receiver, to end user frustration. Failing that — or better yet, in addition to it — allow direct frequency entry on the remote control. I know the frequencies of the FM stations I like. If I can just punch them in directly, I'll be happy.

Frankly, I am baffled by this deficiency. As a shortwave radio manufacturer with long experience in direct entry keypads, Sangean knows how to build such technology. I have owned Sangean direct entry sets not for years.

Is the WFR-1 worth the money? If you are looking for a high-end Internet radio that looks great, the answer is yes. FM tuning notwithstanding, this is an excellent radio for Web listening ... and serving as eye candy in your living room/office. If FM is your first priority, look elsewhere. The tuning is just too painful to use on a regular basis, unless you intend to set your presets once and leave things at that.

The Sangean WFR-1 is available at many Web sites. It retails for $349.95; we found it online for well below that.

MARKET PLACE

Sacramento Hosts Ennes Workshop

The Society of Broadcast Engineers will present an Ennes Workshop on Saturday, March 7 in Sacramento, Calif. FM synchronous boosters, PPM and audio-over-IP are among the topics of interest to radio.

The workshop is sponsored by SBE Chapter 43 and KVIE(TV) and will be held at the facilities of the television station on W. El Camino Ave.

Ennes Workshops are educational programs that present technical broadcast topics for radio and television engineers and technicians. The Sacramento program will include four general sessions for all attendees and six breakout sessions geared to radio or television.

"The decision by Congress to postpone the DTV transition makes workshop sessions dealing with DTV issues of even greater importance," planners stated. "Other subjects covered during the workshop will include HD cable performance, disaster recovery, tower failures, FM synchronous boosters, PPM technology, audio-over-IP transmission and a review of basic filter and antenna theory."

The cost is $25 for members of SBE, SMPTE and AES, $35 for non-members. Lunch is included. To register, fax or mail a registration form to the SBE National Office with payment. The form can be found at *www.sbe.org/documents/SacEnnesWeb_001.pdf*; or for information e-mail *dhennessey@sbe.org*.

One Isn't Enough, So Nautel Adds Seven

Nautel expanded its NV series of FM solid-state transmitters with seven models.

The line is based on the NV40 model introduced earlier; new models are the NV3.5, NV5, NV7.5, NV10, NV15, NV20 and NV30. The company said it sold more than 170 NV units in a few months.

It promotes its Advanced User Interface as a notable feature: "Unlike other manufacturers that add enhanced controls only to the exciter subsystem, Nautel provides a control system with an advanced 17-inch touch screen interface that manages the whole transmitter and multiple exciters."

Models include real-time, instrument-grade spectral analysis and are designed for digital operation, allowing a plug-in Exgine upgrade for HD Radio broadcasting. Adaptive precorrection provides linearity and IBOC transmission with no need for filters. The product line uses common modules, touted as a benefit for customers with multiple transmission sites. "Nautel's power module building block allows users to swap modules from one transmitter to another and reduces the number of spares to keep on hand."

Nautel is noting its 40th anniversary and is offering a five-year warranty on NV and NX Series transmitters purchased in 2009.

For information, contact Nautel at (877) 662-8835 or visit www.nautel.com/expectmore.

MXL Moves USB To the Desktop

MXL Technology, a division of Marshall Electronics, has a new USB microphone package, the Studio 1 Desktop Recording Kit. The Studio 1 is aimed at portable audio needs, Internet and podcasters.

The kit includes a microphone, plastic carrying case, desktop mic stand and 10-foot USB cable.

The condenser microphone has a two-micron diaphragm. An onboard A/D converter allows for a USB connector at the base. A 1/8-inch jack for headphone use is mounted in the middle of the mic.

The digital specs of the mic are 16-bit and choice of 44.1 kHz or 48 kHz. Latency is claimed to be zero and the frequency response is reported to be 40 Hz to 20 kHz. The mic is compatible with Windows and Mac systems.

For information, contact MXL Technology at (800) 800-6608 or visit www.mxlmics.com.

Focal Focuses on Compact Monitors

France-based Focal Professional hopes to make its mark in the monitor world.

Starting small, Focal's CMS 50 is a petite two-way powered analog system. Not surprisingly CMS stands for Compact Monitor Series. The 50 might refer to the 5-inch polyglass cone woofer. The tweeter is a proprietary magnesium/aluminum dome.

Less than a foot high, the CMS 50 is actually biamplified, with an 80W amp driving the low end and a 50W amp driving the tweeter. The drivers are magnetically shielded.

Also part of the system are stepped high-pass, low-frequency shelf, notch and high-frequency filters.

For information, contact Focal Professional/Audio Plus Services at (800) 663-9352 or visit www.focalprofessional.com.

V-Soft Announces Updates

V-Soft Communications has announced an available terrain database update to its FMCommander, Probe 3 software. The update is from the National Geophysical Data Center (NGDC). This should allow V-Soft programs to achieve results similar to those of the FCC. The upgrade is also compatible with any other V-Soft programs that need to use terrain.

V-Soft also announced the latest in the Probe 4 software project. Newly implemented features include hyper-threading for superior number-crunching; several new GUI improvements especially for editing maps; a new terrain profile viewer and a "cancel" feature for abandoning lengthy calculations in progress.

And in the spirit of the season V-Soft is offering a 10 percent discount on all programs.

For information, contact V-Soft Communications at (800) 743-3684 or visit www.v-soft.com.

HD Radio News

WPR Likes HD Radio
Page 23

Radio World | Covering Radio's Digital Transition | February 11, 2009

The Year of HD Radio Portables

Prototype Portable Nav Devices Unveiled; More Power Hike Analysis Expected

by Leslie Stimson

LAS VEGAS Chip sets for HD Radio by Samsung and SiPort that are smaller, less expensive and consume less power are being marketed to receiver makers. According to iBiquity President/CEO Bob Struble, that means we'll see HD Radio portables coming out this year. That category could include iPod accessories as well, he said.

Close to 100 HD Radios are being offered, twice the amount available at this time last year. The challenges for proponents in 2009 remain increasing those offerings, making them less expensive for the consumer and giving them wider distribution — all in the hopes of increasing sales amidst a constricting economy.

Here's an overview of news related to HD Radio from CES.

STRUBLE IS REALISTIC YET UPBEAT

Struble told Radio World in an interview at CES that the company assumes all of 2009 will be tough financially, though he said the private firm, which doesn't disclose its finances, remains well-funded. The company subsequently laid off an undisclosed number of people in January.

In broad terms, Internet radio receiver offerings are growing, and live video and Internet in the car have made gains. Both were themes at this year's convention (see page 1).

Against the backdrop of ever-increasing competition for the medium in the car and elsewhere, Struble acknowledged he's worried about radio, which he says is in "freefall" now with less money and fewer people at stations.

"Radio has challenges. There are other entertainment mediums and plenty of other places to advertise. To remain analog in a world that's fully digital with all of those choices is probably not the best answer." He believes innovations made possible with HD Radio technology, such as real-time traffic information on HD2 channels and iTunes tagging, have the potential to help stations bring in revenue.

He is realistic about financial realities: "Yes, we're worried about the economy. I believe we're going to be challenged because several of the industries we're targeting are in trouble."

Manufacturer iLuv unveiled a tabletop HD Radio that adds iTunes tagging and is certified to work with the iPhone.

Photo by Leslie Stimson

The smallest HD Radio receiver to date: the KRI armband portable.

However, the iBiquity chief remains optimistic about the technology, saying at only 1 to 2 percent penetration in the auto and receiver markets, HD Radio is in a position to show "good growth" in 2009. Struble cited announcements by Kia and Ford with definite dates to offer HD Radio, as well as more devices coming on the market in '09 including HD Radio navigation devices, to support his outlook.

Yet in order to take advantages of the data possibilities of IBOC, some broadcasters have said they must have a more robust digital signal and that digital coverage must match that of analog. In order to accomplish that, they argue that they need to raise FM digital power and have asked the FCC to approve a voluntary increase of up to 10 dB.

Struble believes the FCC will approve an FM digital power increase. There are discussions and "additional analysis" going on between the technology developer and commercial and noncommercial broadcasters, he said.

Several sources told Radio World they hope to present test results at the spring NAB Show and present a unified package to the commission to bolster their arguments for an increase.

Proponents "want to do this, they just want to do it in a managed way," said Struble. "Where we're going to need to get to is, what does 'managed' mean?"

The company notes that the FCC has begun allowing some stations experimental authorizations to raise power and hopes the commission did so to allow proponents to gather more facts.

Given promotion by the radio industry to lobby carriers to include FM chips in cell phones and other personal devices, and considering HD Radio's focus on multicasting, navigation and iTunes tagging — all FM phenomena — where does that leave AM, Radio World wondered. Of some 1,900 stations using HD Radio technology, most are FM; the number of AMs using the technology does not appear to be growing appreciably.

Struble said, "There's no doubt that the technical solutions in AM are much more difficult than they are in FM. If AM broadcasters want to take a wait and see approach, that's fine."

But iBiquity believes AM broadcasters should be in the digital world as well. "We have a solution that we think works, and it's really going to be up to them" to

See CES HD-R, page 24 ▶

Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled by Radio World using information supplied by iBiquity Digital Corp., the HD Digital Radio Alliance, BIA Financial Network and other sources. Data reflect best information as of late January. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

Wisconsin Public Radio Is Bullish on Digital

When Wisconsin Public Radio decided to implement HD Radio, the organization wanted it all: "Audio fidelity improvement for our AM stations, reduction of multipath distortion on our FM stations and the opportunity to add additional channels of programming," says Director of Engineering and Operations Steve Johnston.

Since WPR began upgrading in 2006, beginning with flagship WHA(AM) in Madison and WLSU(FM) in La Crosse, the organization has added the capability to two AM and 11 FM stations of its 30-station group.

"I am very pleased with our ability to use our existing spectrum to deliver such an improvement to our listeners," Johnston reports. He said all three of the above-mentioned HD Radio goals have been achieved.

For years WPR has been providing the Ideas Network, with its talk programming, and the NPR News & Classical Network. HD Radio has provided WPR the ability to add its own HD2 Classical Service.

HD Radio has made a big difference for WPR in Wisconsin's largest city, Milwaukee. "We've never been able to get more than one station in Milwaukee. Adding HD to that station allows us to bring another service there to the multicast channel, and that's a big deal. There's thousands of people listening [to the HD Radio service] in Milwaukee, based on the comments I get."

Steve Johnston

He said that WPR has been a bit frustrated with the "unreliable nature of some of our HD exciters, importers and exporters." He said most of the hassles with gear are related to the use of PCs as the foundation of the system. "We are really looking forward to the introduction of dedicated hardware for HD generation."

He does see a difference in performance between AM and FM signals: "The digital coverage of our AM stations is roughly equivalent to the noise-free analog area, but the FM digital signals do not cover as well. This is especially true on some of our talk stations, which we run in analog mono most of the time."

Johnston supports experimentation with an increase of FM power. "My seat-of-the-pants impression is that the industry will be able to increase digital power to some degree, perhaps to 4 or 5 percent, but not all the way to 10 percent, without serious interference to our own analog signals on many radios. Perhaps the final choice can be made a licensee decision, and each station can select the level that fits their needs best, based upon published test results."

He said WPR has found that it takes listener education for new HD Radio owners to understand the peculiarities of receiving the digital signals. "We do run into listeners who say: 'We can hear that regular analog station, why can't I get that digital?' It takes a little more effort, a little more playing around with the antenna and things." WPR maintains a help line to help those listeners.

But Johnston said the number-one weakness of HD Radio is marketing of receivers, which he describes as almost nil. Part of the problem he described is that by naming the new technology HD Radio, it gets buried under the onslaught of HDTV information. But he also blames electronics stores, where "there's a total lack of education of sales people and the lack of stocking HD Radios."

Still, WPR's efforts are gaining traction in Wisconsin. Johnston said he's found that having competitor stations offering HD Radio is a plus. "If we're not the only game in town, if there are commercial stations also adopting HD, then we do better. It seems like people are more willing to buy an HD Radio if they're able to get more than one HD station on it."

Johnston said it comes as no surprise to anyone who knows WPR's history that it would be a pioneer in HD Radio. WHA went on the air in 1917, broadcasting weather forecasts and farm reports. Wisconsin's public radio network also pioneered broadcasting in FM with its FM network. Today WPR is a partnership of the Educational Communications Board and the University of Wisconsin.

— Craig Johnston

The HD Radio Bottom Line

	Last Year	Last Month	Current
On the Air	1,584	1,828	1,865
FMs Multicasting	809	984	994

Total U.S. stations: 14,124

exclusive of LPFM and translators

CES HD-R

▶ Continued from page 22

make a decision about adopting the technology, Struble said.

HD RADIO DELAYED BUT STILL IN FORD'S PLANS

Ford Motor Company has again committed to offering HD Radio, reemphasizing its intentions though stretching out its target dates.

Last year, then-Chairman/CEO Rick Wagoner said at CES that HD Radio receivers would join other OEM technologies — including Sync and Sirius Travel Link — in Ford, Lincoln and Mercury vehicles in the 2009 calendar year.

This year, President/CEO Alan Mulally mentioned installing HD Radio in new vehicles and Doug VanDagens, director of connected services, pegged the date as "early in the 2010 calendar year." He gave no specifics on models or pricing, nor on whether HD Radio would be standard or an option.

Presumably the auto industry's tough times delayed its HD Radio plans.

By almost all accounts, 2009 will be among the toughest years ever faced by the 20,000 new car dealerships in the U.S., with sales of cars and lightweight trucks projected to shrink by as much as 6 million vehicles from the 16.1 million sold as recently as 2007, according to the National Automobile Dealers Association.

Sales last year were 13.2 million, down 18 percent from 2007, and December sales ran at an annual rate of around 10 million. Last year's sales were the worst in 26 years, according to the NADA.

U.S. automakers have asked Congress for help. As a condition of its $17.4 billion federal bailout, Chrysler and General Motors Corp., the parent company of Ford, have until Feb. 17 to detail a turnaround plan intended to make them viable through cost-saving deals with the United Auto Workers union and creditors.

Looking to the future, Mulally said his company is looking to provide state-of-the-art digital infotainment systems in its products. The automaker presented a vision of where it hopes to go with Sync, based on Microsoft technology that provides hands-free access to a cell phone, car radio and external music players like iPods.

Sync systems on 2010 Fords will also offer real-time traffic, sports and weather reports and turn-by-turn directions, he said.

Sync will be installed by this fall in nearly a million Ford vehicles, said Mulally. The automaker offers it on 20 models in 2009.

He also unveiled Ford's concept of a totally configurable "dashboard of the future," developed in collaboration with Sharp, Microsoft, Sony and Nuance, and featuring SmartGauge with Eco Guide fuel economy capabilities. As part of this dashboard, he demoed an avatar called "Eva" that can read aloud e-mail, perform Internet searches and deliver directions and traffic reports through voice commands.

Also in the future, Ford is looking to provide access to Internet portals like Pandora using buttons on the steering wheel.

KIA WILL FACTORY-INSTALL

It seems 2010 is the year automakers can focus on HD Radio.

Kia Motors will begin offering factory-installed HD Radio receivers in its sedans and SUVs in that calendar year.

Vice President of Marketing Michael Sprague said, "Offering HD Radio technology is the latest example of how we plan to enhance the Kia ownership experience."

Other automakers that have announced commitments to installing HD Radio include Mercedes, Audi, Hyundai, Volvo, Ford, Scion, Mini, Jaguar and BMW.

HD RADIO ENTERS REAL-TIME TRAFFIC CATEGORY

HD Radio technology has entered the personal navigation device market.

IBiquity showed four navigation prototypes that incorporate HD Radio; two had HD Radio integrated into the unit, one fit into a cradle and another with a cigarette lighter adapter. Manufacturers of the navigation devices included Dual, Cydle, KRI and KRS; the latter two will be sold to other companies, for sale under other brand names.

The prototype KRI armband portable HD Radio receiver and MP3 player is the smallest device into which an IBOC chip is integrated so far. The antenna is in the headset cord.

The PNDs use real-time traffic information broadcast over the data channel of an HD Radio signal.

The Dual XNAV43HD includes a 4.3-inch touch screen, text-to-speech functionality and multimedia support. It ships this summer with a list price of $279.99.

The Cydle T43 has an internal mic for Bluetooth hands-free communication, stereo ear jack, AV out jack and mini USB for PC link and recharging. The 4.3 inch PND with GPS is said to have a battery life of up to four hours. Availability and price were not released.

The Dual XNAV43HD supports reception of Clear Channel Total Traffic Network and Inrix real-time traffic information. Clear Channel announced that real-time traffic services over HD Radio are live and operational in 50 markets.

RECEIVER MAKERS ADDING AUTO, HOME HD-R MODELS

Several receiver manufacturers are increasing their HD Radio model offerings, while other manufacturers new to the technology debut products.

IBiquity Digital showcased approximately 30 brands of radios. Most of the nearly 100 models were priced at around $80. IBiquity's 40x50 booth included HD Radio receivers in a Volvo and Hyundai, showing that the technology is now available in both high- and low-end cars.

Brands of radio on display included Alpine, iLuv, Jensen Mobile, JVC, Kenwood, Onkyo, Pioneer, Sony and Yamaha.

The Kenwood KTC-HR300 is an add-on module for an "HD Radio-ready" in-dash electronic component. The KTC-HR300 connects to any multimedia or CD receiver source unit, through Kenwood's Advanced Bus or 5L CD changer control connections. The KTC-HR300 will receive the primary HD Radio signal as well as up to three multicast channels on the same frequency.

New is the iTunes Tagging feature, which allows the user to bookmark a song heard on the radio for later online purchase if the compatible Kenwood in-dash model has an iPod connected through the bus system. The unit will list for $150 and ship in March.

New tabletop receivers were unveiled by Acoustic Research, Gigaware, iLuv and Teac, adding to the list of brands with tabletop models that already includes Coby, jWIN, Polk and Sony.

Photo by Leslie Stimson

NPR Labs was among those involved in the Dice RRS radio to be honored by the Stevie Wonder Sendero Group for accessibility. NPR's Mike Starling receives the award here.

iLuv unveiled a tabletop HD Radio that replaces a current model; it adds iTunes tagging and is certified to work with iPhone. The new iHD171 lists for $199. It replaces the current iPod-docking i169.

Other features include dual alarm clock functions and a video output to watch iPod-stored videos on a connected TV. The iHD171 has 30 programmable presets, auxiliary 3.5mm input and 2x4-watt RMS audio output.

Yamaha has equipped five of nine new components offerings with the digital upgrade.

Dual, Jensen Mobile and JVC are expanding on their presence with new automotive receivers.

JVC has three new in-dash CD receiver models: KD-HDR20, KD-HDR50 and the Arsenal KD-AHD59.

The KD-HDR50 CD Receiver features a built-in HD Radio tuner with multicast capability, front auxiliary input, USB 2.0 connection for iPod/iPhone with two-way control and iTunes Tagging capability. The KD-HDR50 also is ready for a Bluetooth adapter and has MP3/WMA playback capability. The receiver, shipping now, lists for $179.95.

JVC's Arsenal KD-AHD59 CD Receiver features a built-in HD Radio tuner with multicasting and iTunes Tagging capability, front aux input, and USB 2.0 connection with two-way control for iPod/iPhone. The unit is ready for a Bluetooth adapter, is satellite radio-ready and has MP3/WMA playback capability. The KD-AHD59 also features wireless remote, 5V pre-output terminals and variable-color illumination display, and is steering wheel remote control-ready. The receiver, shipping to retailers now, lists for $159.95.

Also new is the JVC KD-HDR20, featuring a built-in HD Radio tuner with multicast capability, front auxiliary input and MP3/WMA playback. This receiver is ready for a Bluetooth adapter and is satellite- and iPod-ready. The unit is shipping and lists for $139.95.

Pioneer debuted two iTunes Tagging CD radios that work with FM RDS and HD Radio. The DEH-P710BT and DEH-P7100BT include built-in Bluetooth and USB direct control for iPod.

Slated for spring availability, the DEH-P710BT and DEH-P7100BT will list at $360 and $340 respectively.

iLuv, Coby, Denon, Onkyo/Integra and Yamaha are adding to their home HD Radio receiver line.

The majority of Alpine, JVC, Kenwood, Pioneer and Sony receivers are HD Radio Ready.

NPR PREPS FOR ADDITIONAL POWER INCREASE TESTS

NPR Labs is planning follow-up drive testing to pinpoint the best levels for an FM IBOC power increase. Testing will be done with member stations as well as Minnesota Public Radio stations.

Representatives of NPR Labs said they plan to test the concept of whether masking elements in the car affect someone's perception of the audio. The drive-around tests in Baltimore County, Md., are planned for February and March, with the plan to bring results to the spring NAB convention.

NPR Labs was at CES looking for manufacturers to make units for captioned radio, Braille and blackboard radios, and radio reading service receivers. It plans to award funds for R&D prototyping.

Dice has made a radio reading service receiver and at least additional manufacturer is interested in that effort. A Dice prototype was displayed at the fall NAB Radio Show; it was in several booths at CES.

The idea behind Blackboard radio is to bring school to the kids (instead of the other way around) in Africa using a solar-powered or wind-up radio. The teacher uses an electronic "white board" and that board image and audio are transmitted to the radio using an RDS subcarrier.

NPR Labs also has a new face, Rich Rarey; he's former master control supervisor of NPR (and a contributor to Radio World). As manager of Strategic Technology Applications for the lab, one of his main tasks is the aggregated story project, in which the radio aggregates related stories and caches them for the listener, a kind of TiVo for radio.

ACCESSIBLE AWARDS

The Stevie Wonder Foundation and his Sendero Group, along with the National Federation for the Blind, honored five organizations with Vision Free Awards — iBiquity Digital, National Public Radio, the International Association of Audio Information Services, NDS and Dice Electronics — for HD Radio-enabled conditional access broadcast technologies that support accessible radio for the sight and hearing impaired. All five groups collaborated on the Dice accessible digital radio reading service receiver.

At a reception sponsored by iBiquity, Wonder said he hopes manufacturers will make all devices accessible and read aloud from a song that he debut at the inaugural, saying: "Fear can't put dreams to sleep."

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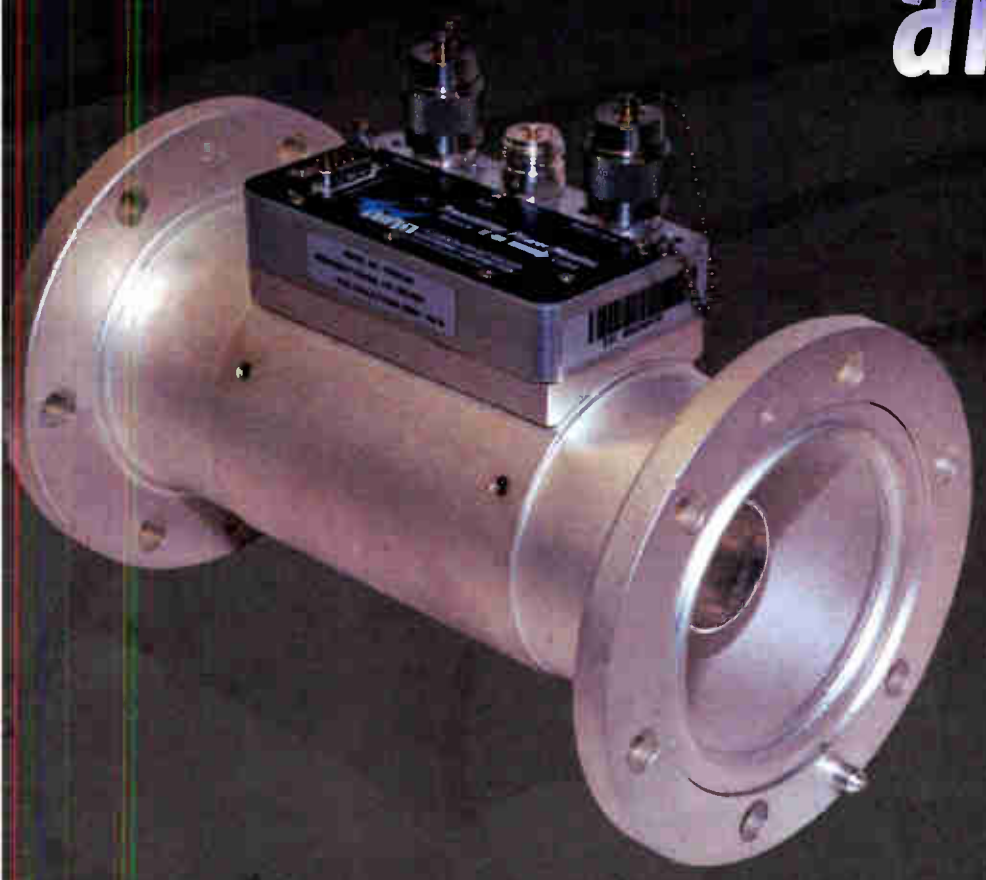

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USER REPORT

BluePack Enables Cell Connections

JK Audio Helps Reporters and Engineers Connect With Studio

by Larry Berger
Executive Director
SLB Productions

PITTSBURGH Airing weekly since 1978, "The Saturday Light Brigade" (SLB) is a radio program for children and adults carried on seven regional public radio stations in Pennsylvania and Ohio from 6 a.m. to noon on Saturdays. The program originates in Pittsburgh, home to family-friendly cultural institutions and attractions. SLB often broadcasts from these places to keep our program lively and serve the community.

For program-length remotes, we typically use ISDN, POTS or IP-based codecs. While this approach works well, it has the drawbacks of (1) acquiring or taking over a communications line at the site, (2) advance testing, (3) fixed wiring and (4) having an extra engineer or technically-savvy host on duty at the remote site.

In short, the solution frequently is overkill for simple delivery of voice interviews from the field and, were it the only option, would cause us to turn away brief appearances at events. The workload simply is not justified.

One past attempt to right-size this activity was to send a field reporter out with a cell phone for cut-in interviews. He would hand the phone to the interviewee, who would then be interviewed by the program host from the studio.

Discovery

Without eye contact, interviews were often not as sharp as they could be. Moreover, the mics in even the best of cell phones are not designed for this purpose nor are their earpieces designed to monitor return audio. We set out to find an affordable interface that would essentially turn a cell phone into a field interview kit.

Key features for us were quality, ease of use, ruggedness and size. We found that the JK Audio BluePack Wireless Interview Tool exceeded our expectations.

I was impressed with the build quality. The metal case is rugged and fingerprint- and scratch-resistant. The jacks and controls have a solid feel.

The author uses the JK Audio BluePack (on belt) at a remote location to connect with the studio.

The potentiometers are countersunk nicely to protect them from accidental movement. They also have a solid resistance that provides the user with assurance that the selected level will not inadvertently be altered. Also, in this regard, the numbered indices on the pots let the user remember the preferred settings.

For some tests, I used a Sennheiser e835 microphone, AKG K240 Studio headphones and an AT&T 8525 cell phone (G3 service) calling into a Telos One-x-Six phone system. Out of curiosity, I also connected the BluePack unit's stereo line output to a Zoom H2 Handy Recorder handheld digital recorder to archive the interview and test the device for use as an off-air phone call recorder.

Before heading into the field, I plugged the mic and headphones in and simply listened. I found a surprisingly quiet preamp yielding clear sound from the microphone, especially for an application where corner-cutting might be justified given the ultimate destination of the audio. The red clipping LED was accurate and helped me find the right microphone volume level.

Pairing was simple. I pressed the blue multifunction button on the BluePack unit and the phone immediately recognized the unit by make and serial number. Easy-to-decode flashing patterns on a blue LED display provided assurance that bonding had been achieved without having to look at the cell phone.

I then placed a call from the telephone to an incoming studio line. Our reporter strolled the 40,000 square-foot Children's Museum and interviewed children and adults. Both the reporter and his subjects were clear and consistently modulated. Sitting in the studio, I did not need to ride gain to compensate for inconsistent feed volumes or noisy connections. As the reporter and I engaged in conversation, we could hear each other well. Cues sent to him through our mix-minus bus did not interfere with on-air audio.

I was curious about introduction of RF noise from the telephone and asked the reporter to move the phone near the BluePack unit, headphones, mic and cables. The only interference detected was when the phone was placed several inches from the microphone, an unlikely scenario.

While on the subject of Murphy's Law, readers might be curious about whether the cell phone mic mutes when the BluePack unit has been bonded. The answer is it does, as does the phone speaker.

On return to the studio the reporter noted how confident he felt with the unit.

Perhaps counterintuitive to those unfamiliar with Bluetooth, achieving a the cell phone-interface bond via Bluetooth is ultimately far simpler and more reliable than the headaches associated with selecting from a menagerie of 2.5 mm, 3.5 mm or proprietary USB-style connectors to achieve a hardwired connection that, regardless of cable quality, always seems to come loose or audibly wiggle.

Once the Bluetooth bond is made, our reporter comfortably walked through areas full of children and confidently did his interviews while the BluePack unit and cell phone handled the transmission flawlessly and the H2 recorder archived the results.

Which brings us to the BluePack unit's extra stereo line out. This little extra actually is a powerful value-added feature. Per the JK Audio design, the left channel of our recorder captured the microphone directly from the preamp while the right channel captured caller audio, both of which sounded great.

This nifty feature allows the device to be used to record telephone interviews (without a mix-minus, hybrid or control board) and apply post-production to the individual channels to create a great final mono mix.

Moreover, when we send a field reporter out to interact with an in-studio host, recordings can be made on both ends of the conversation and subsequently edited to yield full bandwidth archives for rebroadcast or to deliver to a client sponsoring the remote.

While some may be concerned about options such as AC power, limiter circuitry, multiple mic inputs or the ability to use noncellular or corded telephones, I found this unit to have the right features to yield simple, high-quality results.

Moreover, it's fun to use — which means it will be used. That factor alone makes the device worth every penny.

For information, contact JK Audio at (815) 786-2929 or visit www.jkaudio.com.

TECH UPDATE

SADiE Offers Hardware And Software for Radio

Radio broadcasters use the **SADiE** BB2 and PCM2 system as a "craft editor" for tasks requiring a degree of finesse and creative editing, the company says.

The BB2 is a cost-effective USB 2.0 attached device, approximately 4.5 x 4 x 2 inches, that contains DSP for audio processing, along with audio I/O: two inputs and outputs on RCA connectors in analog and digital S/PDIF or AES/EBU format. A 1/8-inch stereo jack for headphones and a 1/8-inch input for a microphone are included. The BB2-J variant adds a jog wheel and dedicated function/control buttons. All sample rates are 32–96 kHz.

The BB2 hardware is available in two packages: the basic system has a cut-down and simplified software interface, whereas the feature-filled PCM2 package includes the full SADiE5 software as found on the larger card-based systems.

The latest version of the PCM2 can include any of the software options available on the larger PCM4 and PCM8 SADiE systems such as the CEDAR restoration tools, VST plug-ins with mixer automation, mastering options, video playback, etc. and thus can be used for portable editing in any application that a full-sized SADiE system is working in, including broadcast, mastering or sound for picture.

For information, contact SADiE (973) 983-9577 or visit www.sadie.com.

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USER REPORT

AT8004 Offers Additional ENG Choice

Audio-Technica's New Interview Microphone Is a Friend to Take on the Road With You

by Curt Yengst
Assistant Engineer
WAWZ(FM)

ZAREPHATH, N.J. The AT8004 is Audio-Technica's most recent offering in the ENG audio market. It's an omnidirectional handheld dynamic microphone, about as simple and straightforward as one could get for this application.

No phantom power required, no switches, no rolloff, no fuss, no muss. Just plug it in and talk. It comes in two versions. The AT8004 is about six inches long. The AT8004L simply adds about another 3-1/2 inches to the body to provide additional space for a mic flag. Each version comes with a protective vinyl pouch and stand adapter.

At first glance, the AT8004 looks similar to the venerable Electro-Voice 635A, commonly referred to as "The Buchanan Hammer" for its durability and simplicity (though not the original 'Buchanan Hammer,' that was the 664). The 8004 feels every bit as rugged. I was half-tempted to actually try hammering nails with it. I would recommend the AT8004L in this case, as its longer body makes it better balanced for such an application. (The fact that I had to return these mics to Audio-Technica prevented me from going through with this particular test.)

In short, the mic feels very solid. The shorter version is ideal for a compact mobile setup, fitting in a purse or fanny pack with a portable MiniDisc or flash recorder. For television, the charcoal finish looks good on camera. Personally, I thought it was better-looking than the 635A.

So it looks good. How does it sound?

The author didn't actually use the AT8004L to drive nails — perhaps in fear of breaking his mic flag.

I tested it with both male and female voices and found that it reproduced both faithfully. I A/B'ed it with another handheld stalwart, the Shure SM58. It sounded brighter, owing in part to its omnidirectional pickup pattern. Omnidirectional mics don't suffer (or benefit, as the case may be) from the proximity effect, that bass boost directional mics exhibit when placed close to the sound source.

As far as handling noise, it performed well. If you handle it like an epileptic octopus on a caffeine jag, you'll get some significant handling noise; but if you use it the way they taught you in broadcasting school, you'll be fine. The handling noise I could generate was mainly in the midrange, which would make it difficult to eliminate using the bass rolloff on any mic processor. But as I said, normal use makes this practically a non-issue. I also tested the mic with a Sony portable MiniDisc recorder in a noisy environment. Despite being omnidirectional, it did an excellent job of capturing the sounds I wanted without burying them under a bunch of sounds I didn't want.

I was happy with the mic's performance. It serves its intended purpose well. With a street price around $100 for either version, it's an easily affordable addition to any radio or TV station's mic locker.

For information, contact Audio-Technica at (330) 686-2600 or visit www.audio-technica.com.

To Hammer or Not to Hammer

Obviously all of this talk about using a microphone as a hammer is in good fun. A microphone, no matter how solidly built it is, should never be used as a hammer. Besides possibly seriously degrading its performance such treatment would likely abrogate its warranty.

Having said that, a handful of durable microphones have been considered "hammers" — able to take a beating and still perform well. "Roadworthy" is a badge of honor for an ENG mic.

So, can the Audio-Technica AT8004/8004L really hammer a nail? Radio World asked Audio-Technica. They smiled and took us up on it. According to Mike Edwards, product manager at Audio-Technica: "Let it be known and proclaim throughout the lands that the AT8004 will indeed pound a nail into a two-by-four without adverse affect on performance and only scratches to the paint. I have done this!"

Coming up in Buyer's Guide

Content Creation & Audio Production Tools
March 11

Microphones & Audio Monitors
April 8

TECH UPDATES

LS-10 Offers 2 GB, Three Recording Formats

The LS-10 linear PCM recorder from **Olympus** offers up to 24-bit/96 kHz recording, 2 GB memory and an SD slot.

The 2 GB of onboard flash memory assures immediate recording, while the SD slot allows for expanded capacity, according to the company. Long battery life enables users to record music, performances or lectures up to 12 hours with two AA batteries.

Features include three recording formats: WAV, MP3 and WMA; and dual microphones and a USB 2.0 port. A microphone "zoom" function allows the microphones' pattern to be modified between omnidirectional and cardioid patterns. Olympus says the microphones' amplifier circuitry is designed to reduce interference for ultimate sound clarity.

Additional highlights include up to 12 hours of recording capability; lightweight, aluminum, 5.3-ounce body and stereo speakers.

For information, contact Olympus America at (888) 553-4448 or visit www.olympusamerica.com.

M-Audio Adds Features to MicroTrack II

The redesigned **M-Audio** MicroTrack II brings more professional features to the original high-fidelity mobile digital recorder aimed at audio and film professionals.

The company said it now offers an extended input gain range, analog input limiter, 48V phantom power, faster file transfer rate, seamless recording of files beyond 2 GB in size and other enhancements.

With dual microphones the MicroTrack II records WAV (BWF) and MP3 files to CompactFlash or Microdrives using balanced line inputs or built-in microphone preamps. Recordings can be dragged and dropped a computer via high-speed USB 2.0 for immediate editing or Web posting.

MicroTrack II is suitable for a variety of applications including newsgathering, field recording, capturing live shows, songwriting and education.

For information, contact M-Audio at (626) 633-9050 or visit www.m-audio.com.

HHB FlashMic Combines Mic and Recorder

HHB's FlashMic DRM85-C is a cardioid version of the original DRM85 FlashMic omnidirectional microphone.

Both models share the same feature set, which includes 1 GB flash memory for up to 18+ hours recording, USB audio data transfer, a preamplifier with manual or automatic gain control, an illuminated LCD display and nine user templates that can be configured externally using supplied FlashMic Manager software.

"Some of our broadcast users had been requesting a more directional FlashMic specifically for use in environments in which there are high ambient sound levels, such as press scrums and conflict zones," said Ian Jones, HHB's managing director.

The company says radio journalists cite fast file transfer and instant one-button recording among the product highlights.

"When news breaks, the FlashMic provides a convenient, all-in-one, portable recording solution with no fiddly cables or connectors," said Jones. "And it's every bit as easy to transfer audio files to a laptop for editing and onward transmission."

For information, contact HHB's distributor Sennheiser USA at (860) 434-9190 or visit www.sennheiserusa.com.

TECH UPDATES

Sony Adds Carrying Case for PCM-D50 Recorder

The **Sony** PCM-D50 digital recorder offers 24-bit/96 kHz recording, two two-position electret condenser stereo microphones for digital-quality sound and PC/Mac file transfer via a high-speed USB interface.

The compact, rugged, handheld is used by broadcasters, professional journalists, recording artists, producers and filmmakers. It can also be used in education, house of worship, legal and corporate applications. The company says it combines a sophisticated limiter and excellent mic preamp to enhance the quality of any audio performance.

New for the Sony PCM-D50 is a durable LCPCMD50G protective carrying case with shoulder strap, designed to shield the unit during field assignments.

The inear recorder features 24-bit/96 kHz recording in standard WAV file format; 4 GB built-in memory to record up to 6 hours at 16-bit/44.1 kHz; dual two-position electret condenser microphones X-Y and wide-stereo polar patterns; LCD digital peak metering; Memory Stick Pro-HG Duo slot; MP3 playback; digital pitch control; S/PDIF digital input and output; PC/Mac file transfer via USB 2.0 and a five-second prerecording buffer

A range of accessories is available including: RM-PCM1 remote commander; VCT-PCM1 tripod stand; AD-PCM1 wind screen and XLR-1 microphone adapter.

For information, contact Sony at (800) 686-SONY (7669) or visit www.sony.com/professional.

Holophone Offers Inexpensive Surround Sound

Following on its PortaMic 5.1, **Holophone**, a manufacturer of surround microphones, is offering the PortaMic Pro camera-mountable surround microphone. With radio users now responsible for a growing range of video, audio and online applications, this may find application.

Based on the design of the PortaMic 5.1, the PortaMic Pro offers point-and-shoot usability in a compact size at an improved price point. The PortaMic Pro allows users to capture, from a single point source, a discrete surround recording that provides listeners with a 3D experience. Users have additional control of recordings with an audio zoom button, which increases the forward bias of the mic's pickup pattern; this helps to ensure the on-air talent is heard in noisy environments.

For adding surround to any studio, field recording and ENG application, the PortaMic Pro comes with a Dolby Laboratories' Dolby Pro Logic II encoder. The mic's six audio channels thus can be encoded down to two, so it can be recorded to any broadcast camera or stereo recording device. The PortaMic Pro is able to supply this encoding in a one-inch high encoder, providing a surround recording while offering an uninterrupted sightline when connected to a camera.

For a more robust connection to the camera or stereo recording device, the mic's surround encoded audio is output to a six-pin balanced mini XLR. Additionally, the encoder has a stereo mini plug output. To ensure a quality recording in loud locations, the mic features a unity gain control and a 12 dB pad. The mic and encoder may be powered by the camera's battery, or by a 9V battery.

When used with Holophone's new D-CODE multichannel decoder or a Dolby Pro Logic II decoder, the two-channel encoded recordings of the PortaMic Pro are decoded to six channels. Additionally, the mic is compatible with the installed base of 60 million Dolby Pro Logic II consumer decoders, allowing the PortaMic Pro's recordings to be broadcast in stereo and decoded to surround in viewers' living rooms.

For information, contact Holophone at (416) 362-7790 or visit www.holophone.com.

TECH UPDATES

Yellowtec to Launch iXm Handheld Recorder in U.S.

The **Yellowtec** iXm combines a microphone and a digital recorder in one unit. Its design combines performance and simple usage, according to the company.

The iXm microphone heads have been optimized for speech intelligibility and low handling noise. The heads are exchangeable to suit various recording environments. Omnidirectional, cardioid and supercardioid pick up patterns are offered. Capsules are automatically detected for automatic gain and DSP adaption. The iXm utilizes an intelligent levelling algorithm enabling the reporter to concentrate on the interview. Files are stored on removable SD memory cards as WAV, BWF or MPEG-2; the company said MP3 is to come.

The iXm is easy to use. The recording section comes along with two buttons and three indicators. The positioning of record and stop buttons enables thumb-on operation. Markers can be set during usage by pressing the record button again. The button will operate virtually noiselessly. Status information for record, memory and battery are visualized by three bright indicators above the user's thumb on the record button.

The iXm's memory is large using standard SD memory cards. The dual power layout with intelligent power management uses either three AA batteries or a built-in rechargeable Li-Ion battery, or both.

A headphone output provides quick monitoring. Track IDs are announced by an integrated voice messaging system. The user can navigate through recordings on a separate playback section on the backside. The line input will be useful at press conferences when the signal is obtained from a mic splitter. A mini USB port can be utilized for accessing audio files from a PC, to recharge the Li-Ion accumulator battery or to reconfigure iXm. Configuration software ships with the iXm.

For information, contact Yellowtec at +49-2173-967-315 or visit www.yellowtec.com.

Tascam Debuts Digital Handheld Recorder

Tascam's new DR-07 is a digital handheld stereo recorder based on its larger DR-1 design.

The DR-07 records to SD cards in WAV or MP3 formats. Features include pitch and looping functions. The dual microphones are electret condensers.

A USB 2.0 port can facilitate downloading recorded files. A mic stand mount is in the base.

The DR-07 ships with a 2 GB card and a windscreen.

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

Sporty Codec Also Records

Mayah's Sporty codec is designed to also record to an SD card or a USB device.

As a recorder, the Sporty utilizes PCM/BWF, MPEG-2 and MP3 formats. Recorded files can be removed with the SD card or downloaded through the USB port.

Sporty's codec functions include IP/Ethernet, ISDN and POTS. Also available is 3G wireless via an optional UMTS/3G interface. It works with G.711, G.722, MPEG-2, MP3, PCM, MPEG-4 HE AAC v2, AAC ELD and optional apt-X/Eapt-X.

The Sporty is battery operable.

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

TECH UPDATES

Unplug Equipment From the Power Grid

GoSolarLife has introduced range of portable solar panels.

They are created with lithium-polymer battery technology and use compact, durable and weather-resistant, folding thin-film flexible solar panels. Thus a mobile user can literally "cut the cord."

Weighing about 40 ounces including battery and accessories, these solar-based charging packages pack into a letter-sized portfolio to fit in most laptop cases.

"When someone's in the field, they may not have access to their vehicle or an A/C outlet. When the battery is dead on an important piece of equipment, they've got to pack it in for another day, which can be extremely costly in time, travel and lost revenue," said Glenn Schulke, CEO of GoSolarLife.

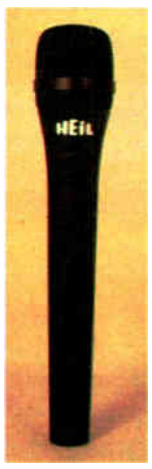
"We believe that solar chargers combined with new battery technology will become a standard for anyone using electronics in the field."

Using solar panels during the day to provide a constant charging source, the batteries store, regulate and condition the power to the connected devices. The user plugs the device into the external battery pack for clean power to a laptop, cell phone, two-way or satellite radio, GPS receiver or other personal electronic devices.

Even for heavy uses such as a laptop computer, the charged high-capacity lithium-polymer batteries can provide up to seven hours of additional battery life once the sun goes down. This is in addition to the computer's internal battery life.

The 6.5 W and 12 W solar chargers feature built-in voltage regulators to charge smaller devices such as cellular and satellite phones, iPods, portable GPS units or digital cameras. Thirty-watt solar chargers are recommended for most broadcast and commercial laptop use, due to higher power drain with heavier usage. Multiple units can be connected together to increase output.

For information, contact GoSolarLife, LLC at (602) 918-1819 or visit www.gosolarlife.com.



PR-R Internal Shock Mount Reduces Handling Noise

Heil Sound is launching the PR-R, a microphone suitable for ENG reporting.

Features include an omnidirectional moving-coil dynamic element with an internal shockmount that reduces handling noise.

The foot-long extended handle length is provided for larger call flags. Its non-glare profile results in a low profile on TV cameras, according to the company. The zinc die-cast body construction enables the microphone to withstand physical and environmental punishment typically encountered during field production operations.

Additional highlights include a foam pop screen, extended frequency response with rising high end; and a weight of 10 ounces.

For information, contact Heil Sound at (618) 257-3000 or visit www.heilsound.com.

SixMix Aids Remotes With MonitorMix Option

Henry Engineering's SixMix USB Broadcast Console is a suitable choice for remote broadcasts, Henry says.

The SixMix accommodates 10 sources, and solves the problem of "not enough inputs" common on small mixers intended for doing sports remotes. The console's USB connectivity allows a laptop to be an on-location recording/editing suite, as well as a library of music, commercials, jingles and other program elements that are needed for a self-contained remote broadcast requiring more than just microphones.

In some instances, audio from a remote-site broadcast is sent to the main studio where it's mixed with in-studio audio, e.g., commercial spots or telephone callers. In this case, remote site talent must hear the complete mix, including all audio mixed at the main studio. If off-air monitoring at the remote site is not viable (if the site is out of the station's coverage area, or due to latency issues) a mix-minus feed is often sent from the studio to the remote site. This feed contains the full broadcast mix minus the incoming remote-site audio. The remote site talent must therefore be able to hear a mix of the remote program audio and the mix-minus audio that's being sent from the main studio.

The SixMix console now offers a "Monitor Mix" option which does that. It allows the SixMix monitor and headphones outputs to provide a mix of the program and mix-minus audio, so the remote site talent hears the same mix that's on the air. In use, mix-minus audio that's sent via POTS, IP, ISDN, etc. is fed into the SixMix "AIR" input. When the monitor mix function is engaged, this audio is mixed with program audio and fed to the monitor and headphone outputs of the console. The monitor mix option includes a pot to adjust relative levels so that mix-minus audio matches the program bus audio.

The MonitorMix option can be ordered with any SixMix console; it can also be added to SixMix units that have already been purchased. The cost for the MonitorMix option is $125.

For information, contact Henry Engineering at (626) 355-3656 or visit www.henryeng.com.

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GUEST COMMENTARY

Expanding the FM Band Is a Great Idea — But Please Keep It Simple

by Philip E. Galasso

The Broadcast Maximization Committee plan to expand the FM band ("Could Radio Use Channels 5 & 6," Oct. 8) has merit; however, some suggestions are in order:

1 Why the obsession with digital transmission? Adding yet another expensive proprietary digital scheme to what we already have is guaranteed to prevent the public from buying the receivers, as it will drive the price up. Do we need another electronic Edsel?

The simplest solution is to maintain the current FM technical standards on the expanded band, using 200 kHz channels (including a guard band) and allowing stations to transmit standard analog FM or hybrid digital using the iBiquity HD Radio system and/or FMeXtra. An inexpensive RF converter is all that existing radios would need for the expanded band. Such converters are already available in Asia and Eastern Europe, allowing older radios to tune the 88–108 MHz band as well as the Japanese or OIRT bands. Since the Japanese have been using 76–90 MHz for years and the OIRT countries (Russia, Poland, etc.) have used 65.8–74 MHz for FM, newer radios would only need a firmware update or selection of jumpers to cover the proposed expanded band. Many car radios made for the Asian market already include both the Japanese and CCIR FM bands, covering 76–90 and 88–108 MHz in two bands.

2 The first AM stations that should be offered the opportunity to move to the new band should be the ones broadcasting on the old Class IV local channels. Those channels become a cacophony of interference when the sun sets. Class B and D stations should be then be allowed to move to available FM channels. The 50 kW Class A AM stations should stay put, but be allowed to increase their power to provide a wide-area service. Weeding out the lower-power AM stations would do a lot to clean up the band. Eliminating AM IBOC would also help, unless the AM band could be refarmed into 30 kHz channels. A difference from the current Canadian plan of allowing AM stations to migrate to FM is that any AM frequencies relinquished by U.S. stations should remain vacant, with no new stations being allowed to apply for those frequencies in the same market.

3 The existing FM band can also accommodate relocated AM stations in some of the less densely populated areas of the country. To relieve congestion, FM translators should be phased out. No new translator licenses should be issued and no existing ones should be renewed, allowing that service to "sunset."

Translators may have made sense in the 1950s, when there were relatively few FM stations on the air and when the performance of many FM receivers left much to be desired. Today, these stations provide nothing but clutter and interference and they are multiplying like cockroaches in a city tenement.

The worst abusers of the FM service are the noncommercial translators that use satellite feeds to rebroadcast stations hundreds of miles away. Is there any good reason why Scranton, Pa., needs a translator rebroadcasting KEAR from Oakland, Calif., via satellite when comparable religious programming is available from no fewer than four local stations in the market? Frequencies vacated by translators may be able to be used for relocated AM stations or for local noncommercial stations.

4 Instead of creating a complicated new system of power classes in the expanded FM band, just keep the existing classes. Distance separations will have to be observed and consideration must be given to IF beats and image response. Pairs of channels 10.6 MHz from each other would be taboo in the same market.

5 Isn't it time to do away with that antiquated designation of FM frequencies by channel number? Who, other than FCC bureaucrats and the engineers who prepare applications for FM construction permits, ever refers to an FM channel number? If I want to listen to WBHT, I tune to 97.1 MHz, not to "Channel 246." Why carry this practice to the expanded band?

6 If any channels in the expanded band are reserved for local governmental use and weather alerts, they should be the first two channels, 76.1 and 76.3 MHz. Alternating these channels and restricting the ERP of such stations according to the demand for these frequencies would allow uniform coverage throughout the country. A special PTY code in the RDS system would allow radios to automatically tune to these stations in the event of an emergency.

7 Further expansion of FM broadcasting could use the OIRT band, which roughly corresponds to TV Channel 4 (66–72 MHz) in North America. Again, IF beats and receiver image response will have to be considered when frequencies are allocated. The low VHF TV band has proven to be unsuitable for 8VSB digital television, due to its susceptibility to electrical noise, skip interference, and interference from other radio services.

Expanding the FM band is a great idea ... but keep it simple!

The author, a broadcast engineer since 1972, works for a cluster in the Scranton area. Amateur radio operator K2PG, he also holds experimental station licenses KA2XUK (long-wave communications) and WE2XTT (600 meters).

Radio World welcomes letters and commentary proposals. Write to radioworld@nbmedia.com with Reader's Forum in the subject line.

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Radio World
Vol. 33, No. 4 February 11, 2009

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Next Issue of Radio World March 1, 2009
Next Issue of Engineering Extra February 17, 2009

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Radio World Founded by Stevan B. Dana

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 810 Seventh Avenue, 27th Floor, New York, NY 10019. Phone: (703) 852-4600, Fax: (703) 852-4582. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853. REPRINTS: For reprints call or write Caroline Freeland, 5285 Shawnee Rd., Ste. 100, Alexandria, VA 22312-2334; (703) 852-4600; Fax: (703) 852-4583.

Computer Array Modeling Offers Many Advantages

The Federal Communications Commission, as we've reported, has adopted new rules permitting the use of Method of Moments computer analysis for AM directional arrays.

The use of computer modeling eliminates the ambiguity and inaccuracy that can be encountered with measured field intensity readings used to establish proper array performance.

In many cases extreme environmental changes have taken place since the last original proof-of-performance to which recent measurements are compared. New construction and installation of overhead and/or underground utilities can render comparison useless even if the original locations are still accessible. Seasonal differences can also greatly affect the accuracy of comparison if measurements are performed under different conditions than the original proof.

Monitor points can be influenced by nearby construction, causing one to believe the array is out of adjustment and make unnecessary adjustments. Graphical analysis of measured data to calculate Inverse Distance Fields can be ambiguous. The mathematical model employed in the FCC's computer program can produce different results with minor data input variations. MoM modeling eliminates these ambiguities.

The Method of Moments does not rely on the simple sinusoidal assumptions upon which FCC equations rely. The engineer can construct a very accurate model of the array and feeder system allowing analysis and optimization of pattern and impedance bandwidth. Recall that when carrier frequency is changed (as in sideband analysis) the tower electrical heights and spacings change, as do the transmission line electrical lengths and component reactances. A matrix model allows one to view the carrier and sideband patterns and impedances and provides the ability to design the phasing/coupling system for optimum performance.

Computer analysis emphasizes attention to the most important part of a directional antenna array, that being the sampling system, which provides information on the operation of the antenna system. By performing routine tests on the sampling system, one is assured that the phase and ratio values displayed on the antenna monitor are indeed accurate. When an array appears to be malfunctioning, the primary question is whether the issue is with the array or the sample system. By having measured data on the array elements and sample system in hand, the engineer can quickly determine what may have changed and take corrective action.

MoM software can also be used a troubleshooting aid if problems with the feeder system arise. Field intensity measurements were customary and more reliable when urban sprawl was not as predominant as it is today. Many times valid measuring locations can become inaccessible within a year of being established in an original proof. MoM computer modeling offers the advantage of accurate drive point impedance prediction and the ability to optimize sideband performance resulting in the best audio quality at the receiver.

Computer analysis is beneficial to the station's bottom line. The cost of having a competent engineer travel to monitoring locations to perform measurements and the analysis of those measurements is greatly reduced, especially if the station has different day/night patterns. The expense of trial-and-error tuneup is also reduced due to the inherent accuracy of the MoM array model. Interference reduction by operating with correct parameters is another advantage. Some arrays may have deeper and/or displaced minima where they are unwanted and unnecessary.

While some engineers may not be persuaded to adopt new methodology quickly, they should consider the number of arrays that have realized benefits from the use of such technology.

— Radio World

◆READER'S FORUM◆

Barry McLarnon

I'd comment to the FCC but they don't like me much.

I am tickled to death that someone of Barry McLarnon's caliber has officially brought forth the truth ("IBOC Critic Opposes Power Boost," RW Online, Nov. 21).

If anyone has any doubt about Mr. McLarnon's report, all they have to do is drive around Lubbock, Texas and tune around the noncom band. Once you hear this IBOC noise it's easy to pick out. To say it's horrible is an understatement, especially when the station runs HD2 and HD3.

Of course, I'd love to see this in the greater Phoenix area to blow up all those "sat-a-lators" that have destroyed the noncom band. (Yes, I'm sadistic and mean.)

I am very afraid that when this hits the AM band, it's going to finish off the band forever.

Speaking of, there was no loss of haste to get rid of AM stereo and any equipment. Even though it took forever to adopt a "plan," it turned out rather well even if it was late; but it's gone now and no one will ever bring it back.

Michael Payne
Twin Falls, Idaho

Brinkley and Weldon

Paul, thanks for your Dec. 3 issue, especially the references to books about radio ("So Many Books, So Little Time").

When "Charlatan" was given a full-page review in Newsweek last year, I knew it was going to be good. I could not wait for the paperback. While a wonderful read.

I wish the author of "Charlatan" would have written more about Mr. James O. Weldon, the engineer who made the powerful XERA possible. He later founded Continental Electronics in Dallas and used improvements in early high-powered transmitter innovations to construct many megawatt transmitters around the world for the U.S. and other government broadcasters.

Your reference to the book about WLS(AM) brought back many memories. During my undergraduate days at the University of Texas at Austin in the late '50s and early '60s, we would listen to WLS during the winter while driving to Dallas, often with the air conditioning on in the car; we loved the music and waited for the current temperature on what I believe was referred to as "Lake Shore" — often 3 degrees.

Douglas A. Boyd
Professor of Communication
University of Kentucky
Lexington, Ky.

Ed Buterbaugh

Please forward my appreciation to Randy Stine for writing such an excellent, well-researched article ("Buterbaugh Legendary in Upper Midwest," Nov. 29).

I worked with Ed Buterbaugh at CKLW for approximately 10 years. Mr. Stine nailed Ed's life story.

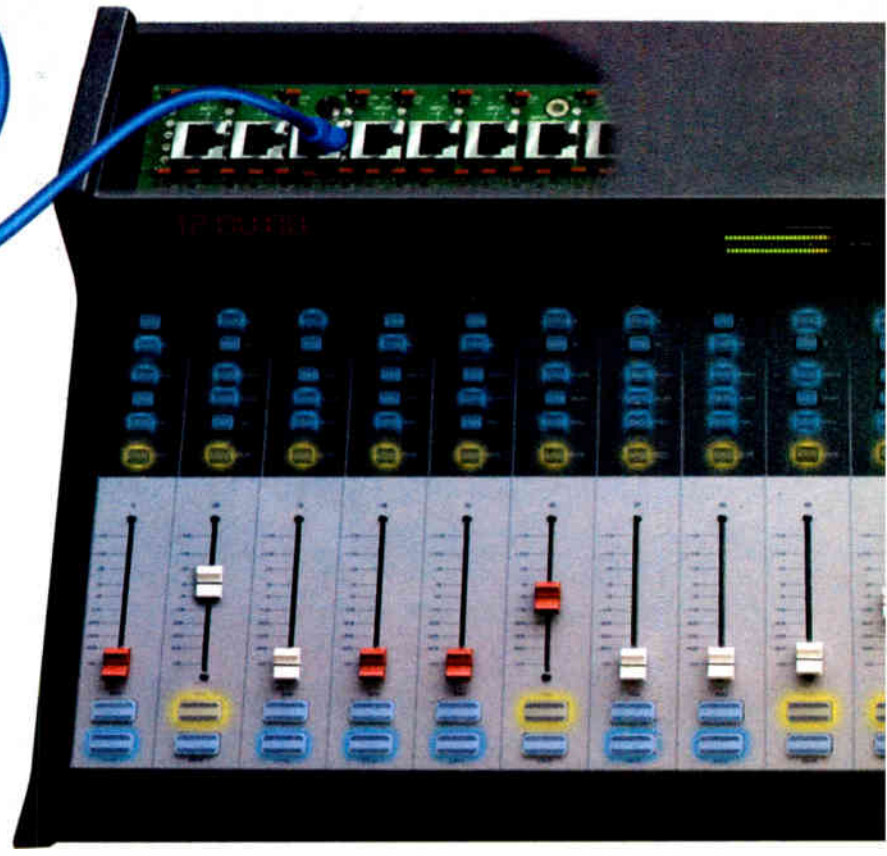
Ed Buterbaugh

I know many of the people Mr. Stine interviewed and everything written rings true. I have forwarded a link to this story to my former CKLW co-workers.

The only thing I can add is to relate the ironic fact that he ended his audio career as he began it, working in a church. Approximately a year and a half before his passing, he revamped the antiquated sound system of his place of worship, The Harrow United Church. Ed provided his time, talent and own resources to upgrade the PA system. The Rev. David Steadman related a warm, funny and personal eulogy.

Jay Golden
Harrow, Ontario

StudioHub+ Inside



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DIGITAL AES/EBU or analog on any input channel • Mic thru line sensitivity on every analog input • Soft touch, LED lit ultra-wear rubber keypads • Two stereo program buses with TEL mix minus bus output • Ten fully programmable mix-minus outputs — standard • All outputs provided in analog and digital simultaneously • LED VU or PPM metering and full monitor section • Up/down clock/timer with master sync capability • Complete GPI channel remote control provided for all A & B inputs • Available in 6 / 12 / 18 / 24 channel frame sizes

NETWORK Six IP audio Livewire channels with LCD selectors • Local input channels with two inputs per channel / analog or digital / mic thru line • Soft touch, LED lit ultra-wear rubber keypads • Two stereo program buses with TEL mix minus bus output • Ten fully programmable mix-minus outputs – standard • All outputs provided in analog and digital simultaneously • Full metering and monitoring • Up/down clock/timer with master sync capability • Complete GPI channel remote control provided for all A & B inputs • Available in 6 / 12 / 18 / 24 channel frame sizes

ANALOG is good. There are over 4000 analog Millenium consoles in service today and we continue to manufacture and ship analog consoles every day. That's because these boards are inexpensive, sound great (with specifications that rival and exceed many digital designs) and have enough features for many small and medium market applications. For more demanding applications, our analog consoles optionally can be equipped with additional mix-minus outputs, distributed output busses and redundant supplies making them even more capable and still a great value.

Going DIGITAL is a process. Radio Systems eliminates some of the stress with our NO CHARGE Digital upgrade program. For the life of your console we will swap any analog plug-in card for a digital one (or vice-versa) allowing you to gradually transition your studio to digital. You can even start out all analog and convert one channel at a time as digital arrives in your facility. But from day one your Millenium Digital console will out-put pristine digital audio to feed your air-chain processor and produce up to ten fully configurable mix-minus feeds.

At Radio Systems, our NETWORK is IP Audio by Livewire®. We've adopted this proven multi-channel standard from Axia® and installed it in our digital consoles. But we left local inputs as well to create the perfect hybrid of stand-alone and network capabilities. This way Millenium Network consoles easily mix local studio sources and connect to all Livewire enabled devices using standard Ethernet switches.

StudioHub+® is the glue of our entire console line. Use our award-winning CAT-5 wiring system to simply and quickly plug any source into any console channel. Or, easily configure custom talent panels and even interstudio tie line connections. And its value doesn't end after the installation is over. RJ-45 connectors allow new sources to be added at any time and makes trouble shooting easy.

Livewire is a registered trademark of TLS Corp.
StudioHub+ is a registered trademark of Radio Systems, Inc.

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While the two usual suspects slugged it out in the loudness war, we quietly developed the ultimate weapon for the REAL challenge:

WINNING THE RATINGS WAR

Basic loudness is simply not the draw it was in the last century. Today, with so many options for audio delivery, getting and keeping listeners means you need to SOUND GREAT across all media. That's why we developed VORSIS – to deliver clean compelling audio that cuts through the muck without fatiguing those all-important ears.

With Vorsis, we rethought the whole process – developing new tools to let your station deliver the best possible sound to each and every one of those 20th century radios, not to mention the great new standard and hi-def radios being produced in THIS century.

With Vorsis, you're never stuck with your processor's signature sound. You have a full toolset to create your own magnificent sonic signature – one your listeners can key into just by scanning the dial. For the first time, you have the capabilities of bringing true fidelity to FM, AM, and HD/DAB radio.

Intrigued? Call us or visit us on the web to learn more or set up a demo. You'll be happy you did. Vorsis – more listeners listening more.

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