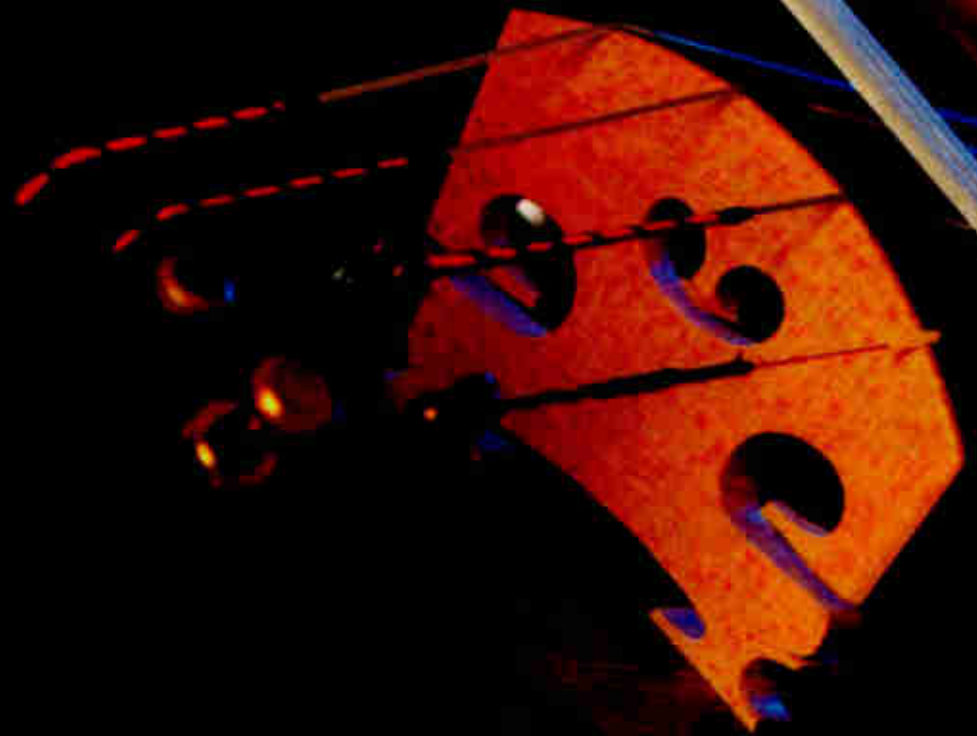


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iBiquity Touts Auto Integration

News about HD Radio from the recent NAB Show

BY LESLIE STIMSON

All major companies selling cars in the United States offer HD Radio technology in some form, according to iBiquity Digital. Six were featured at the spring convention.



MAJOR AUTOMAKERS FEATURE HD RADIO

All major car manufacturers selling into the U.S. now offer HD Radio technology in one or more models, according to iBiquity Digital Corp.

In late April, Nissan said its first model to offer HD Radio will be the 2015 Murano, expected to arrive at dealerships in late 2014. HD Radio is part of an upgraded audio option.

The latest additions mean that by the end of this year, HD Radio will be available, as standard or as an option, from 35 manufacturers for a total of 185 models.

Approximately 90 of those models

feature HD Radio receivers as standard equipment. Five automakers also use HD Radio technology to deliver traffic and data information to vehicles.

The technology developer says there are 16.5 million HD Radio-equipped vehicles on the road; one third of new vehicles sold in the U.S. came equipped with HD Radio in 2013. The company projects the number will reach 40 percent this year.

Why is most new receiver activity taking place in vehicles? Because that's where most radio listening occurs and where stations derive the majority of ad revenue, according to experts like BIA/Kelsey, the Radio Advertising Bureau and Nielsen.

In fact, the table radio is going away and being replaced by a set of speakers connected via Bluetooth in an iPod dock, according to consumer electronics experts; clock radios are being replaced by tablets and cellphones and portable music devices are being replaced by smartphones.

"Consumers aren't buying table radios. They're carrying devices," iBiquity Senior Director of Broadcast Business Development Jeff Detweiler told attendees of a Broadcast Engineering Conference session.

Some 2,200 U.S. radio stations are broadcasting with HD Radio technology, most of them on the FM dial. These stations account for 78 percent of domestic listening, resulting in an estimated 3.8 billion hours of annual HD Radio listening, according to BIA.

Based on a recent BIA report on top station revenues, 94 of the top 100 billing radio stations are broadcasting with HD Radio technology, according to the research company and iBiquity.

The majority of stations broadcasting in HD Radio are in major markets. Broadcasters in other cities have cited the cost of equipment conversion and iBiquity licensing as barriers to conversion.

Radio World asked iBiquity President/CEO Bob Struble what his message would be to stations that have yet to convert.

"It's time," he replied, citing HD Radio's growing presence in the OEM world. "If you've been on the fence, it's a good time to get off the fence," because there are ways to monetize HD Radio, and digital stations will have a competitive advantage over analog stations, especially as automobile media systems evolve further.

"The connected car is real. It's here, and HD Radio provides broadcasters an important and fundamental way to compete." HD Radio audio and receiver displays are on par with those offered by services like Pandora, Spotify and others, Struble said in an interview.

Some critics, in addition to citing conversion costs, have questioned iBiquity's receiver penetration figures and said that though HD Radio may now be included in more dashboard systems, consumers may not realize it's there.

OEMS OFFER HD RADIO IN MEXICO, CANADA

More HD Radio receivers are becoming available in Canada and Mexico, as automakers and receiver manufacturers begin to standardize the technology across North America. That's accord-

(continued on page 10)

We Take One and Give You Six

Study about radio's ROI demonstrates how deeply people connect to the medium

Expect to hear this statistic quoted a lot in coming months: Radio delivers a sales "lift" of \$6 for every \$1 spent.

That was the finding of a study of advertising "return on investment" conducted by Nielsen Audio and Nielsen Catalina Solutions. It was released in late March and received further attention in an April financial report from Clear Channel, whose Media+Entertainment business sponsored the study.

The statistic is likely to give U.S. commercial radio managers and salespeople a handy factoid to add to their "elevator speeches" — what they would say if they were on a short elevator ride and someone asked, "Why should I believe in radio as a marketing channel?"

Reporting the "six for one" statistic, Ad Age quoted a Nielsen Catalina official as saying, "It's shocking how connected people are to their radio."

What's shocking to me is how easily radio's connection is dismissed in the uncritical "group thinking" common among financial analysts and competing media.

The study aimed to determine how radio advertising influences actual retail sales, and to measure ROI. Researchers took listener information for specific commercials (as collected via the Portable People Meter, now owned by

Nielsen) and linked it to 60 million households of frequent shopper data in a "single source" view. Their aim was to figure out how radio spots influenced sales of products bought in listeners' households.

sured for the specific media buys of 10 brands, each of which had different combinations of radio networks."

Another finding: Radio delivers strong consumer sales response close to the time of purchase. The closer the exposure is to purchase, the higher the response. Further, "African-Americans and Hispanics also showed higher responses to exposure."

RADIO PAYBACK

Per \$1 Ad Investment



Ratio of incremental sales revenue per thousand to advertising cost per thousand = Payback

Copyright 2014 © Nielsen Catalina Solutions

"The overall finding was that for every dollar spent on advertising, there was a sales return of six dollars on average for those exposed to the ads in the prior 28-day period," the researchers reported. "The sales impact was mea-

Look. I know radio has its issues trying to navigate its future due to evolving platforms. And we can beef plenty about how U.S. commercial radio corporations manage, or sometimes mismanage, their valuable holdings through

FROM THE
EDITOR



Paul McLane

poor programming decisions. I don't merely swallow all of corporate radio's Kool-Aid.

But people in our industry should fight, fight, *fight* anytime someone around them, especially in other media, repeats the canard that radio is dead or dying, that ours is a medium made irrelevant by satellites, smartphones and streaming.

This is a simplistic, defeatist mindset — and a false one. But let's keep it from becoming self-fulfilling.

"RADIO HAS LEGS"

I'm happy to hear a combative theme sounded more often lately.

Nautel President/CEO Peter Conlon told me at the recent NAB Show that there's good news to be found around the industry, if you look; people are buying radio stations and buying transmitters.

"Is that 'stupid' money?" he asked me rhetorically. No; those investors are not dumb. "Radio has legs," Conlon said with emphasis. "Innovation is not dead."

Emmis CEO Jeff Smulyan, in an April video interview with the NASDAQ CEO Signature Series, replied to a question about the "death" of traditional media properties by politely reminding the questioner that "listening to traditional radio has held up very well," while reiterating his view that activation of the FM chip could also dramatically help "change the perception" of radio by making it part of the exploding smartphone experience.

Consultant Holland Cooke, writing in Talkers, noted positive remarks about radio at the NAB Show by influential tech columnist David Pogue. Cooke extrapolated: "As broadcasters, we have call letter cred and cume and TSL and dashboards and habit, a powerful head start."

And let us not forget the big nut. U.S. radio reaches 244.4 million people in an average week, according to Nielsen, 92 percent of the population. That remains a powerful fact.

So even if you aren't a GM or account exec, get your own elevator speech together; try it out in the mirror. Cynicism is easy to parrot; tell me something different: Why *is* radio a good investment? Why is it a place *you* want to spend the rest of your career?

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Radio Exhibitor Space to Change

Trade group plans entrance change for radio, pro audio booths

BY LESLIE STIMSON

Some radio vendors at the NAB Show are not happy that booth locations will be changed next year.

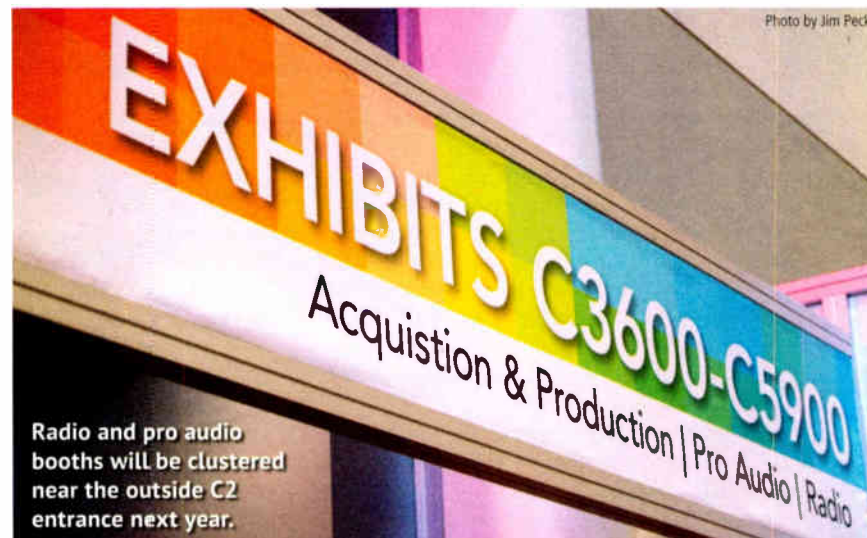
More radio and pro audio exhibitors in the Central Hall are being clustered, and those that had been closest to the so-called grand lobby entrance — between the North and Central Halls of the Las Vegas Convention Center — will move farther from that Central Hall door. The new radio/audio layout will overlap the footprint of the old one, but the traffic flow and orientation of the “front of the radio hall” are likely to change.

The C2 entrance is across from the monorail exit, connected to the South Hall meeting room complex and adjacent to a shuttle bus drop-off.

The change comes as the NAB Show has grown considerably over the last few years. The trade group said exhibit space was up about 7 percent from the previous year, with 945,000 net square feet of exhibit space, and that there were 1,746 companies exhibiting.

“We are looking for ways to accommodate that growth and to organize the show floor in logical ways by product categories,” a spokeswoman told RW. She said the increase required the organization to reassess the overall organization of the floor in several areas.

NAB is moving radio and pro audio to accommodate growing exhibit needs of its Acquisition and Production cat-



Radio and pro audio booths will be clustered near the outside C2 entrance next year.

egory, which consists mostly of video-related companies. That space in particular has sold out the last couple of years, according to the trade lobby.

Radio exhibits last moved in 2010, from the North to the Central Hall.

“LESS ATTRACTIVE”

The shift affects the entire radio and pro audio categories, and vendors could be affected by varying degrees, depending on how far their booth is moved.

Radio is one of eight product categories at the show. There were some 100 exhibitors in the radio and 185 in the pro audio categories this year, according to the NAB Show website. Companies self-define their categories, and some

fall into both. A list of companies categorized as radio this year can be found at <http://tinyurl.com/lw4u6s9>.

For NAB Show exhibit purposes, “radio” consists of analog, digital and streaming technologies, HD Radio, antennas, transmitters, towers, automation, master control, news and weather services, advertising/media sales solutions, encoding, microwave/RF accessories, scheduling software, signal management, IT/network infrastructure and security, Web, mobile and video applications.

Several radio vendors spoke to RW off the record about the issue. For some the move was a surprise; they learned

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RADIO OUTLOOK

(continued from page 1)

SOONER BETTER THAN LATER FOR AM RELIEF

The FCC is reviewing approximately 165 initial public comments and 55 replies to its AM revitalization initiative.

An idea for which there appears to be overwhelming support is a filing window in which AM owners alone could apply for FM translators, one per AM licensee.

FCC Commissioner Ajit Pai would like to see such a window "no later than 2015." Bryan Broadcasting Vice President/General Manager and NAB Radio Board member Ben Downs urged FCC Audio Division Bureau Chief Peter Doyle to act quickly on the concept: "Peter, hurry."

Doyle says the commission is reviewing comments on revitalization "to make sense of what direction we want to go in." The proceeding is in two parts, Doyle said. The first involves the simplest possible changes, like a translator application window; the second would require additional rulemaking.

Media Bureau Chief Bill Lake characterized radio's health as a bipartisan concern. He said the commission hopes to bring out a report and order on AM "very soon."

The opportunity to license an FM translator wouldn't work for every AM owner. Downs predicts that sky-wave protection will be controversial, saying Class As will want to protect that listening, while stations that have to sign off early or reduce power during afternoon drive-to-protect the Class A skywave will not.

In the longer term, Pai said, AM has "difficult issues" to be decided. But the commissioner believes the radio industry's future looks bright in general. "Radio has an important role to play in the national culture going forward."

Commissioner Mignon Clyburn said that, growing up, she wanted to be a radio personality, jokingly calling her comment a message "for anybody out there, when my term expires." More seriously, she said that the commission cares "about all platforms," noting the AM revitalization initiative was circulated when she was interim agency chair.

EAS CYBER SECURITY IS A PRIORITY

It's been more than two years since broadcasters participated in the first national test of the emergency alerting system. Now the FCC is working on a Notice of Proposed Rulemaking to propose changes to its rules based on those results.

So says retired Rear Admiral David Simpson,



Greg Cooke of the FCC, Antwane Johnson of FEMA IPAWS and Ari Meltzer of Wiley Rein discuss EAS.

chief of the FCC's Public Safety and Homeland Security Bureau. This will lay the groundwork for future regular testing, he says.

Greg Cooke, associate chief of the Policy Division of the bureau, thinks the NPRM will come out "fairly soon — hopefully within the next quarter."

Simpson says EAS has come a long way; but with its additional functionality comes risk. Last year's fake so-called "zombie attack," in which someone gained access to the EAS encoders/decoders of a few stations connected to the Internet, made it clear that EAS needs a secure cyber environment, he believes.

"Pirate attacks can take down your networks and facilities," says Simpson. He said it's not a question of if, but when. "We don't believe the government can set up a moat around broadcasters. You wouldn't want that anyway."

A subgroup of the Communications Security, Reliability and Interoperability Council hopes to adopt recommendations in June to protect stations from such attacks. CSRIC advises the FCC on security and public safety issues.

Meanwhile, work to strengthen the station backbone of emergency alerting continues. States had asked FEMA for more Primary Entry Point stations, so FEMA added 38 more, as Radio World has reported.

Antwane Johnson, division director of FEMA's Integrated Public Alert and Warning System, says the infrastructure work to add those 38 as new Primary Entry Point stations is now complete, for a total of 77 PEPs. He tells RW that FEMA is now focused on upgrading the equipment in the oldest facilities. All have backup generators and fuel systems to enable them to run independent of a station's power source for about 60 days.

Johnson proposes that the EAS community discuss "everything" related to emergency alerting, including the direction for EAS in the next 10 years; he'd like to have that discussion at the fall Radio Show.

EAS: DON'T "CRY WOLF"

The FCC is serious about its prohibition against simulated or real EAS tones on the air except during emergencies and tests. The agency recently proposed a total of \$1.9 million in fines against three companies for airing spots that included EAS warning tones. It says more fines for comparable violations are coming as the agency works through similar cases in its pipeline.

"It's crying wolf," says Eloise Gore, associate chief of the FCC's Enforcement Bureau, about the practice of emulating alerts in advertising. "If you have people become inured to hearing this tone, when there is a real emergency, then they won't pay attention to a real event."

The FCC began receiving lots of consumer complaints about this issue about a year and a half ago, she says. She described the problem as a multiplatform one that affects radio and television, cable and satellite

systems.

"I had consumer complaints from people who jumped out of the bathtub" when they heard the EAS tones, "because they live in tornado areas," Gore says. "We don't want to hear any more of this."

Companies that were fined did have screening procedures, said Wiley Rein associate Ari Meltzer, but those safeguards applied only to content, not simulated EAS tones. The companies will rework their guidelines to screen for false tones, he said.



Commissioner Jessica Rosenworcel supports activating FM chip in cellphones.

ROSENWORCEL LIKES FM CHIP CONCEPT

At least one FCC commissioner, Jessica Rosenworcel, supports the concept of enabling FM chips on smartphones, though she didn't call for a mandate.

NAB Chief Operating and Strategy Officer Chris Ornelas says that in ongoing talks with broadcasters, wireless carriers typically argue that enabling the chip shortens battery life and

that handsets lack room for an antenna.

Commissioner Rosenworcel says, "I don't think you'll see a mandate. But we're also not just regulators, we're consumers. I think it would be really neat to have [an FM chip] on my phone, and I think it would drain my battery a little less." Noting that one carrier, Sprint, has enabled FM chips on some of its smartphones, Rosenworcel said she hopes that she and her colleagues "will agitate carriers a little to make that happen."

Sprint has enabled FM chips on at least 11 models and pledged to activate more.

Separately, NAB President/CEO Gordon Smith asked FCC Chairman Tom Wheeler if his commission will have any sway with carriers on the chip issue, especially given Wheeler's background as former head of the Cellular Telecommunications and Internet Association.

Wheeler didn't commit one way or the other: "One of the challenges of this job is realities that existed last week won't exist next week. So we are in the middle of trying to come to grips with how you handle the IP transition in the wired world and wireless world."

Smith said that when cell towers lose power during a disaster, radio is a secure source of emergency information to consumers. Wheeler acknowledged, "we ought to be having that debate [about] safety in the 21st century. We've got to look at the broad aspects" of the chip issue.

MEDIA OWNERSHIP SPLITS COMMISSIONERS

The FCC intends to keep its current local radio ownership limits, saying they help promote localism and open doors for women and minority owners. The limits vary, with up to eight stations allowed in the largest markets.

(continued on page 8)



Journalist: Maria Carrasco

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RADIO OUTLOOK

(continued from page 6)

The agency is asking for public comment on its tentative conclusion, as well as on costs and benefits of retaining the current tiered limits.

The text of a Notice of Proposed Rulemaking released in April puts in writing much of what became apparent in March. That's when the commissioners voted 3-2 to begin the quadrennial review of media ownership rules.



Commissioner Michael O'Rielly remembers when the broadcast media ownership rule review took place every two years rather than four.

Some changes do appear to be pending; the commission tentatively found no reason to keep the radio-newspaper cross-ownership ban, and it also proposes eliminating the ban on radio-TV cross-ownership.

Comments to MB Dockets 14-50 and 09-182 are due 45 days after Federal Register publication.

The two Republican commissioners are not happy that the chairman is rolling the pending 2010 media ownership review into the 2014 review, and that

action is not expected until 2016.

GOP Commissioner Michael O'Rielly remembers when the review was biennial and the FCC asked to make it every four years. "The promise that we will get to it in 2016 is not comforting," he says. "The media landscape has changed significantly, but that's not reflected in our rules."

Commissioner Ajit Pai said, "We just kicked the can down the road for a couple of years," though he agrees with the plan to drop the radio cross-ownership rule.

Commissioner Mignon Clyburn, a Democrat, defended the chairman's timing decision. The agency's media ownership data is 10 to 15 years old, she said, and the FCC needs to know what the current "ecosystem" looks like as well as the effects new rules might have.

"There does not seem to be a path to get new data that I would be comfortable with. That's a core reason as to why I'm taking a more deliberative approach," said Clyburn.

"NEW" GENERATION OPERATES IN REAL TIME

The "new" generation of consumers operates in real time; they have on-demand TV, newspapers and books, and they expect everything "immediately," says Yahoo tech columnist David Pogue.

The writer, who's also host of "Nova ScienceNow," said at the show that a smartphone is so much more than a phone now, and young people often don't bother to leave, or listen to, voicemails.

"We're a person-to-person economy," says Pogue. The Internet plays the role of a giant matchmaker, a trend that started with eBay, which helps strangers "buy and sell junk" without meeting, he said.

Pogue hears frequently that Spotify is going to



The "new" generation of consumers operates in real time, according to tech columnist David Pogue; this has implications for broadcasters.

"kill radio," but "that's not how things work," he said. Instant coffee didn't kill brewed coffee, nor did DVDs and the VCR make movies obsolete. "Things splinter," he continued; and new technology also can frighten people.

However, he praised streaming audio services like Spotify and Pandora for enabling users to make playlists and share content. There's not enough of that in terrestrial radio, Pogue said.

He singled out the NextRadio FM app, calling it "everything radio should be. You should be on the mountain talking about this app!" He noted that the app doesn't use a phone's data plan and promises to consume less battery life than does Pandora or Spotify.

Read more about NextRadio in our next issue.

NRSC UPDATES RDS GUIDELINES

The National Radio Systems Committee approved several updates to its RDS usage guidelines.

Chairman of the RBDS Subcommittee Dan Mansergh, who is director of radio engineering and media technology at KQED Public Media in San Francisco, tells Radio World the biggest change was incorporating guidelines for how to use RDS for emergency alerting.

Previous language addressing emergency alerting and RDS was almost a placeholder, lacking a lot of detail, Mansergh said. "Recent activity with the NPR Labs project in the Gulf states shows how an end-to-end data-driven alerting system complements EAS and the other alerting systems out there through IPAWS."

He identified GSS, which makes the Alert FM system, as another "significant" contributor. Noting that the GSS system has been deployed for a while, Mansergh said, "Since we were recognizing that there are a number of different ways to use RDS for a variety of applications, it's useful to explain how the different systems work."

Stations employ RDS for revenue-generating uses such as traffic data and iTunes Tagging. RDS offers flexible sequencing and rotation options, supporters say.

Milford Smith, NRSC chairman and Greater Media's vice president of radio engineering, says, "This guideline explains how to implement any service that uses RDS."

The guidelines also clarify specific information about injection levels, especially in regards to compatibility with FM subcarriers.

Mansergh said, "We'll be looking at that more. We see stations have a desire to have more RDS services. With higher injection levels comes the possibility of interference, which could result in data errors." The guidelines help stations avoid those.

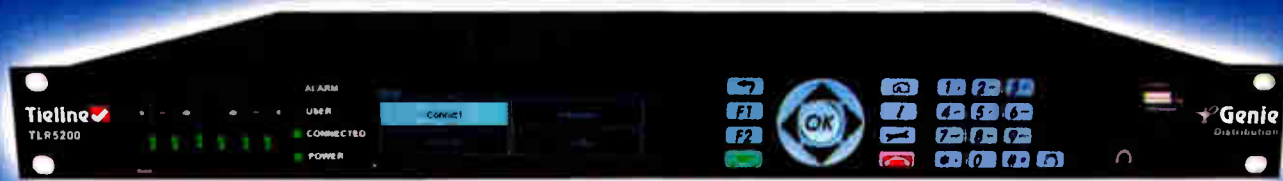
Mansergh and Smith describe the overall guidelines as a practical, nuts-and-bolts collection of best practices that station engineers can use to implement any service that uses RDS. "It's something that a radio station engineer can take to the transmitter site and help him or her with the setup," says Smith. The guidelines are free.

(continued on page 10)



The National Radio Systems Committee, shown prior to the 2014 meeting, is always seeking more members. Sponsored by the National Association of Broadcasters and the Consumer Electronics Association, its purpose is to study and make recommendations for technical standards that relate to radio broadcasting and reception of radio broadcast signals

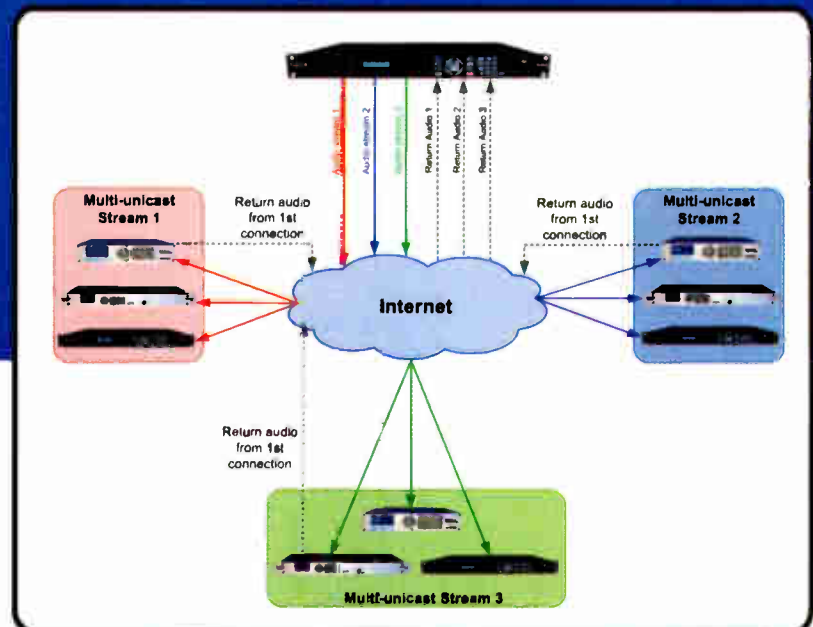
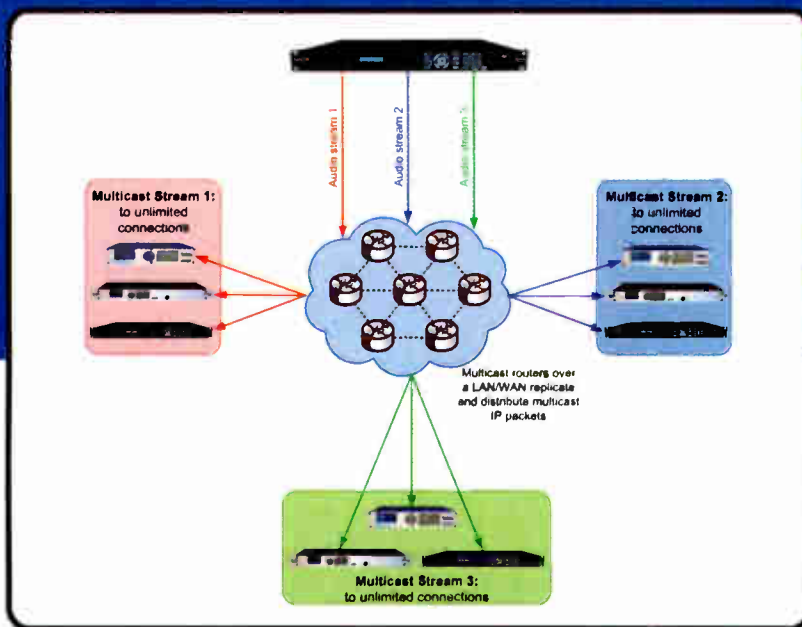
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HD RADIO

(continued from page 3)

ing to iBiquity Digital, which says 13 of the 35 automakers that sell HD Radio-equipped vehicles in the United States also offer them in Canada and Mexico.

Ford, Toyota, GMC, Chevrolet, Buick, Jeep, Dodge, Mazda, Mercedes-Benz, Infiniti, Lincoln, Mitsubishi and Ram now have vehicles offering HD Radio at dealerships throughout North America.

The Mexican government approved HD Radio as the digital standard for AM and FM in June 2011.

Mexico City has 13 FM HD Radio stations; they air 24 HD2 and HD3 channels. There are 25 more stations broadcasting with the technology in other areas of the country. About 30 percent of the Mexican population has access to an HD Radio broadcast; iBiquity says more broadcasters plan to adopt the format.

The tech developer has opened an office in Mexico City to promote the rollout, and added personnel in Mexico to support broadcasters, car dealers, brands and retailers.

Canada is evaluating the digital radio technology. Several of its border cities have access to HD Radio broadcasts from the U.S. Struble said the company's automotive and receiver partners "welcome the advances in Canada and have expressed strong support for a unified North American broadcast standard behind HD Radio technology."

The company says broadcasters and consumers will benefit from economies of scale associated with the rollout in Canada and Mexico, and that owners in those countries will benefit from being able to implement the more advanced version of the system now available.

HD Radio aftermarket automotive receivers are available in Canada from Alpine, Clarion, JVC, Kenwood, Pioneer and Sony, as well as home AVR receivers from Denon, Onkyo and Yamaha. The retail channel will continue to expand as additional stations convert to digital broadcasts, iBiquity says.

We recently reported Canadian Multicultural Radio launched HD Radio broadcasts on 101.3 MHz in Toronto. CMR is using HD Radio multicasts to address the needs of a diverse community, with an HD2 in the Tamil



Photo by Jim Peck

To station owners who haven't yet converted to HD Radio, iBiquity President/CEO Bob Struble says: "It's time."

language, HD3 in both Hindi and Urdu, and HD4 in Punjabi.

ALL-DIGITAL AM TESTS CONTINUE

Results of all-digital AM testing continue to look positive, and NAB Labs is charting a path to asking the FCC for authorization eventually, should broadcasters want to do that.

So said NAB Senior Director of Advanced Engineering David Layer at a Broadcast Engineering Conference session.

The most recent testing involved Greater Media's WBT(AM), Charlotte, N.C.; Cumulus-owned KTUC(AM), Tuscon, Ariz.; and WD2XXM, an iBiquity test station in Frederick, Md. All of these already were airing hybrid digital signals.

NAB Labs is using consumer receivers, primarily OEM radios in Ford vehicles, to characterize the all-digital coverage. Personnel have also tested in BMWs using Volvo receivers.

The fact that testing is being conducted with receivers available in rental cars is in contrast to the reference receivers used some 11 years ago in iBiquity's initial AM all-digital testing.

Cumulus Senior Vice President of Engineering and IT Gary Kline told attendees that the all-digital audio sounded "far better than I expected" and that he walked away from the tests "feeling pretty good about running all-digital HD on AM."

Greater Media Vice President of Radio Engineering Milford Smith told RW the all-digital AM HD Radio signal on Class A, 50 kW clear channel WBT "was very robust," more so than

the hybrid signal. This was the second round of testing on WBT, to eliminate anomalies found in round one last year.

NAB Labs has now conducted drive tests on five AMs and hopes to test on another four facilities in 2014. More owners are offering stations for testing now, according to NAB.

The NAB Radio Technology Committee has identified the types of facilities it wants for further testing. Categories include a station with a non-directional antenna; a station with a directional antenna; an expanded band station; a Class A in the lower band; a Class D; and a Class C with a complex antenna array.

Consulting firm Cavell and Mertz is developing a lab test facility that will be located at NAB Labs; the aim is to formulate repeatable tests that back up the drive data.

RADIO OUTLOOK

(continued from page 8)

The NRSC last refreshed its RDS usage guidelines about a year and a half ago.

The updated guidelines will be available online (www.nrscstandards.org) once NRSC sponsors NAB and CEA have reviewed the document.

The NRSC is always seeking new members, and Gage specifically invited broadcasters to participate.

ONLINE POLITICAL FILE UPDATE

The FCC reminded television stations that, as of July 1, they are required to post new documents to their online political files. Until now, only stations affiliated with the top four networks in the top 50 markets had to do so.

"The issue is of some importance; this is an election year and by July some campaigns will be well underway," says Media Bureau Chief Bill Lake.

NAB Executive Vice President and General Counsel Jane Mago anticipates that at some point the FCC will require radio stations to post their political files online as well, but there is no date set for that yet.

Smith told Radio World the NRSC has discussed the possibility of eventually evaluating all-digital AM, similar to the testing that preceded FCC authorization of IBOC.

All AM HD Radio receivers in the field today can receive all-digital signals.

What has NAB Labs learned from testing so far? Layer said that coverage of the AM all-digital signal exceeds that of the hybrid signal. This was shown experimentally in 2002 and confirmed at WBT in 2014 using production hardware.

The all-digital signal is more robust than the hybrid AM signal, and coverage is dependent on co- and adjacent-channel interference.

FCC BUREAU CHIEF "ENJOYING THE DIGITAL RADIO"

It's always interesting to learn about the media and technology habits of those who regulate media. Now we learn that FCC Media Bureau Chief Bill Lake is experiencing HD Radio firsthand.

He told attendees at an FCC panel that "as a listener," he's "enjoying the digital radio in his new car," and that he believes "it's key for the auto industry to add digital radios to their product line." He didn't identify the car make or model.

"Anything the radio industry can do to promote [digital radio] is good for the industry," he said. After an attendee complained he couldn't find a home receiver in stores, Lake replied that he'd also found a new digital home radio at Best Buy.

An NAB official confirmed to RW that Lake was referring to HD Radio.



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BOOTH MOVE

(continued from page 5)

about it when they selected exhibit space for next year. Others said they'd found out a couple of weeks before the show.

Most weren't happy, questioning how customers would find them. Some seemed resigned to the change. "It's a less attractive location," said a vendor about his company's new space.

Another told RW: "It seems like radio is being pushed to the back of the bus," near the "doors that go out to the food truck."

"This is our big show of the year, and to be pushed back is disappointing," said a third.

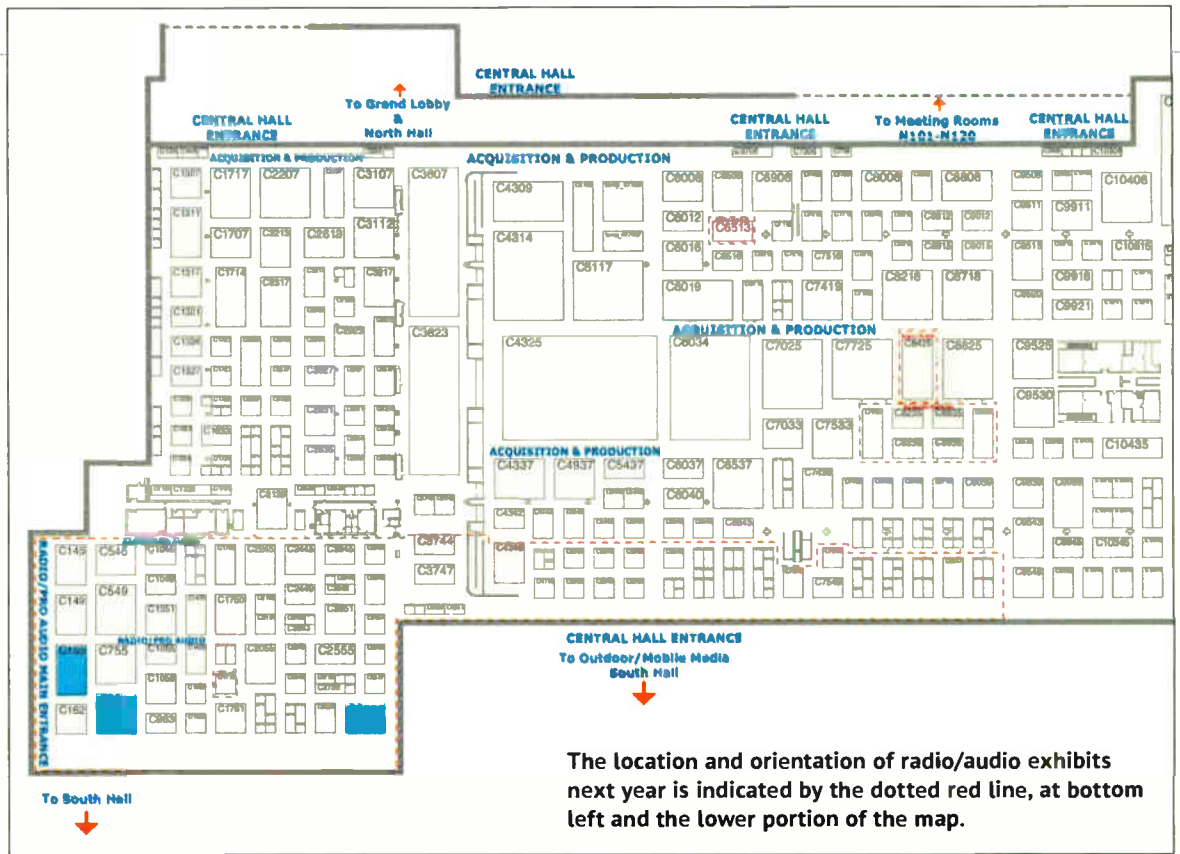
Another said that grouping all of the radio exhibitors is a good idea but he didn't like how the changes came about. His company chose a larger booth next year to be able to remain relatively near its current space, but he said spending on other show events may need to be constrained as a result.

A fifth vendor said the new layout "will be fine" but didn't like learning about it so close to the show when many other exhibit-related items demanded attention.

"AT THE CROSSROADS"

Radio will remain an important part of the spring show, the NAB spokeswoman stressed. The organization plans to create special signage around the Central Hall 2 entrance, branding it as a radio and pro audio entrance. "The area is at the crossroads for traffic moving between South and Central Halls — the bridge crossover drops people right at the entrance to C2," she said.

At least one vendor, GatesAir — part of what used



The location and orientation of radio/audio exhibits next year is indicated by the dotted red line, at bottom left and the lower portion of the map.

to be called Harris Broadcast — plans to relocate from the North to Central Hall, in the acquisition and production category. "We are moving by choice," a spokesman told RW. The company, which makes both radio and TV equipment, is moving into a space near the front of the Central Hall by the grand lobby.

NAB has an Exhibitor Advisory Committee that

companies can contact to voice concerns. While declining comment on the changes, Diana Stokey, chair of the EAC, said, "I encourage any exhibitor who has feedback on the change to the 2015 floor plan contact your Exhibitor Advisory Committee Representative. The EAC is your direct voice to NAB's show management team. NAB strongly encourages this dialogue."



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NEWSROUNDUP

NIelsen: In advance of a May shareholder's meeting, audience research firm Nielsen told the Securities and Exchange Commission that it is projecting to save some \$45 million through "synergies" after the closing of its \$1.26 billion deal to acquire Arbitron. Nielsen is merging the former Arbitron's Maryland data processing operations with Nielsen's existing Florida facility, resulting in layoffs spread over several months, as we've reported.

PIRATES: Federal officials seized equipment from two sites in Manhattan that they say were used to transmit "Rika FM" illegally on four frequencies: 94.5, 94.9, 95.3 and 100.1 MHz. "As alleged, these pirate radio stations were for-profit businesses that broke the law to line their own pockets while disrupting legitimate broadcasters," said FCC Acting Enforcement Bureau Chief Travis LeBlanc. "They should be out of business and off the air." New York is one of a handful of states that have passed laws making it easier to prosecute radio pirates.

PIRATES II: Massachusetts Governor Deval Patrick criticized equipment seizures against three Boston pirate operators, though he said he understood the legal basis for the raids. The FCC defended its action, saying the agency had filed multiple warnings against the operators, which were ignored.

HD PATENT: The judge overseeing the patent infringement case against 14 radio ownership groups that employ HD Radio technology agreed for the second time this year to extend the deadline for broadcaster replies. U.S. District Court Judge Gregory Sleet pushed the date to June 18 after a request from the plaintiffs and defendants to give them "additional time to discuss a possible settlement," according to court documents signed by both sides. Wyncomm LLC sued the broadcasters in November 2013 claiming that the voice and data transmission technology broadcasters use for their HD Radio broadcasts violates patents it owns.

PIONEER/ALPINE: Pioneer plans to make Apple CarPlay compatibility available this summer, through a firmware update to its newest receivers, five NEX in-dash multimedia units. The receivers are available now. Meanwhile, Alpine Electronics will offer aftermarket products compatible with Apple CarPlay in the U.S. and Europe this fall. Model numbers and pricing will be announced when



Pioneer's AVIC-800NEX in-dash navigation/multimedia receiver

the products launch. Using a connector in the vehicle, CarPlay works with iPhone 5s, iPhone 5c and iPhone 5 running the latest version of iOS 7.

With CarPlay enabled, Apple iPhone owners can use Siri voice control to make and receive calls, compose text messages, use Apple Maps for navigation and listen to music, podcasts and iTunes Radio. CarPlay also lets users stream iHeartRadio, Spotify, Stitcher and Beats Music, according to Apple.

EAS: Broadcasters will have more time to weigh in on the concept of multilingual EAS. The FCC pushed back the deadlines to file public comments (EB Docket 04-296) to May 28, with replies due June 12. The proceeding

concerns how to ensure emergency alerts in languages other than English are transmitted and received.

TIS: The FCC seeks public input on an NAB/SBE proposal to relax filter regulations for Travelers' Information Stations from the current 3 kHz to 5 kHz. Comments are due to PS Docket 09-19 by May 16 and replies by June 2.

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WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Corbin Campbell is chief engineer for Mid-West Family Marketing, owners of four stations in Springfield, Mo. He suggests that engineers take a look at industrial lights from American LED-Gible Inc., found at www.ledgible.com and seen in Fig. 1.

The cost is around \$130 for the four-light stack. Each light stack is pre-built from one to five lights, and each light can be set individually to flash or not. They also can be supplied with buzzer options.

Other companies make similar products, but this model is designed for industrial plants where managers need to indicate machine status. Corbin has placed them in 911 centers to indicate whether call takers were on the phone.

Corbin chose the four-stack for his studio application, using this legend: red for EAS; green for request line ringing; yellow for hot line ringing; and blue for future use, possibly an after-hours doorbell.

The base against the ceiling tile is a wall protector that normally attaches to a wall to keep a door handle from crashing through drywall. It makes the finished installation look more polished.

Fig. 1: Corbin Campbell's studio light pole, from American LED-Gible Inc., is shown here. A plastic boot completes the installation.

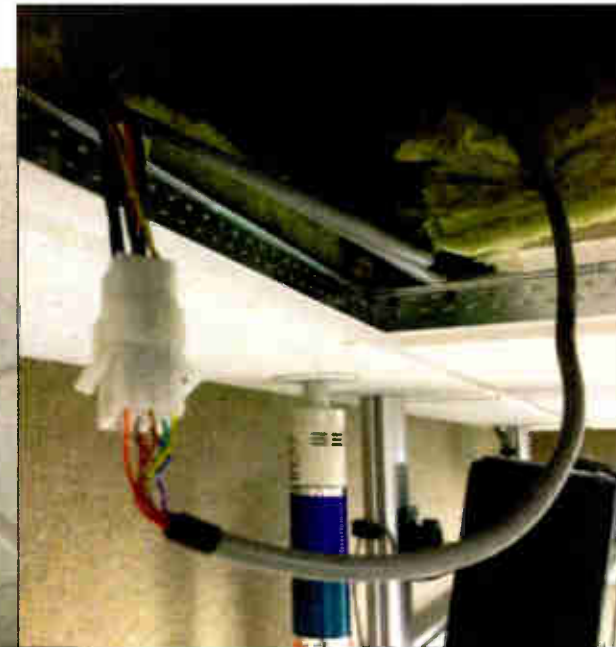
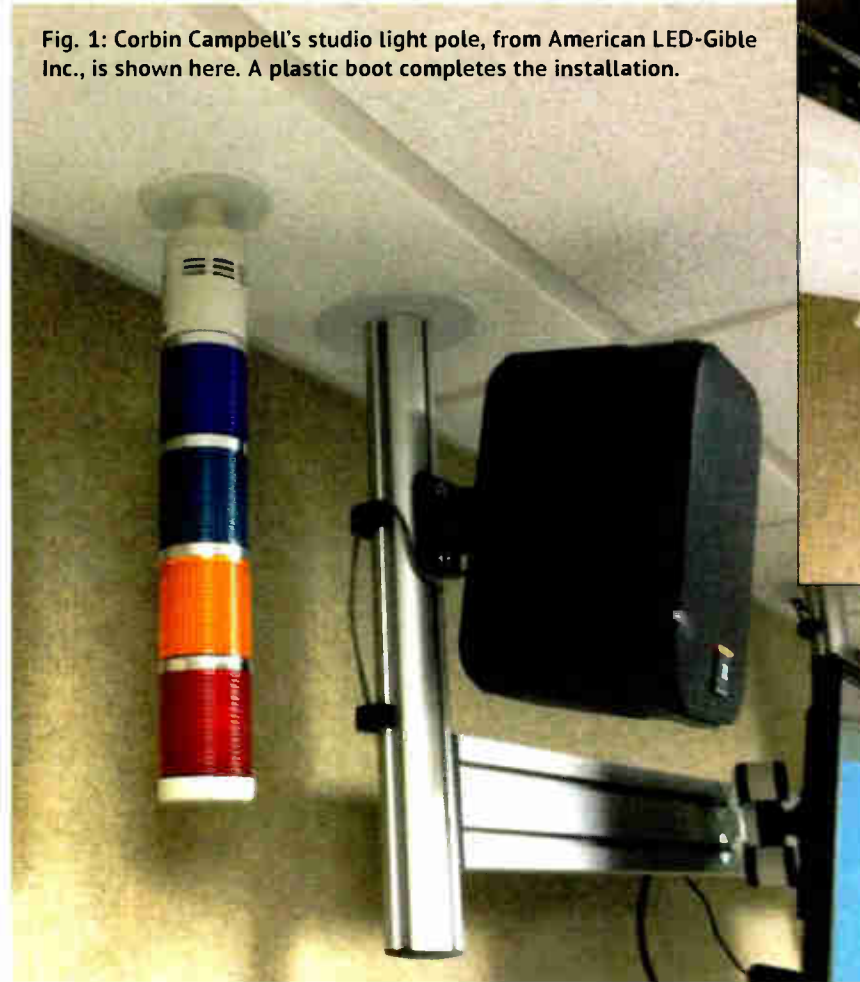


Fig. 2: When the lights are wired to a Molex connector, it will be easier to remove them in the event that they require service.

The light bulbs are also available in two sizes.

As you can see in Fig. 2, Corbin used Molex brand connectors to allow for a quick disconnect in case the lights need work.

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Editor-in-Chief Paul McLane has a question for *Workbench* readers:

Who among us in the Radio World family would not love playing with drones? But beyond just the fun factor, could video drones be a new tool for tower maintenance and facility inspection? Do you know of engineers or tower companies that have used video drones for this purpose?

As prices continue to drop, we're thinking there's a use here for radio facility managers or tower crews. If you are blazing a drone trail, at the tower or in other workplace applications, drop a line to johnpbisset@gmail.com.

At the NAB Show RF Boot Camp and SBE Ennes Workshop this year, I spoke about the value of a portable infrared thermometer.

Cumulus Rockford Market Chief John Huntley has been using a Fluke 62 Mini Infrared Thermometer Gun for a few years. It is available online for under \$120.

The beauty of this instrument is that

(continued on page 18)

NEW



AARON 650

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Version 3 update adds more features, new controls, and greater sonic power.

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This year at NAB, we introduced **AARON 650**: a totally-new FM rebroadcast/translator receiver built to handle the most challenging reception scenarios. **Version 3 firmware** added adjustable crossovers, attack and release times, Windowed AGC and more to our **DAVID IV FM audio processor**. And our new **INOmini 402 RDS Sign-Driver** was on hand displaying live RDS for your control rooms, studios and outdoor billboards.

Learn more at
www.inovonicsbroadcast.com



Wheatstone Takes Home Five Industry Awards at NAB 2014!



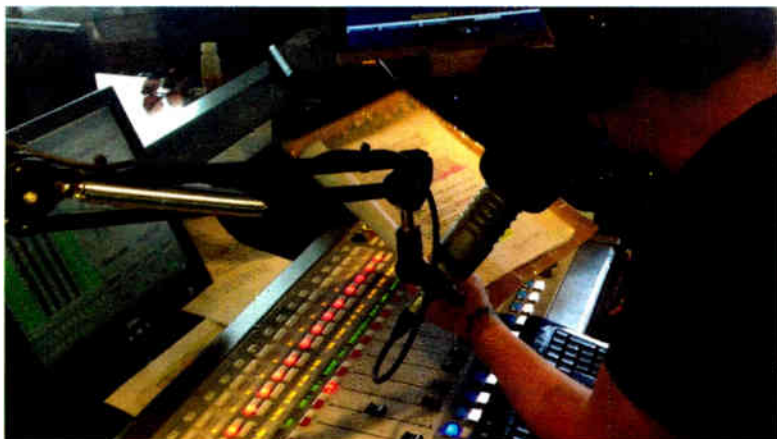
Wheatstone introduced some exciting new products at NAB 2014, and it appears that the industry noticed!

Wheatstone was presented with an unprecedented five Best of Show awards for its BLADE 3, L-12, SG-192, Dimension Three, and Series Four products.

Among the broadcast industry's most prestigious technology awards, NewBay Media's Best of Show Awards are evaluated by a panel of engineers and industry experts, and are selected based on innovation, feature set, cost efficiency and performance in serving the industry. The presentations were all made at the Wheatstone booth at NAB 2014 on the afternoon of Wednesday, April 9.

Read the rest of the story here: INN10.wheatstone.com

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BLADE Runner: 1341 Days and Counting

You see this shot of a working BLADE that has run for 1341 days straight? Incredible, right?

Wheatstone "Minister of Algorithms" Steve Dove thought so, too, which is why he included it as one of his slide presentations during his NAB Broadcast Engineering session.

Incredibly, someone watching the presentation recognized the BLADE as being one of his own and further commented that it probably would have gone on indefinitely if not for a routine reboot some months back. Find out who it is by visiting the link directly below.

[Click here to learn more: INN10.wheatstone.com](http://INN10.wheatstone.com)



D-76. Do You See the Family Resemblance?

One of the most beloved consoles in the Wheatstone Audioarts line — and, indeed, the radio industry — is the basis of our new Audioarts D-76 console.

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We think we've arrived at the perfect balance between feel, size and features with the introduction of our new L-12 control surface. Based on all the same design principles as our popular L-8 and flagship LX-24 control surfaces — a precision-built, low-profile, tabletop IP control surface that offers assignable sources to any fader and with hot-swappable individual fader modules — this newest Wheatstone console has just enough faders to be effective in most on-air or secondary production studios, but not too many that it's unwieldy to use and difficult to place in the modern radio environment. Take a look and tell us what you think.

[Click here to learn more: INN10.wheatstone.com](http://INN10.wheatstone.com)



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What Is That Irritating Sound?

Was it a pirate station, deliberate interference or a switching power supply gone wild?

TECHTIPS

BY MARK PERSONS

It reads like a Sherlock Holmes mystery novel.

Tim Laes, corporate director of engineering for Midwest Communications, received occasional listener complaints about an unusual noise heard on WNFL(AM) in Green Bay, Wis., in November and December 2013. WNFL is a DA2 with 5 kW day and 500 watts night into three towers on 1440 kHz.

However, AM radio constantly battles noise from fluorescent lights and a hundred other sources, and listeners often don't know how to explain what they are hearing, even when it is a valid complaint.

Laes is a ham, call W9EE, so he got off to a good start in unraveling this mystery. Hams often think farther out of the box than most people, and Laes discussed the issue with both local engineers and other hams.

RANDOM DITS

The WNFL signal in Green Bay was clean, so it was not a studio or transmitter problem. Then Laes determined that most listener complaints were coming from south of town. He lives north of Green Bay but was able to hear the interference, just barely, using a ham receiver and listening in the quiet

environment of his ham shack. There it was, something like Morse code at about 15 words per minute, but it didn't decode into letters and words. Instead, it was a 1 kHz tone of random dits and dahs, as heard in the AM mode of his



Fig. 1: A communications receiver tuned to 1440 kHz.

receiver. That would be A2 modulated CW, which is almost never used.

(Hear a one-minute sample of the audio online at <http://mwpersons.com/sounds/12-16-13.mp3>.)

Was it a pirate station, deliberate interference or a switching power supply gone wild?

The plot thickens.

Driving tests confirmed that the interference became more audible as he traveled south. There didn't seem to be a definite source, and it was nearly impossible to track because KFIZ broadcast on 1450 kHz in that area. It causes nor-

mal adjacent-channel modulation interference, since it is only 10 kHz up from WNFL. To make matters worse, the problem was only intermittently heard on the air.

In the spirit of cooperation, broadcast engineer Steve Konopka, N9FOY, got involved. He contacted Steve Brown, W9APL, chief engineer for Woodward Commutations in Appleton. Konopka had two radios going at once and noticed that the Morse-like sound seemed to happen in cadence with programming on 1150 kHz WHBY, some 24 miles at 171 degrees away from WNFL. Konopka listened at home while Brown briefly shut off his 25 kW transmitter on 1150 kHz and then on his 1 kW

1570 kHz station. Brown had recently installed a new STL system; it was interrupted as well.

All tests showed Woodward was not the problem.

CASE SOLVED

Laes and Konopka decided to do some tuning and discovered the same tone was audible 9 kHz above and below 1450 kHz. They could only hear the unwanted signals by tuning receivers up and down in frequency to get the unknown signal inside the 3 kHz bandwidth of their receivers: KFIZ(AM), in Fond Du Lac, Wis., is 1 kW day and night into a single tower on 1450 kHz, a local channel. It is some 53 miles down the road, at 206 degrees from WNFL.

Now Laes and Konopka contacted Stu Muck, who does engineering for KFIZ and was in the process of replacing large electrolytic capacitors in the station's Gates One transmitter.

Muck noticed that the transmitter's occupied bandwidth was, as he said, "starting to work its way out of the NRSC mask." Unfortunately, that repair did not fix the 9 kHz problem. The strange sound went away when he disconnected audio from the input on the

(continued on page 21)

WORKBENCH

(continued from page 14)

it has a focal point of 1:10 units, which enables users to measure smaller objects from a further distance, and works just fine in the presence of 5 kW at 1440 kHz.

In addition to checking for hot spots in electrical breaker boxes, it can be used in ATUs and the phasor, because the instrument is not affected by RF. Point the instrument at all copper tubing or strap junctions, as well as coil clips or rollers. The thermometer can be used to identify hot capacitors, as well as those that are about to fail.

In John's case, his AM directional parameter readings were wrong; things returned to normal after he replaced the capacitor.

John brings the thermometer along in the winter, too. He uses it to check transmitter-site generators for coolant heater failures. Yes, you can use your hand and do a touch test; but sometimes the IR thermometer is easier for checking for heat in the radiator from the outside of the cabinet.

The two gensets he maintains are propane fueled, but they are liquid mode and temperamental to start without heat in the coolant and engine block. A liquid mode genset has a vaporizer that uses heat from the coolant to change the propane to vapor.

John also recently used his thermometer to check for heating of bullets on 3-inch rigid non-flanged line within the building. The site had been installed 14 years ago.

He found that the inner conductor on the line to a dummy load had been cut with a tubing cutter. The result was that the bullet would not insert fully into the inner and was only making contact in a narrow ring. John made the correct assumption that the rest of the internal plumbing plant was that way.

The noncontact thermometer verified the condition from the outside at each connection. John scheduled an outage and was able to cut back an inch or so on each end of the inners, using a fine-tooth, hand-driven reciprocating cutter (also known as a hacksaw). He then smoothed the rough edge with a file and replaced two bullets that had lost their springiness.

John C. Huntley is chief engineer and director of IT for Cumulus Rockford. Email him at john.huntley@cumulus.com.

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

John Bisset has spent 44 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

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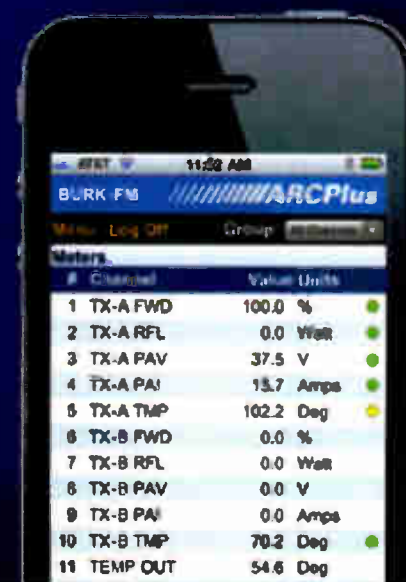
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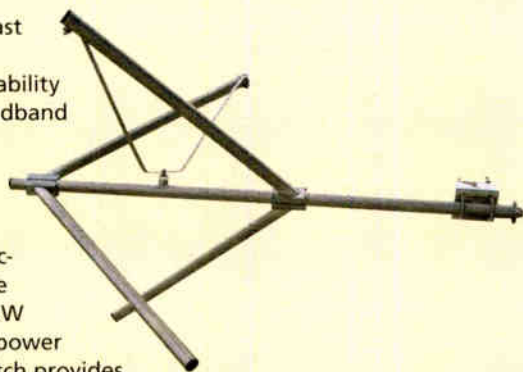


MARKET PLACE

Antenna Attention: Broadcast equipment company Progressive Concepts has announced the availability of the CIRPA Antenna, a new broadband circular polarized FM antenna.

The CIRPA is made of stainless steel and Teflon. Each bay can handle up to 2 kW of input power with a 7/16-inch DIN connector. They can be stacked to provide more gain and to handle up to 4 kW with a 7/8-inch EIA flange on the power divider. The antenna's gamma match provides DC grounding for lightning protection.

Info: www.progressive-concepts.com



The IN-put: The Aphex IN2 is a new USB audio input for computers. It offers 24-bit/192 kHz performance with Class A preamps heading up the initial stage.

For keeping files smaller, the IN2 also supports 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz and 176.4 kHz sample rates as well. The two Class A preamps have 48 V phantom power, high-pass filter (75 Hz) and a 20 dB pad.

Other features include a headphone output based on Aphex's Headpod 4, MIDI I/O for legacy toys, S/PDIF I/O, XLR inputs,

1/4-inch instrument inputs along with 1/4-inch TRS outputs and a fixed Aphex optical compressor. Power comes from a wall-wart rather than the USB bus to maintain better audio.

Aphex Chairman David Wiener said, "The goal in creating the IN2 was to raise the bar for analog audio quality that gets connected to a DAW, while at the same time including features like analog compression for a more complete workflow."

Info: www.aphex.com



Four More: Broadcast audio equipment maker Wheatstone has a new console, the IP16.

This is a networkable control surface-style console similar to the IP12. It operates through the company's WheatNet IP network.

Each channel has a 100 mm fader, LED scribble strip, lighted bus assignment, cue/talkback and on/off switches.

The master section has control room, studio and headphone controls with source selector, and headphone jack, timer controls, a master talkback button, and a built-in cue speaker controls. There are four event switches and six programmable buttons available for user functions.

The meter bridge offers 30-segment LED meters, timer readout and speaker.

Info: www.wheatstone-radio.com

Silencing Reflections: Speaker maker Equator Audio has a new supporting product for its speakers, an acoustic treatment panel.

Called Francis Buckley/Equator Sound Abatement Panels, they were developed with Grammy-winning Engineer/Producer Francis Buckley.

The panels are made of cotton rather than fiberglass or synthetic foam materials. Also different than common acoustic treatment panels is the size. Rather than the typical 2-foot by 4-foot panel, the FB/E panels are smaller at 1-foot by 2-foot. This allows them to be placed more easily in a project studio. They are 2 inches deep. Equator says the panels have a noise reduction coefficient of 1.05 and a sound absorption average of 1.04. They come four to a box, in black. Price: \$149.

Info: www.equatoraudio.com

PRODUCT SPOTLIGHT

ADVERTISEMENT

Audio-Technica ATH-M30x Professional Studio Monitor Headphones

With its newly remastered design, Audio-Technica's ATH-M30x Professional Studio Monitor Headphones represent a new generation of sound. Featuring 40 mm drivers with rare earth magnets and copper-clad aluminum wire voice coils, the headphones are tuned for highly detailed audio with strong mid-range

definition – making them an ideal choice for field recording applications. The ATH-M30x offers a circumaural design that contours around the ears for excellent sound isolation in loud environments, and a collapsible housing for space-saving portability.



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PEOPLENEWS

Rick Sewell has joined Crawford Broadcasting Company – Chicago as engineering manager of that cluster, and Brian Kerkan has been named chief engineer for Detroit.

CBS Radio named Max Krasny vice president of sales and strategic alliances for the Altitude Group subsidiary.

Spanish Broadcasting System Inc. promoted Max Ramirez to VP of digital media sales of SBS Interactive.

Jules Riley has been hired as operations manager for Journal Broadcast Group's Tulsa. Beverlee Brannigan has been named VP/GM for Wichita operations.

Dallas Nau will lead NRG Media LLC's Tri-Cities, Neb., cluster.

BIA/Kelsey promoted Mark Fratrick to senior vice president.

Entercom Communications Corp. hired Stacy Cunningham as ops manager for San Francisco and named John Graefe chief information officer.

Gary Gunter was named VP/GM of Radio One Inc.'s St. Louis stations. Randy Hershoff is VP/GM for Columbus, Ohio. Jeffrey Wilson is regional VP of its Midwest radio stations and Eddie Harrell Jr. is now VP/GM for Cleveland.

Mark Rosenthal now also serves as CEO of Katz Media Group.

American Public Media Group named Morris Goodwin as senior vice president and chief financial officer.



Rick Sewell

AM INTERFERENCE

(continued from page 18)

station's Orban 9100 audio processor. Muck discovered the noise issue was present only when program audio was passing through the processor. Further analysis showed the processor's number four card was in oscillation at about 9 kHz, but only when there was programming audio present. Who'd ever heard of that before?

Case solved.

NO COMPLAINTS

Remember how the 9 kHz tone seemed to come and go with modulation on WHBY? Well, that is because KFIZ was running the same nationally syndicated talk show as WHBY while some of the listening tests were being performed. Talk about confusing the detectives with a red herring!

So, the 9 kHz oscillations on 1450 kHz were heard as a Morse code-like 1 kHz note on receivers tuned to 1440 kHz, because it was within the receiver bandwidth when tuned to 1440 kHz. There is no nearby station on 1460 kHz to be interfered with, otherwise that would have been another clue.

Under current FCC rules, any station could legally transmit a 9 kHz tone at full 100-percent modulation and cause problems for RF neighbors. Muck does not have a record of how high the unwanted 9 kHz modulation was, but not much is required for people to take note when a steady tone, or worse yet a Morse code-esque tone, appears at 1 kHz, mixed with audio intentionally broadcast.

No complaints were received from KFIZ listeners. Why? Well, receiver manufacturers reacted to customer noise complaints years ago by restrict-

ing audio bandwidth in AM receivers to about 3 or 4 kHz. Very few AM receivers today can reproduce audio to the full NRSC 10 kHz audio bandwidth.

SO MUCH FOR 10 KHZ

I did frequency response tests in my shop on a few AM receivers. They were a Sherwood RX4109 component stereo, a Sony CFD-10 boom box and a Bose AWRI-1W Wave Radio.

The test setup featured an AM stereo generator, set to monaural, with an NRSC pre-emphasis equalizer and an NRSC low-pass filter between an audio generator and the exciter. No dynamic audio processing occurred. The exciter has a sample transmitter output, which produced enough signal for receivers to hear it on the bench. Receiver tone controls were set for standard response with no bass or treble boost.

Test results were what we expected, or at least suspected. The surprising part is that the receivers had very similar response curves averaging 2 dB down at 3 kHz, 7 dB down at 4 kHz, 12 dB down at 5 kHz, 21 dB down at 7 kHz, and 32 dB down at 9 kHz. I understand that car radios are about the same. So much for 10 kHz audio!

On a side note, I recently sold an Orban 9300 AM audio processor to a client. Before it was installed, I optioned the software to allow only 4.5 kHz of audio bandwidth. The station sounded loud, in part because there was no audio power transmitted and wasted from 4.5 to 9.5 kHz. No complaints, just happy listeners who could hear that talk station better. Fig. 2 is a spectrum analyzer display of 4.5 kHz AM audio bandwidth.

Years ago, I remember troubleshooting a pure 1 kHz tone that listeners heard on an AM station. The cause was a second adjacent channel (20 kHz

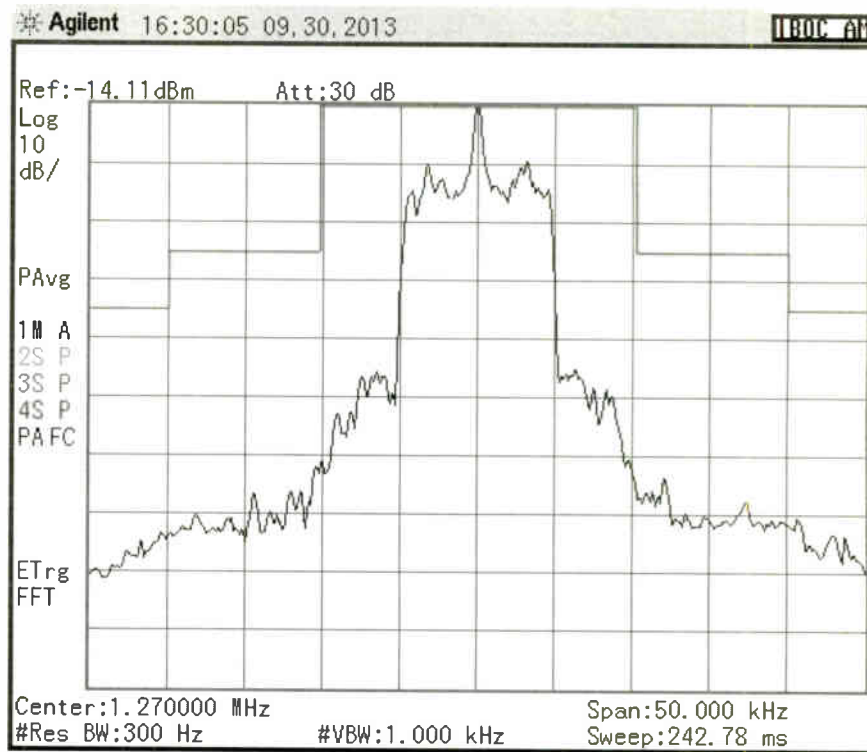


Fig. 2: 4.5 kHz Bandwidth on NRSC Test

away) AM station that was rebroadcasting a stereo FM station using a monaural FM receiver. The 19 kHz stereo pilot from the FM went right through the FM receiver, audio processing, transmitter, and out the antenna. That was before NRSC 9.5 kHz low-pass filters were required. The 19 kHz tone was just 1 kHz from the station being interfered with and was plainly audible to many listeners in an area halfway between the two station locations.

I'd like to make it clear that the 9 kHz and 19 kHz signals that caused 1 kHz tones in receivers were not mixing products between stations. They were "signals on the band" heard by receivers.

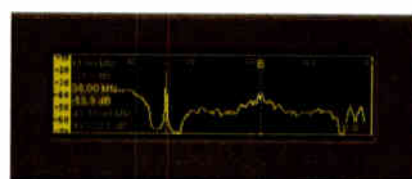
Yes, some AM transmitters are capable of modulating to even 20 kHz, but the receivers are not there today to take advantage of it. With increasing noise levels on the AM band, I do not advocate increasing AM audio bandwidth. In my opinion, we must make the best of what we have to get viable programming to listeners. It makes perfect sense.

Comment on this or any article. Write to radioworld@nbmedia.com.

Mark Persons, W0MH, is a Certified Professional Broadcast Engineer who has more than 30 years' experience. His website is www.mwpersons.com. Find past articles under the Tech Tips tab at radioworld.com.



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Radiosport Championship Returns to U.S.

Hams use competition to promote camaraderie, amateur radio communication



AMATEUR RADIO

The WRTC2014 organizing committee set up test stations during the summer 2013 IARU HF Championship. All stations consist of the same models of tower, tent, antennas and generator.

BY CHRISTOPHER FRIESEN

The World Radiosport Team Championship returns this summer to the United States after 18 years.

This global gathering — an Olympic-style competition between the world's elite amateur radio contesters — is back on home soil for 2014. The event, scheduled for July 8–14, promises to light up the ionosphere above Massachusetts.

What is radiosport? It's the competitive use of amateur radio.

The championships are part of an ongoing cycle.

Almost every weekend, amateur radio operators put their stations on the air and compete against their fellow operators in a spirit of sport, good will and technical competency. The goal of these contests is to make as many contacts with other amateur radio stations as possible.

HISTORY & METHODOLOGY

Randy Thompson is one of the championship organizers. A former competitor, he's been to five of the six previous WRTC events held around the world.

"The original one was in Seattle," he said in a phone interview. "I missed that

one. Then the next one was in San Francisco, then we went to Slovenia, then to Finland, then we went to Brazil, then it went to Russia. And now it's here."

The World Radiosport Team Championship is held every four years and runs concurrently with another large amateur radio contest, the International Amateur Radio Union's HF Championship.

"It's a big project," Thompson said. "If it was any further apart, it wouldn't be special. If it was any closer together, it would be too much."

Several other major contests are held annually in the years between WRTC events. Operators who accumulate the highest scores, in various regions, are invited to become team captains. Captains choose a teammate, and both bring their skills to the championship.

RULES OF ENGAGEMENT

"We have invited 59 teams of two people to participate," Thompson said. "We have a referee for each team to serve as an on-site observer. To keep the sporting aspect as equal as possible, we are providing each team with the same tower, antennas, tent and a generator and a field that's relatively level."

In total, there will be 65 identical stations; the extras are available for the competitors' use in the event of a problem with one of the set-ups.

The idea is to eliminate as many variables as possible. The only thing that will separate these teams, as they race for top honor, is operator skill. However, Thompson says, competitors

are allowed to bring some of their own equipment.

"They get to use radios they're used to; they get to use their computer logging software. They can use whatever kind of crazy switching and automation stuff they want."

YL AND YOUTH COMPETITORS

The 2014 competition will have two female (YL in amateur radio parlance) operators competing alongside returning champions, and against a team of young operators who are just starting to make their mark in amateur radio contesting. Thompson says having an all-female team isn't unique to this year's contest, as the Brazilian organizers had invited a "YL" team to participate in a previous competition.

"[In 2014] two German ladies qualified through the standard qualifying process," Thompson said. "We didn't set aside a space for them."

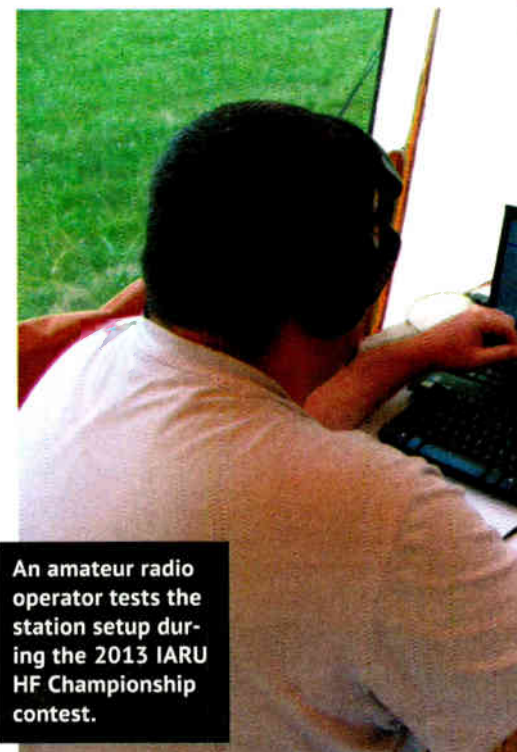
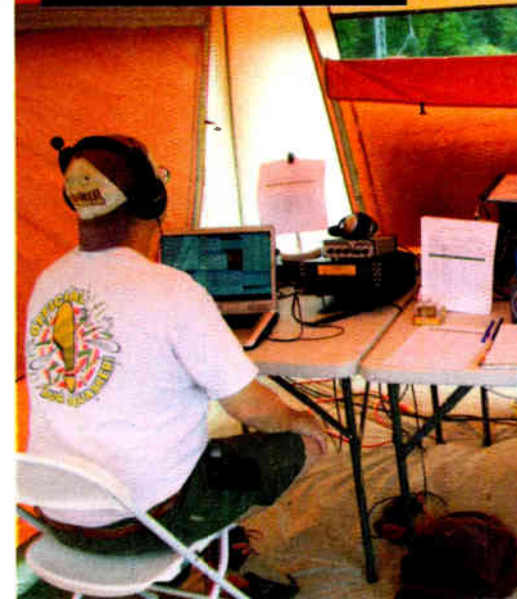
However, this year's organizers did reserve a special spot in an effort to appeal to a new generation of amateur radio operators.

"What we did this time is set aside one place for a youth team that will be manned by operators who are both under 25 years old," Thompson said.

SPECTATOR SPORT

Thompson and his fellow organizers are interested in sharing the hobby of amateur radio with as wide an audience as possible. They want this event to connect with fellow contestants and

Each station will feature two operators and a referee.



An amateur radio operator tests the station setup during the 2013 IARU HF Championship contest.

the broader group of amateur radio operators, but they have a goal beyond enthusiasts of their own hobby.

"We want to use WRTC as a platform to promote ham radio to the general public."

Thompson recognizes that this could be difficult, since there are many technologies available that compete with radio. And, he says, amateur radio contesting has another challenge to overcome.

"Ham radio contesting is not the world's greatest spectator sport," he said.

To respond to that problem, this year's organizers are going to be incorporating new features that will raise the visibility of the contest, and its participants, using their website, www.wrtc2014.org.

"We are going to capture the score off the logging computers of all the competitors that are operating, transmit it up in real time, so we will have an





Photo by Douglas Scribner, K1ZO



Volunteers will construct 65 temporary stations, in fields located in an area of Massachusetts about 75 miles wide prior to the WRTC2014 contest.

Photo by Randy Thompson, K5ZD

relations moments. And, he says, there's no substitute for the camaraderie.

"They'll get a chance to spend some time with these really good operators that are coming in." He said the social aspect is one of the highlights of the competition. "When it's all said and done, and you look back, the competition and winning and everything isn't nearly as valuable as just getting to meet all these people that you've talked to a million times, and you never get to see."

Christopher Friesen wrote about spy "numbers stations" in January. See radioworld.com, keyword Friesen.



Photo by Randy Thompson, K5ZD

online scoreboard that is showing how everyone is doing," he said. "So we really will be able to watch this almost like a car race or a marathon."

HUMAN RESOURCES

Thompson says the 2014 organizers have had great support from amateur radio contest clubs and equipment manufacturers and are close to reaching their fundraising goals to meet the event's budget. But they still need some support in one other key area.

"The biggest thing we need now is human resources," he said. "Anybody who is willing to come in and help us with two or three days of set-up, and then the one day of take-down."

Even without competing, Thompson says, volunteers will be winning by helping make the event successful for the competitors. They will also help amateur radio shine during one of its best public

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Mics: What's in Your Studio?

Radio World asks contributors which models they actually use at their stations

FIRSTPERSON

BY BRETT MOSS

We asked several Radio World contributors and colleagues to let us know which mics they go to at work.

Ira Wilner, chief engineer for Saga Communications, Keene, N.H.: "We use [Electro-Voice] RE20s and RE620s at all of the Saga cluster studios in Keene, N.H. — WKNE(FM), WINQ(FM), WSNI(FM), WKBK(AM) and WWZBK(AM). We sometimes use them on remotes along with [Shure] SM58s. The EV RE20s are workhorses. They always sound good, have decent built-in pop screens and nice directional patterns to reduce room tone. We use them on male and female voices.



Zach Sang of "Zach Sang and the Gang" visited WKNE. He sits next to the studio's Electro-Voice RE620.

"If I were a fine arts radio station I'd use Neumann condenser mics such as the U 87 or U 89 or their newer announcer mics, both condenser and dynamic, but only indoors."

Al Peterson, production director, Radio America, and former RW Studio Sessions editor: "At Radio America, we have RE20s for on-air mics all over the house, connected to the requisite Symetrix 528 voice processors. The only changeup is in our video production suite, where we use a mix of Audio-Technica AT831 and AT898 lavalier mics for on-camera talent and one MXL V67i FET condenser mic for the big-voiced narrations and VOs."

Aron Read, director, IT/Engineering, Rhode Island Public Radio: "Rhode Island Public Radio uses four Electro-Voice RE20s in our studio. We also have one Neumann U 87A in our control room that our morning and afternoon anchors use. There's a single



An Audio-Technica AT813a in use at Rhode Island Public Radio.

Audio-Technica AT813a on a tabletop stand that's frequently used by the guest on our "Political Roundtable" segment."

Kevin Larke, chief engineer, Midwest Communications Inc., Lansing, Mich.: "All of our air studios and production studios have Electro-Voice dynamic microphones, eight RE20s, seven RE27N/Ds and one RE320. We don't have any condenser mics.

"I like the sound of the RE27N/Ds because they are brighter sounding than the older RE20s. Sometimes the RE20s sound a little muddy, especially with deeper male voices. We bought the black RE320 a couple years ago, and it sounds very good in our main voice tracking studio. It seems to sound somewhere in between the RE20 and RE27N/D as far as brightness. The RE-320 is priced lower, but it was disappointing to see it was made in China.

"All the other EV mics in our building were built in the U.S.A. back when EV was located in Buchanan, Mich. We also bought several RE309A shock mounts recently, and they were also made in China. The shock mounts were also made in Michigan previously.

"For remote broadcasts, we have a potpourri mix of different brand handheld dynamic mics. We have several Shure SM57s, an older EV RE50, and some low-cost Audio-Technica mics that we found in a 5 for \$99 deal."

Tom McGinley, director of engineering, CBS Radio Seattle and Radio World technical advisor: "KMPS(FM), a country music station, uses Shure SM7s in all studios. The PD requested those for their wide and forgiving sweet spot and natural sound.

"Classic rocker KZOK(FM) uses a Neumann U 87 on air and AKG 414s in production studios. The PD and jocks like the high-end clarity and "godlike" sound they deliver.

"Jack FM KJAQ uses AT4500B condenser mics along with cheaper versions of the AKG 414 and AT4050s that deliver accurate and natural response.

"KFNQ(AM) CBS Sports Net uses Sennheiser

MD-421/U dynamic mics — an old favorite for AM talk and sports.

"With a good mic processor that includes parametric EQ, gating and compression, almost any of the mics listed above can be made to sound very similar to any of the others. (Although, the U 87 stands in a class by itself.) We still like and use the Symetrix 528e mic processor. Easy to adjust and reliable."

Cris Alexander, director of engineering, Crawford Broadcast: "We use RE20s and EV 635s in control/production rooms. In talk studios we tend to use Shure SM58s because they're just about impossible to overdrive and pop and because they are relatively deaf and don't pick up extraneous noise from other people in the room. We also use SM58s in our remote kits for the same reasons."

Curt Yengst, assistant engineer at WAWZ(FM): "Here at Star 99.1 we use Electro-Voice RE27s pretty much exclusively in our on-air and production



WAWZ's Dawn Wheeler speaks into an Electro-Voice RE27.

studios. We have a few RE20s around as spares, and at our emergency studio, The Bunker. For remotes, we use Shure Beta SM58s. We like the REs because they sound great on just about everything we plug them into, they don't need phantom power, and there's not a beating they won't take. Ditto the 58s — durable, reliable and idiot-proof."

Michael LeClair, chief engineer, WBUR(FM) and Radio World Engineering Extra technical editor: "At our public radio stalwart, WBUR, we use the Neumann U 87A as our primary on-air microphone. The technical directors love them because you can set them up to work with just about anyone, and if there are many people in the room they can be set to figure 8 pattern to share the microphone.

"We also use the Neumann KM 183 and KM 184 microphones for instrument miking when we have musical acts in the studio.

"In the field we use a pair of Audio-Technica condenser microphones — the AT8031 handheld cardioid and the AT897 short shotgun. These microphones are our primary newsgathering types."

Dan Slentz, former engineer and on-air host, including stops at WHIZ(AM/FM) and KERA(FM): "I've always been a fan of EV RE20 mics. I worked at one station that used Neumann U 87s and they eventually switched to 20s. I've tried a few others (even some new creations by nontraditional mic manufacturers) and find that a few of the 'mic staples' still seem to have the right sound. "When Electro-Voice came out with the RE27N/D, I wanted to give that a shot ... and I absolutely hated it. The different material (the N/D — neodymium) produced a 'harsh sound.' "However, when EV came out with the RE320 (and at a lower price), I expected myself to not like it at all, but was very pleasantly surprised by the quality. I have to say that it didn't have the harshness of the 27, yet it had the full, rich sound of the 20 ... but at a much better price."

Mario Heib, contract engineer, KPCW(FM): We use Electro-Voice RE20s exclusively at KPCW, Park City, Utah. They are rugged and have little or no bass-boost proximity effect. We have them mounted in the Electro-Voice shockmounts, which are great at isolating table noise. Another nice feature of the RE20s is, that as dynamic microphones, they seem to be less sensitive to room and other noises. The main microphones use the Aphex Channel as a preamp and processor. The gating feature is great for reducing background noise.



Host Randy Barton interviews a guest in the KPCW on-air studio. Count the RE20s in the room.

What's your mic of choice and why? Tell us in 200 words or less at radioworld@nbmedia.com, with Letter to the Editor in the subject field.

TECHUPDATE



TASCAM UH-7000 MIC PREAMP/USB AUDIO INTERFACE

Equipment maker Tascam says that the UH-7000 is a pro-level microphone preamp and audio interface, designed with a focus on low noise and audio quality.

The UH-7000 can be used as a 4-in/4-out audio interface in a DAW production environment, and as a standalone microphone preamp and A/D-D/A converter. The HDIA microphone preamps are newly-designed with broadcast-quality specs like -128 dBu EIN, 117 dB signal-to-noise ratio and distortion ratio of 0.0009 percent or less, according to the company.

Burr-Brown A/D and D/A converters and a built-in DSP mixer are Mac and Windows compatible, 48 V phantom power is supplied for condenser mics, and it supports up to 24-bit/192 kHz resolution. The UH-7000 has balanced mic/line analog inputs via XLR and 1/4-inch connectors and balanced analog outputs via XLR along with AES/EBU I/O via XLR and a USB port.

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

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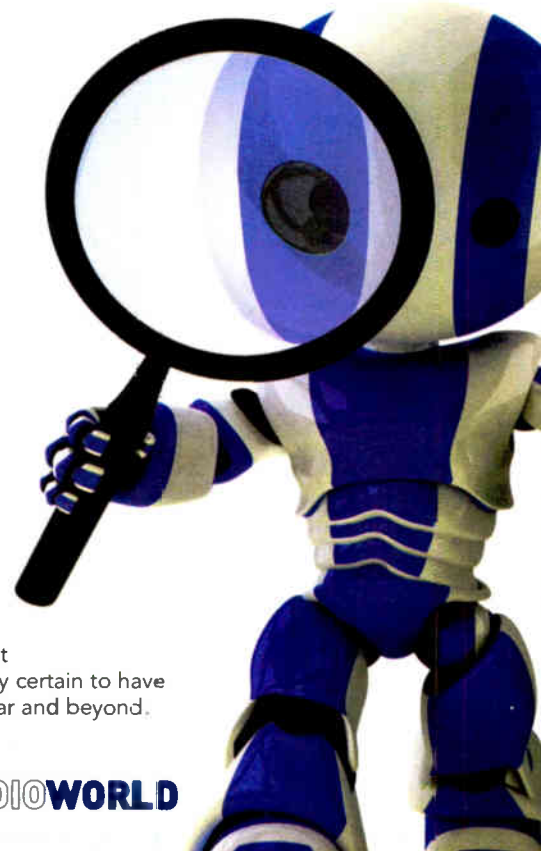
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TECHUPDATES

AUDIO-TECHNICA DEBUTS HEADWORN MICROPHONE

Audio-Technica's newest headworn microphone is the BP894 MicroSet subminiature cardioid condenser.

It features a rotating capsule housing with talk-side indicator for use on either ear, allowing the cardioid element to be aimed directly at the user's mouth for maximum intelligibility. The company says that its uniform pattern provides excellent rejection of outside noise, with high gain-before-feedback when used with live sound systems and stage monitors.



The set is aimed at use in public speaking, broadcast, theater and house of wor-

ship applications. A high, 135 dB SPL capability allows the unit to handle high-pressure levels with ease, while the power module's high-pass filter provides a steep low-frequency attenuation to improve sound pickup without affecting voice quality. The headworn microphone is minimally visible when in use, courtesy of its lightweight, under-ear design and 2.8 millimeter capsule. Each BP894 is available in black and beige, in both wired and wireless configurations, and comes with the AT8464 dual-ear microphone mount that converts the single ear-worn MicroSet to a dual-ear-worn unit for maximum stability and comfort.

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

PRESONUS CROWNS SCEPTRE STUDIO MONITORS

PreSonus says its Sceptre series CoActual two-way studio monitors reveal nuances of audio that can't be reproduced by conventional designs.

The Sceptre S8 two-way monitor combines an 8-inch low/mid-frequency driver and a 1-inch, horn-loaded, high-frequency transducer into a coaxial



unit with aligned voice coils. The Sceptre S6 employs the same design with a 6.5-inch woofer. Both models employ 180-watt, Class D bi-amplification and have acoustic ports.

The company says Sceptre's panoramic soundstage, detail, sweet spot and dynamics are the result of an advanced coaxial design that works with a 32-bit, 96 kHz dual-core processor running Fulcrum Acoustic's TQ algorithms.

In addition to making possible the coaxial design, the monitor's DSP provides user-adjustable contour features for optimizing monitors for the mixing space. Sceptre's sound and response can be adjusted using its performance controls: HF driver adjust (0 dB, +1 dB, -1.5 dB, -4 dB), high-pass filter (off, 60 Hz, 80 Hz, and 100 Hz, -12 dB/octave slope) and sensitivity (+4 dBu to -10 dBV).

Balanced XLR and 1/4-inch TRS line-level inputs with A-taper level control are standard. Safety features include RF shielding, current-output limiting, over-temperature protection and amplifier "soft start" feature to eliminate popping on power-up.

For information, contact PreSonus in Louisiana at (225) 216-7887 or visit www.presonus.com.

BUYER'S GUIDE

HEIL: FROM BROADCAST TO PODCAST

Heil Sound says its PR40 dynamic microphone has been a stalwart in the broadcast world since its introduction in 2003. The company adds that the smooth frequency response made possible by a large quilted aluminum 1.5-inch diaphragm gives it a natural articulation that on-air talent find pleasing.

On the technical side, broadcast pros find that the top-address PR40's -40 dB of rear rejection and 148 dB maximum SPL makes their life easier too. There is an internal pop screen, as well. Heil says the internal magnet is a mixture of iron, boron and neodymium that is 10 times stronger than typical microphone magnets.

While it is true that microphone designs don't change that often — especially established brands and models for pros — new markets and application opportunities do come along. Such is the case with the podcast market.

The world of podcasting, once an esoteric place specializing in tech-oriented conversation, is booming. A mind-boggling range of topics exists and podcasters run the gamut from kids in their parents' basements to celebrities, politicians and business gurus.

The Heil PR40 is an affordable professional model suitable for podcast setups.

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



NEUMANN DIGITIZES KH 120



Using the KH 120 small-format studio monitor as a base, microphone/monitor maker Neumann has developed the KH 120 D, a monitor with direct digital inputs.

The KH 120 D is designed for tracking, mixing and mastering applications in music, broadcast, project and post-production studios. Equipped with an additional BNC input for AES/EBU or S/PDIF formats (24-bit/192 kHz), the KH 120 D enables digital workflow through playback on the studio monitor.

It features digital delay for both analog and digital inputs, enabling the monitor to be used for tasks requiring time alignment. With a maximum delay of over 400 ms, the KH 120 D is able to address audio/video synchronization issues, or manage time delay compensation in situations where space constraints preclude equidistant positioning of loudspeakers.

Like the KH 120, the new two-way D model uses a 5.25-inch woofer and a 1-inch titanium fabric dome tweeter. The drivers are each powered by a 50 W Class AB amp. Other features include low/mid/high EQ and a limiter.

Stated frequency response specs are 52 Hz-21 kHz. Mounting hardware is available.

For information, contact Neumann USA in Connecticut at (860) 434-9190 or visit www.neumannusa.com.

DYNAUDIO UPDATES BM RANGE

Dynaudio Professional has updated its range of BM speakers to mkIII versions. The range now includes BM Compact mkIII, BM5 mkIII, BM6 mkIII and BM12 mkIII. The company says the original BM and former BM mkII ranges have been used audio professionals for years, including the BBC.

The company says the Compact mkIII is popular among broadcasters because it fits in nicely in a remote van, radio studio or editing suite, with its 5.7-inch woofer and 1.1-inch soft dome tweeter with aluminum voice coil. The BM5 mkIII has a small footprint and the same tweeter but features a 7-inch woofer.

A mounting solution will be ready by fall 2014, and in case mounting is not an issue, the BM mkIII speaker comes with an ISO Acoustics stand that allows the monitor to float in free space, taking energy transfer to the surface out of the equation.

For information, contact Dynaudio Professional/TC Electronic in Ontario at (519) 745-1158 or visit www.dynaudioprofessional.com.



DPA OFFERS MODULAR MICS

DPA Microphones' dedicated Recording Microphone range (shown) provides audio across various applications, including live broadcast presentations, speeches and press conferences.

The range, now incorporating the modular MMC4018 supercardioid capsule and the modular 4000 and 2000 microphones, allows users to combine capsules with DPA's integrated preamps. These include the Class A transformerless design, a low-cut and high-boost filter version, a compact option for visually unobtrusive miking and the new modular active cable preamp for hanging or table applications.

Also among the company's offerings is the d:screet Necklace Microphone. It uses DPA's d:screet 4061 omnidirectional miniature capsule in a soft rubber necklace; it is convenient for instances when mounting and consistent audio output are primary requirements. The mic offers fast, repeatable, "do-it-yourself" mounting, and, the company says, is designed for use by non-technicians. It is available in black, white and brown and in lengths of 18.3 or 20.9 inches.



Additional solutions for the d:screet Omnidirectional Miniature Microphones series include two enhanced versions that are durable for the rigors of broadcast. The new heavy duty 4060 and 4061 microphones are described as fit for rigorous situations with people who require even more enhanced security and for whom visual appeal is of less importance. They feature a stainless steel housing, sturdy cable relief and a thicker 0.08-inch cable. D:screet mics have a new robust strain relief, which ensures that people who are not used to handling miniatures have increased reliability.



For information, contact DPA Microphones in Colorado at (303) 485-1025 or visit www.dpamicrophones.com.

SENNHEISER INTRODUCES MULTIPATTERN MIC

The MK 8 is a condenser microphone that offers switchable omni, cardioid, wide cardioid, supercardioid and figure 8 patterns. Inside it has a 1-inch gold-sputtered diaphragm.

Other features include a filter that can insert a 60 Hz low-cut and a 100 Hz roll-off filter. A 10/20 dB pad is available. Frequency response is listed at 20 Hz–20 kHz with a max SPL of 140 dB (no pad engaged).

Sebastian Schmitz, Sennheiser microphone product manager, said, the sound design of the MK 8 is based on Sennheiser's series of large-diaphragm condensers. "Professional users will like its versatility since it can cater to basically any recording situation." The mic is made in Germany.

For information, contact Sennheiser USA in Connecticut at (860) 434-9190 or visit www.sennheiserusa.com.



EV ADDS NEW MICROPHONE WITH FAMILIAR LOOK

Electro-Voice broadened the application of its iconic RE20 microphone with the introduction of the RE320. Designed for recording studio applications, the RE320, according to EV, is equally at home in a broadcast environment. A "Dual Personality" switch allows selection of a frequency response contour optimized for the kick drum or a linear response curve suitable for voice or musical instruments.

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

For information, contact Electro-Voice in Minnesota at (800) 392-3497 or visit www.electrovoice.com.



KRK LAUNCHES NEW ROKITS

The new Rokit Generation 3 Studio Monitor Series (Rokit G3) from KRK Systems, a Gibson brand, is a line of two-way active monitors. Available with 5-inch (Rokit 5), 6-inch (Rokit 6) or 8-inch (Rokit 8) drivers, the speakers offer transparent, balanced spectral response, with low distortion and superior imaging, the company promises.

The high- and low-frequency response delivers mixes that translate over a range of playback systems. New frequency amplifier adjustments let users tailor them to taste or room acoustics. Featuring a lightweight yellow composite woofer, the Rokit G3's tuning process treats the woofer, cabinet and port as an integrated whole to provide vocal clarity with extended bass response.

The enhanced Class A/B analog, bi-amplification system has been optimized to maximize headroom without increasing distortion. The upgraded 1-inch soft-dome tweeter provides response up to 35 kHz, while KRK's proprietary waveguide technology promises stereo imaging with a wider sweet spot.



For information, contact KRK Systems at (800) 444-2766 or visit www.krksys.com.

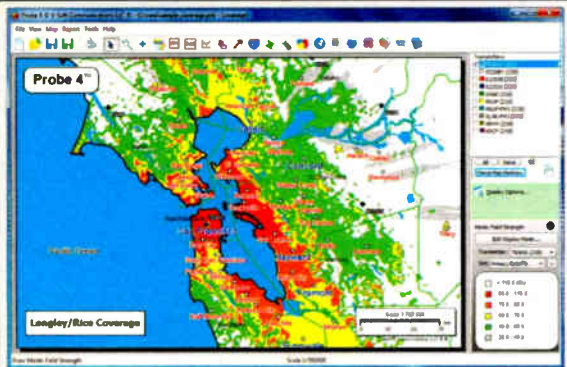
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Arrakis 12-channel board, up and running when taken out of service, must sell, \$1200. Dwayne Forbi, WLOC, 270-774-1485.

Harris Stereo Statesman, 5-chnl audio board, can be parts unit, mainly for chassis. Pete Russell, 321-773-2756 or Peter_Russell@bellsouth.net.

MICROPHONES/HEADPHONES/SPEAKERS/AMPS

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Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035 or ilg821@aol.com.

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiolvlg@gte.net.

Equipment Wanted: obsolete, or out of service broadcast and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSF, KOB, KCBS,

KQW, KRE, KTIM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a San Francisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

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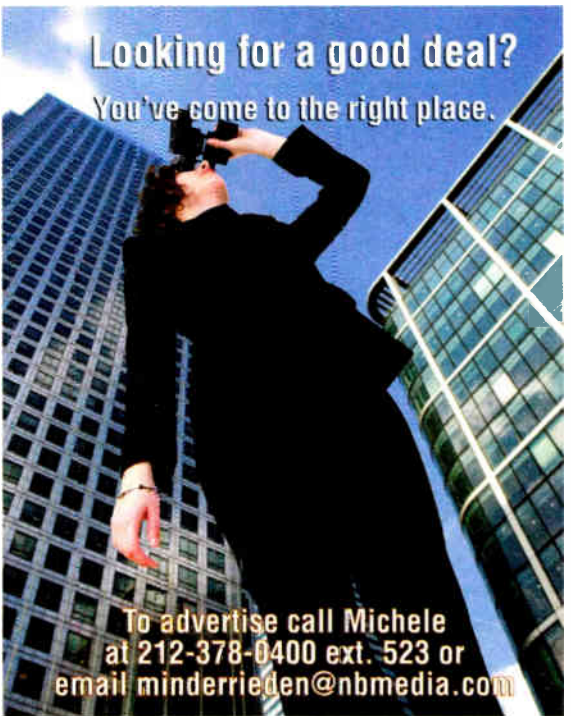
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READER'S FORUM

COPPER THEFT AGAIN

Also be aware that a Seattle station was off the air due to theft of copper cable ("Pubcasters' RDS Hacked," *radioworld.com*, March 13). Shouldn't be too hard to track down the culprit, as he left behind his cutters, and from their condition, it's surmised that he received a significant shock.

Seems chain link and "high voltage" signs are no longer a deterrent.

*Greg Ericsson
Port Orchard, Wash.*

CONGRATS, ED

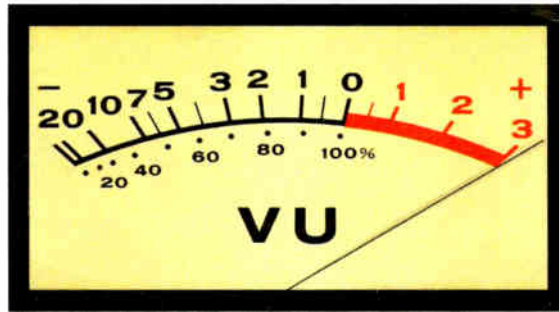
Ed, congratulations on your retirement ("Hearst Baltimore's Ed Kiernan to Retire," *radioworld.com*, April 14). Thank you for hiring me as DTO at WCBS(AM) way back in 1988. I retired from CBS in 2012. Enjoy!

*Alan Parnau
Hackettstown, N.J.*

ARE WE LOUD ENOUGH YET?

Recently a thread seems to have developed (unraveled) in the trades concerning the loudness of our radio stations and how to increase it (some more).

Some high-tech types have discovered that, by minimizing annoying stereo separation, we can squeeze another fraction of a decibel of oomph into our audio. And this miniscule contribution will, of course, vault our station into the number one ratings position (until the competition does the same). Because everybody knows



the loudest guy shouting is the one everybody pays attention to. And so it must go for radio too, I guess.

I always thought squeezing was for oranges in the morning. Silly me.

How many bands of compression, limiting and whatever other patented squeezing do you need? Now, squeeze the stereo image?

Wait, I've got an idea! Squeeze all that extraneous stereo stuff down to mono. Then you'll have maximized the loudness by minimizing the stereo image. Hey, then you can turn off the stereo pilot. There's another 9 percent of modulation that's wasted by stereo.

Now we're jammin'! Just like AM.

Hint: After you've dispatched all of that annoying stereo stuff, try reducing the audio bandwidth. Cut the lows below 200 Hz and the highs above, say, 5,000. Most radios don't reproduce 'em well anyway. And you'll be louder still. Look how well that worked out for AM radio. Everybody knows that listener fatigue is a myth created by pinkos to justify government "research" grants. Just like global warming.

Now that we've maximized our loudness by minimizing our fidelity, perhaps we can convince the MP3 player manufacturers to do the same. Good luck with that.

I'll stick to squeezing sweet, juicy, shapely delights I can put in my mouth. What goes in my ears (two of 'em, for stereo), I'd rather not run through the compactor.

*James Walker
Liberty, Ind.*

MAKE NIGHTTIME DOWNLOAD TIME

For many people, probably most, it's perfectly feasible to park their car at night in a location within range of their own household/personal Wi-Fi hotspot. It's therefore perfectly feasible to have one's car stereo download, overnight, fully automatically once programmed, all the latest podcasts and store them on a flash card.

Many GB of one's favorite podcasts should be enough for most people. Mobile data not needed.

One real limitation to this approach is that some music or other content may be licensed for streaming only, not downloadable podcasts. On the other hand, downloadable podcasts are infinitely more standardized (RSS/MP3) than the wide variety of incompatible streaming formats and methods. A first step towards "streaming to the car" would be to pick a standard.

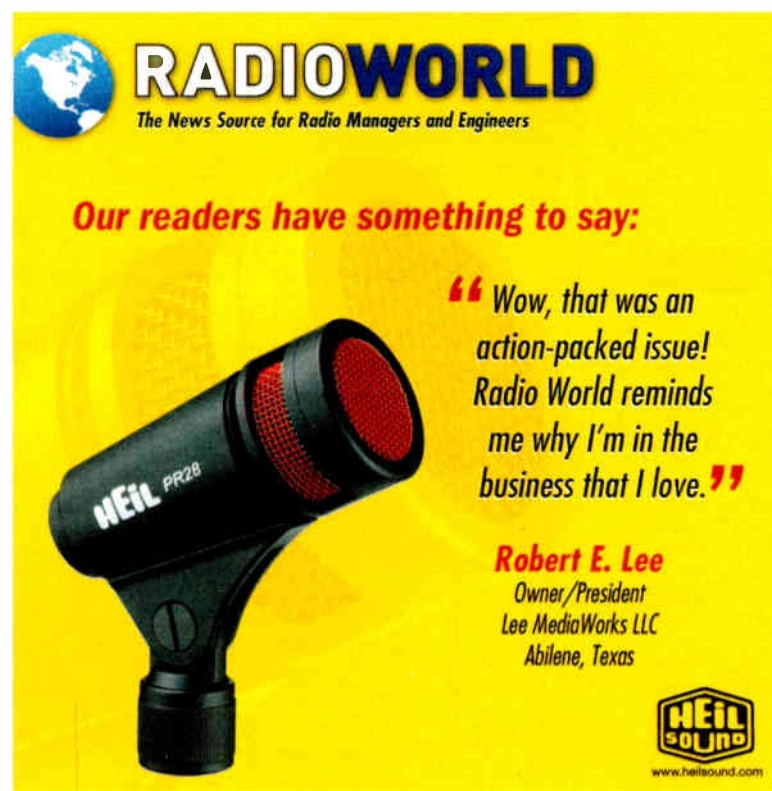
*Jeffrey Harvey
Airborne Military Communications
Fall River, Nova Scotia*

EVIDENCE OF ARCING?

Dave [Hershberger] has a recording of his reception, with and without the outdoor, directional antenna, at www.w9gr.com/clips/KNCO-loop-test.mp3 ("AM Ideas Fill the FCC Inbox," March 12 issue).

Sounds like something arcing in his house, or a nearby plasma TV set. I'd be interested in what an FCC inspector or the local power company RFI investigator could find. And I applaud Dave for his initiative.

*Ken W. English
Studio Engineer
KSL(TV)
Salt Lake City*



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