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Smart Speakers Lead Consumer Trends in Audio

Brian Markwalter describes audio as "a very competitive landscape. We are still in a period of shakeout." Wireless speakers and headphones have fueled much of the growth.

CTA data gives insight into developments affecting radio and the broader CE business

BY RANDY J. STINE

ARLINGTON, VA. — Brian Markwalter gets excited when he thinks about how many smart speakers will end up in Christmas stockings this year. Markwalter's job is to spot consumer trends in electronics, and he knows a good craze when he sees one.

Consumer demand for smart speakers like Amazon Echo and Google Home and the convenience that comes with them continues to push traditional radio further into the digital world, according to CTA's research. Smart speakers and on-demand audio have quickly become in vogue when it comes to satisfying consumers' appetite for audio consumption, including radio streaming.

Markwalter, senior vice president of research and standards for the Consumer Technology Association, gathers intelligence on consumer behavior and how they use radio. He offered a snapshot of that data at the IEEE Broadcast Technology Society's Fall Broadcast Symposium this month in Arlington, Va.

FOCUS ON THE HOME

Markwalter's technical program session focused on consumer trends in radio and TV. CTA produces objective market research, tracks sales data and forecasts trends.

"We do a variety of things at CTA, so when I do a talk I can tap into a variety of our products. We forecast industry sales of hardware and streaming services, which is at the center of this mix we see of radio listening and streaming and the connected experience in the audio space. We track sales of tabletop radios and those new smart speakers, which are playing a bigger role in listening experiences for consumers. And then we also do consumer research. So we will go out and survey on topics driven by our membership and interest in trends."

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TIS

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else fails. It won't surprise Radio World readers that the medium is AM radio; what does surprise is that it is 10 watts and not 10,000 that are often employed.

The persistent question on the minds of our nation's emergency managers is this: "When there is no longer grid power and when communication towers have gone horizontal, how will I speak to my citizens?"

Safety officials want a means of communication that can be their ace in the hole when third-party providers fail to deliver power and connectivity. And so, a legacy technology has stepped to the fore: humble 10-watt Travelers' Information Stations.

It was very smoky in Great Smoky Mountain National Park in 2016 thanks to a wind-driven wildfire. The message from Gatlinburg, Tenn., public safety officials at the time was "Get away now!" The picture shows fire aftermath.

WILDFIRES AND MORE

These stations can be licensed by a local or federal government entity on any open AM frequency on a secondary basis. The stations normally are found on 530 kHz or 1610–1700 kHz due to the scarcity of US broadcast stations on those channels.

TIS stations first appeared in national parks and airports in the 1980s, and later along the nation's highways, as part of the Intelligent Transportation System buildout in the '90s. More recently they have become a valuable asset for community safety. The stations commonly work as part of a system, in conjunction with a community's outdoor warning sirens, NOAA/SAME (Specific Area Message Encoding) activations or IPAWS/EAS-based alerts.

Information Station Specialists technician Geoff Penna installs a TIS radio antenna at a Customs & Border Protection port of entry along the U.S./Mexican border.

Their value was bolstered recently when the FCC clarified that local officials have the authority to broadcast emergency information directly to citizens on TIS stations, also clarifying that determination of the content lies entirely with public safety officials in charge of incidents. The commission also relaxed bandwidth restrictions on the TIS service from 3000 to 5000 Hz. As a result, the growth in the number of TIS stations installed for community safety has increased.

Especially in the last decade, the stations have become recognized for their contributions in wildfire evacuation and recovery. When residents leave their homes and steer their automobiles toward evacuation lines, emergency managers use every mode of communication available to direct them. Many use TIS as part of that mix because it is totally under their control and is likely to stay active with loss of power, internet and third-party connectivity services.

When residents return to fire-ravaged communities, the stations can inform them regarding the plethora of safety and travel concerns they must be aware of as they reestablish their homes.

In the words of Mike Williams of California's San Marcos Pass Volunteer Fire Department, "How do we advise motorists while fire lines are moving, given the uncertain state of cellular communications and the underlying desire to avoid promoting distracted driving? In Santa Barbara County, we have found success using this most old-school of technologies: AM radio."

Williams has managed a TIS station in the county's San Marcos Pass that has played role in multiple major wildland fire events and evacuations in the past decade.

There are many recent wildland fire events in which the TIS service has played a lifesaving role:

Idyllwild, Calif. — Cranston Fire, August 2018

"The reader must know that our entire mountain was without power for several days," reported Bill Tell and Roland Gaebert of Idyllwild's Mile High Amateur Radio Club. The situation took down many local broadcasters who didn't have generators. "Temperatures were 90-plus, the internet was [often] not operational … nor were telephones fully functional."

As the Cranston Fire raged mere miles away, forcing evacuations, Idyllwild's TIS station WNKI578 on AM1610 remained fully operational 24/7. Tell and Gaebert kept the content current, utilizing links to the Fire Department and Riverside County EOC via HAM Radio/RACES.

Montecito, Calif. — Thomas Fire, December 2017

You will remember that Montecito was hard struck by the largest wildfire in California's history, the Thomas Fire, which consumed 280,000 acres and, along with subsequent landslides, led to the largest loss of life and property in the area since the Great Santa Barbara earthquake of 1925.

The community already had an established multimodal communication system that included TIS radio technology. By utilizing these notification methods, including the Montecito Fire Protection District's AM1610 TIS station, officials were able to reach citizens directly over the air while streaming the same programming via the Internet to computers and smartphones.

(continued on page 5)

World Radio History

Kudos to One Hard-Working Dude at AES

The society honors David Bialik for determinedly building its broadcast track

I'm delighted to learn that the Audio Engineering Society board of governors has recognized David Bialik with its Distinguished Service Award.

AES Secretary Valerie told David in an email that the award is to honor "three decades of service to AES convention committees and the creation and development of the conventions' broadcast track." He was set to accept it this month at the AES show opening ceremony event in New York.

Bialik's full-time job is title of director of stream operations for Entercom Communications; he held the same title for CBS Local Digital Media prior to Entercom's acquisition of CBS Radio. He also was senior stream engineer for CBS LDM after joining that company in 2011 as project manager in streaming operations.

David got his start in radio as an undergrad at American University as the student radio station's general manager. He went on to work for NPR affiliate WAMU(FM), licensed to American University, then for the National Association of Broadcasters' Science & Technology Department. In 1991, he was named chief engineer of United Broadcastings' WKDM in New York; soon after he transitioned to Bloomberg's WBBR, where he was named the station's first chief engineer. He formed a systems engineering consultancy in 1995.

For AES, his official title is chairman of the Broadcast and Streaming Sessions. He has served on every AES Javits Center Convention Committee. He told us that his primary objective has been to promote the evolution of the AES Convention into a "must attend" technical destination for broadcasters. He also serves as co-chair of the Broadcast and Online Delivery Technical Committee. He is certified by the Society of Broadcast Engineers and served as the chairman of the society's New York chapter for seven years.

David Bialik on the job.

Anyone who has been around the AES broadcast content knows how dogged Bialik has been in working to bring informative sessions to the people who attend the show. I also particularly appreciate that he values and celebrates radio's audio history, its innovators and its interesting facilities. This honor is well earned, and we at RW tip our hat to him, too.

The award was established in 1991 to recognize extraordinary service to the society over a period of 10 years or more by society fellows in good standing. It was formerly called the Vermeil Medal Award and is the highest service achievement award in the society.

Radio World believes in celebrating the work and accomplishments of engineers and technology innovators working in all parts of our industry. Is there someone in your organization or personal network whom you feel deserves to be acknowledged? Drop me a line at paul.mclane@futurenet.com.

FROM THE EDITOR

Paul McLane

Photo courtesy of Marcos O'Rourke

THE FASTEST WAY TO THE TOP

"A lot of our sites are at remote mountain top locations. It can take a couple hours of off-roading to reach them."

K-Wave Radio chief engineer, Marcos O'Rourke, uses AutoPilot® at his studio in Orange County to consolidate alarms and log data from ARC Plus systems at eleven sites in southern California and Nevada. *"Unplanned site visits are expensive and time consuming. My Burk equipment helps me keep those trips to a minimum."*

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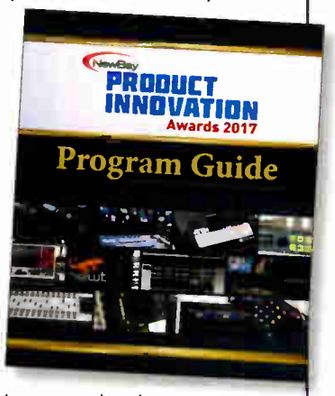
FUTURE

PRODUCT INNOVATION AWARDS

Nominations are open for our annual Product Innovation Awards. Companies can enter now, and readers should watch for our Program Guide email coming to you before the end of the year.

The background: Each fall we offer manufacturers the opportunity to enter outstanding product introductions that serve professionals in the radio/online audio as well as the TV/pro video industries. The awards are presented by our media brands **R**adio World, TV Technology, Digital Video, Creative Planet Network, Government Video, Video Edge and **R**adio magazine, to recognize technology innovations and advances.



Companies pay a fee to enter these; and not all who enter win. But all nominees are then featured in the Program Guide that our readers can see and review for free, to see all the new tech that manufacturers have been working on.

It's cool to flip through the awards program guide and get a sense of which companies are promoting which new technology. Last year's is still plenty relevant, you can see it at *www.mazdigital.com/webreader/53903* or scroll down at *www.radioworld.com/resource-center/awards*.

To nominate or learn more, visit *https://future.swoogo.com/product-innovation-awards-2018/* or drop me an email to *paul.mclane@futurenet.com*.

TIS

(continued from page 3)

Jackie Jenkins, communications coordinator for the District's fire department, said, "When all other critical infrastructure was lost intermittently due to strong power surges, we were able to rely on the AM radio [TIS station] to keep the community informed."

Gatlinburg, Tenn. — Nov. 28, 2016

A world away in Tennessee, the popular tourist destination of Gatlinburg found itself in the path of an "inland hurricane of fire" that drove flames at 80 mph through the drought-parched Smoky Mountains and right into the city.

As the firestorm approached, officials began to evacuate 14,000 residents and visitors, but the speed and ferocity of the fire overwhelmed the power grid and their communication/911 systems. Water pumps burned and fire hydrants ran dry. Gone in one evening were entire neighborhoods and more than 2,500 buildings. Due to a superhuman effort by local safety officials, loss of life was limited to 14.

The city and Sevier County has now upgraded its warning systems to include 14 outdoor warning sirens and three synchronized TIS emergency advisory radio stations that can be used to guide citizens to recommended exit routes based on future fires' locations and directions of travel. Motorists will be able to directly hear — on vehicle radios and in real time — advisories issued by safety officials on the ground, while reading the same messages in text form on computers and portable devices.

CONCLUSION

In so many instances, it is the local emergency managers, the fire officials, the broadcast engineers and the amateur radio operators who collaborate to make TIS radio stations function for communities that may find themselves suddenly in harm's way. They only have 10 watts to work with, but, speaking on behalf of the members of AAIRO, I wish more power to them.

Learn about the American Association of Information Radio Operators at www.aairo.org. *Comment on this or any story to* radioworld@futurenet.com.

World Radio History

O'Rielly Looks at the Subcap Question

Commissioner says NAB proposal is "worthy of the commission's consideration"

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FCC Commissioner Michael O'Rielly spoke at the fall Radio Show in Orlando. He thanked broadcasters for providing critical emergency and weather information, raising funding and awareness for charities, covering news and sports, and "your long tradition of helping your fellow Americans." Then he offered a review of recent activities at the commission, including a discussion of issues related to possible changes in radio's subcap ownership rules. Excerpts:

On the enforcement side, we've been incredibly aggressive against pirate radio perpetrators and issued our first Forfeiture Order against landlords, who were intentionally violating our rules prohibiting the unauthorized use of radio spectrum. From West Virginia to Massachusetts to Colorado to right here in Florida, pirate radio "stations" have been under constant attack by the commission's field offices, as well as D.C. Headquarters. Likewise, Congress has shown exceptional leadership, unanimously approving a bill in the House of Representatives to give the commission even more authority to go after these bad actors. As I stated at a recent event, pirate radio operators and anyone facilitating their actions should be packing it in, because we are coming for them!

If any of you are having problems with pirates in your area, please let us know. We will get someone on it!

Meanwhile, on the regulatory side, the commission has been reviewing the rules on our books that no longer make sense in today's vibrant media marketplace, eliminating a host of outdated broadcasting rules built for yesteryear. One of the reforms I am most proud of has been the elimination of the Main Studio Rule. I don't have to tell this audience that eliminating the requirement that a broadcast station retains a physical location, with a de facto requirement to maintain two designated staff members, allows for real efficiencies — without a loss in service or devaluation of localism. This sentiment was echoed to me at a Univision station in Phoenix, Ariz., and again, in a letter from a broadcaster in Durand, Wis. As the latter broadcaster explained: "We have not dropped any level of community service and I would submit that because of the changes the station has increased the level of service." Just what I expected.

All that being said, in my opinion, our 2010/2014 Quadrennial Review that we reconsidered in November did not provide sufficient relief from our Local Radio Ownership Rules. To be fair, we were limited in scope based on the petitions for reconsideration that were filed, and we were at least able to modify our rules on embedded markets. However, as we head into our next Quadrennial Review, more work remains, which I would like to spend my time discussing with you today.

UPDATING OUR MEDIA MARKET DEFINITION

Over the last year, I have highlighted the need to review and revise the commission's current narrow definition of the media marketplace. Unfortunately, the prevailing and myopic perspective amongst some is that individual communications sectors somehow do not compete with one another. Under such siloed thinking, AM radio only competes with AM radio, FM radio only competes with FM radio, and local television broadcasters only compete with other local TV stations.

But, as the National Association of Broadcasters recently pointed out in a filing to the commission, today, broadcast radio competes with Pandora, Spotify, satellite radio, podcasts, Facebook, YouTube, and others. To quote NAB: "In the digital audio world of 2018, local radio stations, especially AM, face intense competition for listeners and advertisers." Many of you experience this competition daily.

For example, I recently read in radio trade press — yes, I do read your trade press — that a local advertiser survey by Borrell Inc. pointed out that the traditional media platforms, including radio, are likely to face advertising cuts in the years ahead. The reasons provided were cheaper social media buys and the desire to spread ad dollars to create differing touch points to customers. Such a reduction in radio advertising demonstrates that sufficient alternatives exist in the market.

Let's face it, SiriusXM or Pandora or a combined entity may not be headquartered in Concord, N.C., or Concord, N.H., Massachusetts, California, Virginia or Ohio, but a teacher can still access these stations while driving home from school after a long day. Broadly, this means that, given the extensive competition from new technologies, the current generation of legacy media will only flourish, and in some cases survive, if the government recognizes this marketplace reality and rejects asymmetric regulation of the broadcast industry.

Thinkstock/Andrey Suslov

Accordingly, all relevant participants must be included in any media market definition. When I talk to existing providers in this space, they explain quite clearly how they compete directly against all of those operating in the market, especially given the development and scale of two large internet companies: Facebook and Google. In not recognizing this in our rules, we penalize longstanding providers, such as the radio industry, skewing the market in favor of unregulated industries.

AM/FM SUBCAPS

On a similar theme, I have also highlighted in recent speeches the need to both raise the overall radio ownership caps within a market and eliminate the current AM/FM subcaps. However, this is the first opportunity I have had to discuss this issue since NAB proposed an updated approach to subcaps.

As I understand it, under NAB's proposal, in the top 75 Nielsen Audio markets, a single entity would be allowed to own or control up to eight commercial FM stations and an unlimited number of AM stations. If a station participates in the FCC's incubator program that we approved last month, it can own up to two additional FM stations (for a total of 10 FMs). Finally, the commission would impose no AM/FM subcap in Nielsen markets outside of the top 75 markets, as well as in unrated markets.

While I remain open-minded as the commission begins our 2018 Quadrennial Review of our media ownership rules, including the Local Radio Ownership Rule, I do believe the NAB proposal is worthy of the commission's consideration.

First, there does appear to be a clear delineation between the top 75 markets and markets 76 to 201 plus. For example, the average station revenue in 2017 for markets 26 to 50 and markets 51 to 75 was $1.8 million and $1.2 million, respectively. This dropped down to $716,000 in markets 76 to 100 and to $399,000 in markets 201 plus. Thus, it seems to make some sense that the line was drawn where it was. At the same time, it may also make sense to consider delineating after the top 25 markets. Here, the dropoff is even more apparent. In the top 10 markets, the average station revenue in 2017 was nearly $5.2 million and in markets 11 to 25, almost $3 million. Again, this dropped to $1.8 million in markets 26 to 50 and $1.2 million in markets 51 to 75. Going forward, I will be interested to see where the record supports drawing such lines, if any are needed at all.

As to the station limit proposal, I must admit that I have been skeptical of arguments suggesting that eliminating these caps would harm the market or individual stations. At the heart of the opposition, there appears to be a concern that the largest FM owners in the market would

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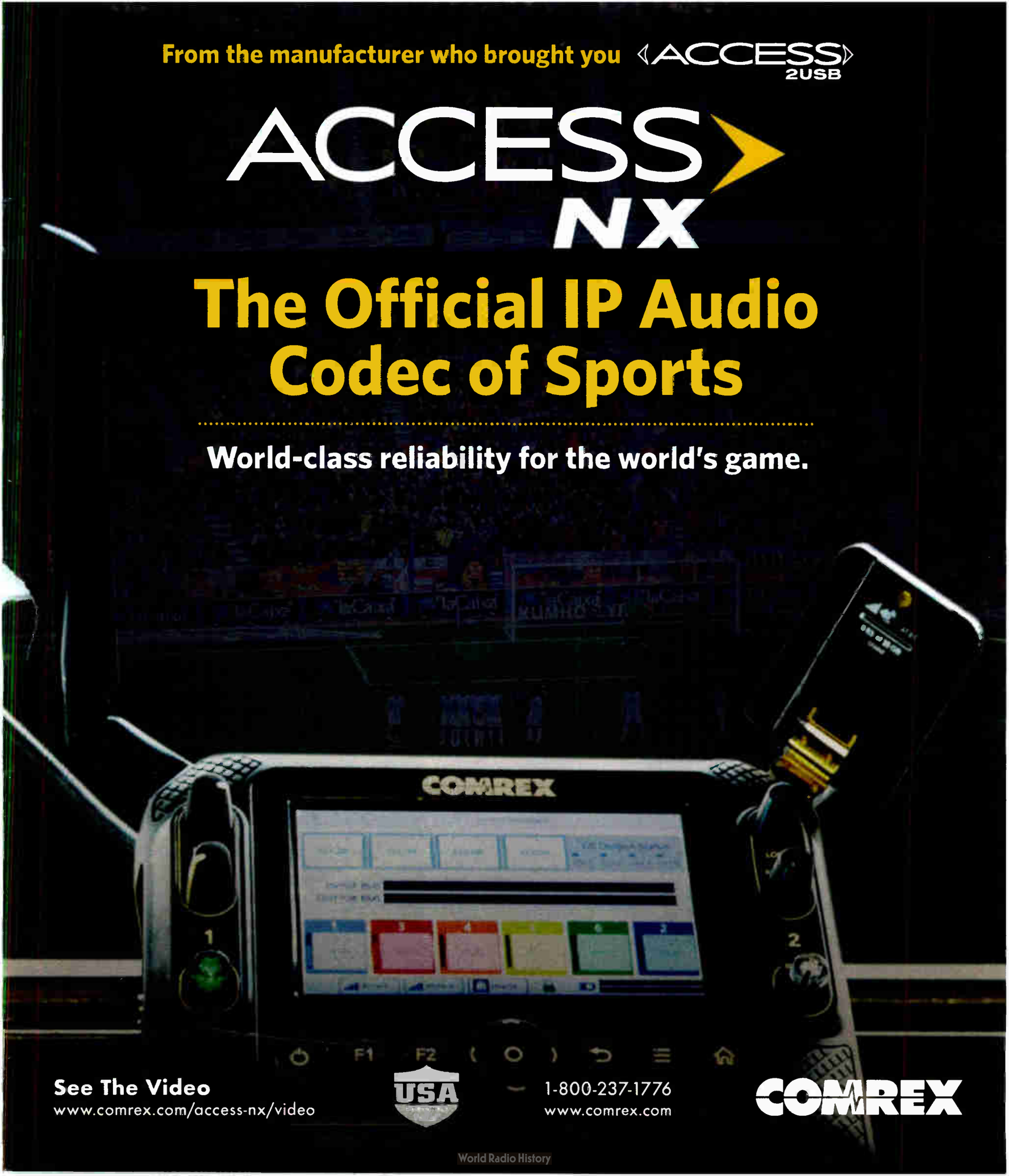

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O'RIELLY

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exit the AM business, taking with them any incentive for AM equipment manufactures to innovate in the AM band.

First, I am not convinced FM station owners would sell off profitable AM stations in order to acquire additional FM stations. This is particularly true now that the FCC allows AM stations to pair with FM translators. The stations that may be sold would likely be the unprofitable stations that were not the most attractive investment opportunities anyway.

Second, the claim of a so-called rapid decline in AM due to a sudden lack of innovation in the band is speculative at best. The commission has asked about this as part of our AM Revitalization proceeding, and while ongoing upgrades are occurring, we have yet to see game-changing innovation in this band. All that being said, the NAB proposal does recognize these concerns, and creates what many might call a middle ground between our archaic rules that broadcasters live under today and the complete elimination of our subcaps.

Importantly, throughout my discussions with those concerned about lifting the subcaps, the focus has certainly been on the FM subcaps. In closed door meetings, those skeptical of deregulating in this space have suggested that lifting the AM subcap would be an acceptable reform — potentially even helpful. As to the FM subcaps, while I continue to see merit in full elimination, I am open to being convinced that we should instead allow ownership of up to eight stations — 10 for those that incubate — in a top 75 market. This could possibly be a good first step in modernizing our rules. I look forward to examining a full record on this topic in the upcoming months.

INCUBATOR PROGRAM

Finally, since the issue is intertwined with the AM/FM subcap discussion, I would like to spend these last few minutes discussing the incubator program the commission launched last month to help facilitate an increase in radio station ownership diversity. At the outset, I want to commend FCC Chairman Pai for his leadership in both proposing and carrying out this idea. As many of you know, this unique opportunity will currently only be available for radio stations. I personally would have liked to expand this to television as well, but it is now on your shoulders to demonstrate that this program can be a success before we expand the idea further.

With the focus of the incubator program resting on market-based incentives, such as further lifting ownership restrictions and allowing for full transferability, rather than on questionably successful tax certificates, I believe the program is on solid ground to be a success. However, I must admit that some questions do remain.

For example, I wonder what will happen to incubators that take on a less-than-stellar incubatee. Will they be forced into pouring resources into a company that simply cannot get off the ground? There is no easy answer for this, other than the need for incubators to do appropriate due diligence and choose their incubatees wisely.

© NAB

Moreover, I am concerned that litigation in this space will further delay the incubator program's implementation, exacerbating our abysmally low number of women-owned and -controlled and African-American-owned and -controlled radio stations in the United States. Unfortunately, it appears that some are still trying to alter our comparable markets algorithm to disallow comparability more than five market rank sizes removed in either direction from the incubated station's market. As I stated in August, this is an overly complex alternative that I fear will restrict participation in our program. I will continue to object to any changes in this area.

To conclude, let me implore upon you to review this program closely and consider becoming involved. Yes, there are potential benefits to your stations for participating, but, more importantly, participating keeps with the radio industry's long tradition of helping your fellow Americans.

NEWSWATCH

NEXTRADIO'S DAYS APPEAR NUMBERED

Barring a major influx of cash and support from the radio industry, time apparently has run out for NextRadio, the bold initiative to encourage activation of FM chips inside smartphones spearheaded by Emmis Communications.

Chairman and CEO Jeff Smulyan said on an earnings call that Emmis is "unwilling and unable" to continue funding the NextRadio and TagStation businesses.

"Emmis and other companies in the radio industry have been working diligently to form a consortium that would own and operate the NextRadio and TagStation businesses," Smulyan said. "The participating companies envisioned using their collective scale and resources to build an attribution platform for the radio industry that would have provided the common language and measurement that radio advertisers are demanding.

"Unfortunately, the effort to form a consortium for NextRadio and TagStation has not been successful," he continued. "We have tried and have worked with a number of broadcasters, but because Emmis is unwilling and unable to continue to fund the NextRadio and TagStation businesses as they are currently structured, we plan to dramatically reduce the operations of these businesses and explore other means of eliminating the operating losses from these businesses in the coming months."

NextRadio, developed by TagStation LLC and owned by Emmis, has been a celebrated cause for Smulyan. But financial support from the other major radio broadcast groups has been dwindling, according to Emmis financial disclosures. TagStation is a cloud-based software platform that allows stations to manage album art, metadata and enhanced advertising on various devices.

"To make NextRadio successful it needed to do data attribution," he said, but this would require "deeper involvement" from the radio industry.

"We tried. We couldn't get the industry to come together."

Emmis disclosed that operating losses from its related NextRadio businesses totaled $7.6 million over the 12 months ending Aug. 31.

At one time, in an effort to kickstart NextRadio's foothold in the marketplace, a consortium that included Emmis, iHeartMedia, Beasley, Radio One, Hubbard Radio, Townsquare Media, Bonneville, Entercom Communications and others, agreed to pay Sprint $15 million per year over a three-year period beginning in 2013 in return for the wireless provider activating the FM tuners in a minimum of 30 million FM-enabled wireless devices. In all it appears Sprint was paid $39.2 million total for the app activations. Emmis ended the practice of paying cell carriers to activate the chip in 2016 and adopted a revenue sharing formula with wireless providers.

Emmis never convinced Apple Inc. to unlock FM chips in iPhones, despite pressure from FCC Chairman Ajit Pai and others to do so in the interest of public safety.

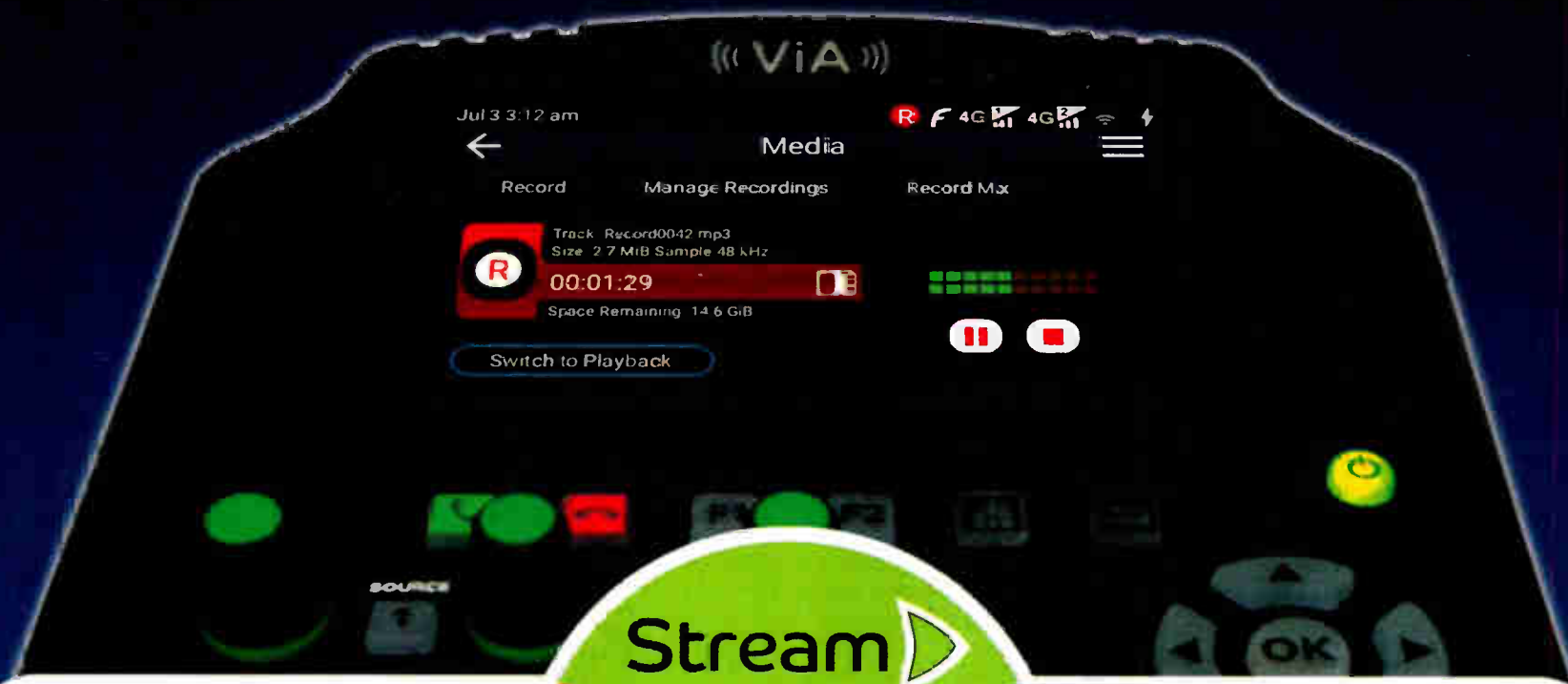
It also tried to drum up additional investment by giving other eligible broadcasters several "call options" to acquire all or part of NextRadio, according to paperwork filed by Emmis with the U.S. Securities Exchange Commission. The call option could have been exercised by eligible radio broadcasters in August 2017 and again in August 2019. It's unknown whether any company pursued the option in 2017, but after the latest developments, it seems unlikely.

— By Randy J. Stine

World Radio History

More than Just an IP Codec

Introducing Record and Playback on the ViA



Stream

Record

- Select & record any input, return audio or file playback
- Stream, Record & Play simultaneously
- Record to SD card
- View & manage recordings

Rec

Play

Playback

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World Radio History

TRENDS

(continued from page 1)

Markwalter said.

The CTA's most recent findings come in the midst of the quickly evolving digital world of radio. The emergence of Amazon Echo and other connected smart speakers clearly is having an impact on in-home listening, Markwalter said, along with the quick ascent of consumer demand for wireless headphones, even though sales of traditional tabletop radios remain fairly steady.

"Stereo headphones continue to benefit from the transition into Bluetooth," he said. "And those wireless ear buds are the ultimate smartphone companion."

The increase in using voice for search queries is bringing consumers in contact more easily with radio station's streams, he said. And asking the home assistant to play a radio station is just a start.

"Who knows how far this will go with the technology? At the same time radio faces extreme competition from on-demand audio services from Spotify, Amazon Music, Google Play and Apple Music," he noted.

CTA estimates 80 million in-home smart speakers will have been sold by the end of this year, Markwalter said. "It really is phenomenal growth and has shaped a number of other adjacent categories."

Smart speaker makers should ship north of 39 million units this year, according to CTA, then to climb to 44 million units in 2019.

In addition, some of the smart speakers are moving "upscale" with new product lines. "Including an amp for an Amazon receiver like product that is Alexa-enabled," he said.

DELIVERY PREFERENCES

Markwalter said CTA research continues to show a shift in demand to streaming audio, especially among younger demos like millennials (ages 22–37) and Gen Z (ages 14–21).

"Daily listening for those two groups pegged radio as their third biggest source of daily audio consumption, trailing streaming and online music videos. Then it was digital downloads and podcasts rounding out the top five," he said.

Markwalter said SiriusXM's acquisition of Pandora, announced in September, will likely affect how audio is delivered in the connected car. SiriusXM has 36 million subscribers in North America; Pandora, which provides free and paid music streaming services, has more than 70 million monthly listeners.

"Sirius needed a strong play on the streaming side of things. That move is indicative of the changes in music-listening habits and going forward will likely require radio broadcasters to diversify even further and be present in the lives of their listeners in multiple ways," Markwalter said.

In-car listening remains a significant part of consumers' listening habits, he said, with added importance as more self-driving capabilities take over.

"Amazon's recent hardware announcement included a product exclusively for the car to integrate the Alexa experience. I think we will see the propagation of digital assistants and smart speakers throughout our lives continue. And certainly digital assistants in cars. On-demand features are already being added to vehicles," he said.

"The hands-free element will continue to grow as both the voice recognition improves and people get more comfortable with the technology."

Markwalter, who has been with CTA since 2002, says the on-demand voice interface replaces a "browser interface" and will affect many industries, including radio and TV. "Once we saw Echo and Alexa and Siri and other digital assistants taking off, no matter what business you are in you better have a plan for this voice-activated interface. For example, I know NPR was an early adopter of the technology. You can simply ask Alexa to play NPR."

At CTA's Consumer Electronics Show earlier this year, Markwalter said, Ford featured a prototype with Alexa integration. "Recently Fiat Chrysler has announced plans to adopt Android as its customer-side entertainment system," he said.

UPSCALING

According to CTA data that Markwalter collected for his presentation, sales of tabletop radios remain flat, he said.

"From our findings, traditional AM and FM listening is hanging in there. I don't foresee the AM band going anywhere. It's an older format, obviously, but in most cases audio manufacturers are still including it," Markwalter said.

That's good news for the 4,626 AM stations counted by the FCC in the United States. On the downside for AM, CTA's research reveals a desire for consumers to experience better sound quality in the audio space.

"There have been some really cost-competitive bundles from Google, Apple and Amazon. For example, the Amazon Dot. But it clearly wasn't about the audio quality; it simply wasn't big enough to offer audio quality as an internet radio. But we are seeing an upscaling of that sector now. We see other companies, like Harman, which is known for quality audio, producing some tabletop and bedside hardware that have better audio," Markwalter said.

As for HD Radio, Markwalter says it shows up in CTA's research of source listening formats, but the group doesn't specifically track unique HD Radio sales.

FM radio listenership via smartphones enabled with FM chips also remains very much on the fringe of consumer preferences.

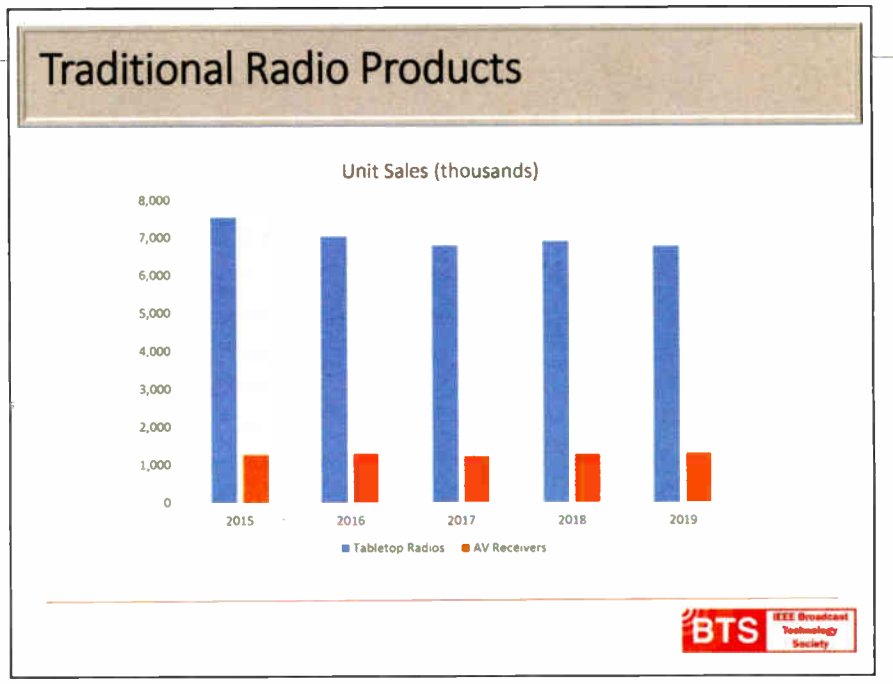
He said the group did not drill down deep into podcasting.

Markwalter said a lot of groups, including radio broadcasters and streamers, are still trying to capture market share in the audio space.

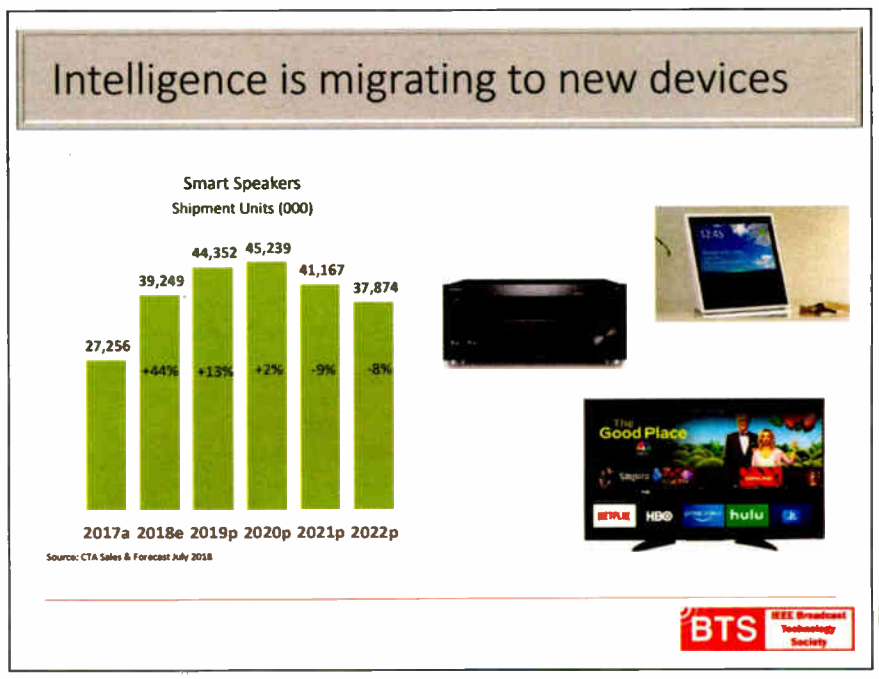
"It's a very competitive landscape. We are still in a period of shakeout. That is why the SiriusXM and Pandora mash up is intriguing to analysts wondering how it might shake up the marketplace."

That said, the strength of radio remains the same: "What was strong about radio remains strong about radio, which is its availability, local content, convenience, no lack of connectivity and consistent coverage. All important in the eyes of consumers," he said.

Markwalter's final takeaway at the BTS session is that consumer audio technology is a robust sector with consumer spending very strong. "Interest in content audio remains very high. It's amazing how much time people spend with their content, both audio and video. There's a combination of devices available with connectivity that allow people to spend a lot of time listening to radio," he said.



CTA data shows sales of tabletop radios remaining flat. "From our findings, traditional AM and FM listening is hanging in there."



On-demand voice interface and other intelligent features will affect many industries, including radio and TV.

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World Radio History

A Moment in Recorded History Goes Up in Smoke

Plus, two ideas to improve your comfort and your monitoring ability

WORKBENCH
by John Bisset

Email Workbench tips to johnpbisset@gmail.com

Our next radio origin story comes from Henry Engineering's Hank Landsberg.

Hank writes that it's 1963, and he's 11 years old. He's hanging with his best friend Dave at his house in Pasadena, Calif. Known by Dave's mom as "Junior Scientists," they are frequently experimenting with electrical and audio stuff, building mic mixers, fixing phonographs, running wires for speakers throughout the house and just having fun.

That was the day their recording career ended in a blaze of black smoke and green vinyl glory.

One evening, Dave's dad brings home the coolest, most awesome "audio toy," a SoundScriber office dictating machine. This large, heavy machine was built in the early 1950s and used by executives to dictate letters for their secretaries. What gave the SoundScriber machine its endless possibilities as a creative toy was the medium upon which it recorded sound: a vinyl record. The "recording blank" was a thin, flexible vinyl disc. It was green in color, 7 inches in diameter, with a quarter-inch, square center hole.

The SoundScriber machine looked like a phonograph but had two "tonearms," one for recording audio onto the disc, the second for playing it back. It recorded audio by embossing grooves into the soft vinyl material. The grooves were very closely-spaced, not unlike a microgroove LP. The machine's turntable ran at 33 1/3 rpm so the record, once recorded, could be played on any phonograph.

Two 11 year-old kids now had the ability to make their own phonograph records! Nothing could be cooler for a couple of creative minds.

Thankfully, the gift of the SoundScriber machine included a box of recording blanks, and Dave and Hank immediately began to record all sorts of interesting stuff, including sound effects. They also created "radio shows" by mixing in music and effects.

After a few weeks of producing a library of audio adventures, a crisis arose: The box of recording blanks was empty! The manufacturer had discontinued production of the green vinyl discs, and the machine itself was no longer in production.

Now what? The boys had a good machine to make records, but nothing to record them on. The Junior Scientists got to work finding an alternative — like flattened pie tins since the grooves were embossed, not cut! The pie tins worked OK, but were very noisy.

On to the next solution: re-using the existing vinyl discs. By heating up the vinyl, perhaps it would soften and the grooves would disappear.

To a way to warm up the vinyl: A saucepan inverted on a stove burner kept the vinyl from getting too hot. The process was slow, so the boys got distracted, leaving the kitchen for a while. Laden with groceries, Dave's mom came home, opened the door and was greeted with an acrid, throat-searing stench. (Hank adds it was probably highly toxic, too.)

The kitchen was filling with smoke, and the green vinyl is bubbling away. The goo was dripping down the pan onto the stove, and the kitchen ceiling was covered with a thick black soot. At this point, Hank high-tailed it out of there, leaving poor Dave to take the brunt of his mom's anger. But there was plenty for the both of them, as she called Hank's mother, who was armed with a few choice words of her own for Hank when he returned home.

And that was the day their recording career ended in a blaze of black smoke and green vinyl glory.

A week later, the whole event was behind them. Hank was re-welcomed to Dave's house, and he and Hank remain very good friends to this day. But they never tried to melt records on mom's stove again.

Hank has recently updated the Henry website; check it out at *https://henryeng.com*.

Alpha Media Fredericksburg's John Diamantis found a tractor seat cushioned drum stool at a music supply store. Manufactured by PDP and shown below, the stool is ideal for punching down analog/Cat-6 wires or for extended computer programming.

As you can see, the drummer's stool with the tractor seat is sold for just under $100; plain cushioned drummer's stools are in the $30 price range. The stool beats sitting on the floor to do your work.

Rural Florida Communications Cooperative's Wayne Eckert responds to our temperature monitoring topic from the Sept. 12 column.

He says there is a simple and inexpensive way to monitor temperature anywhere using an LM34 Precision Fahrenheit Temperature Sensor. This is a low-draw linear chip that can be powered with from 5 to 30 VDC, and outputs a voltage that matches one to one the temperature it senses, +10 mV per degree.

Here is a link to the Texas Instruments data sheet, which explains its operation and provides example schematics: *https://tinyurl.com/y9xwr4ns*. And this link takes you to Digikey, where you can purchase the LM34: *https://tinyurl.com/yaxvc9p4*.

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

Author John Bisset has spent 48 years in the broadcasting industry and is still learning. He handles Western U.S. radio sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

Use a PDP Drum Stool for support when working in a rack.

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World Radio History

A Sampler of Common-Sense Helpers

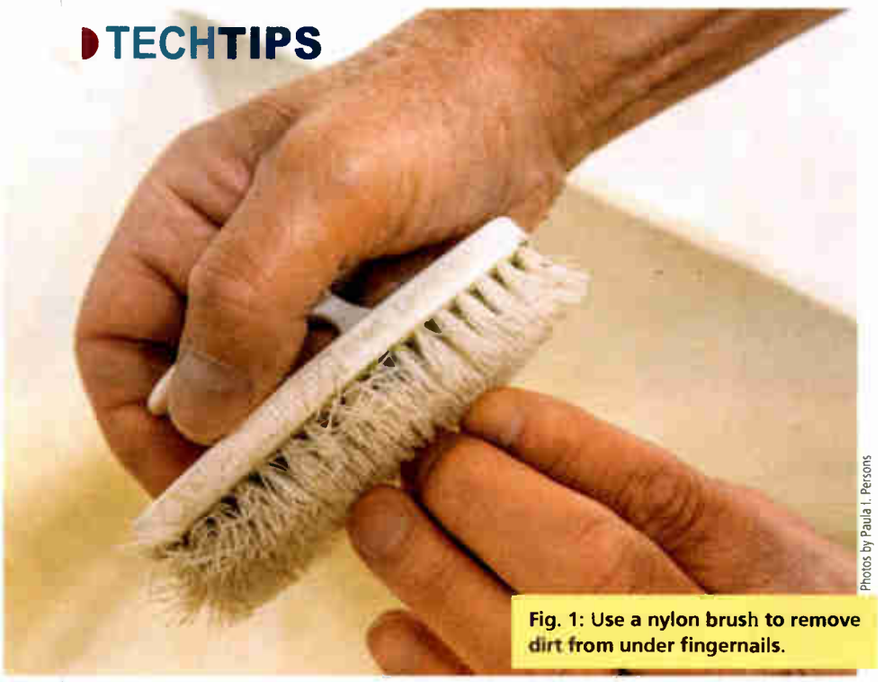
With the holidays coming up, our intrepid author offers a cornucopia of useful suggestions

TECHTIPS

BY MARK PERSONS

When you work on a transmitter, especially a tube model, you'll encounter very fine gray-black dirt particles. After my days working at transmitter sites, my wife Paula often said, "You smell like a little transmitter." The first task was to wash my hands, but they often stayed black because of dirt embedded in the skin. Paula wouldn't let me sit down to eat with dirty hands.

For stubborn dirt, I use a scrub brush to force dirt particles out from under my fingernails and skin wherever needed. Also, I found scrubbing my hands while showering with a good hair soap, like Head & Shoulders shampoo, worked well. Paula's father was a furnace repairman; she knew a few of these tricks even before meeting me.



Photos by Paula I. Persons

Fig. 1: Use a nylon brush to remove dirt from under fingernails.

An Xcelite 2210 tool gives a perfect crimp every time on solderless terminals of three sizes. I've found the reliability to be 99.99 percent during the course of 20 years of frequent use.

With traditional crimpers, you can squeeze as hard or as little as you like. That's a problem because the integrity is not always as good as you'd want. Best to pull on a terminal after crimping to make sure it is tight and will stay on the wire. The 2210 is a hand-operated machine, which won't release until it has gone through a complete crimping cycle. They are a single action that crimps terminals in two places. Look for what is now called the Draper Expert 35574 Ratchet-Action Terminal Crimping Tool; I recently saw it for sale on Amazon for $33.54 plus shipping. Voilamart appears to have the same tool for as little as $12.99.

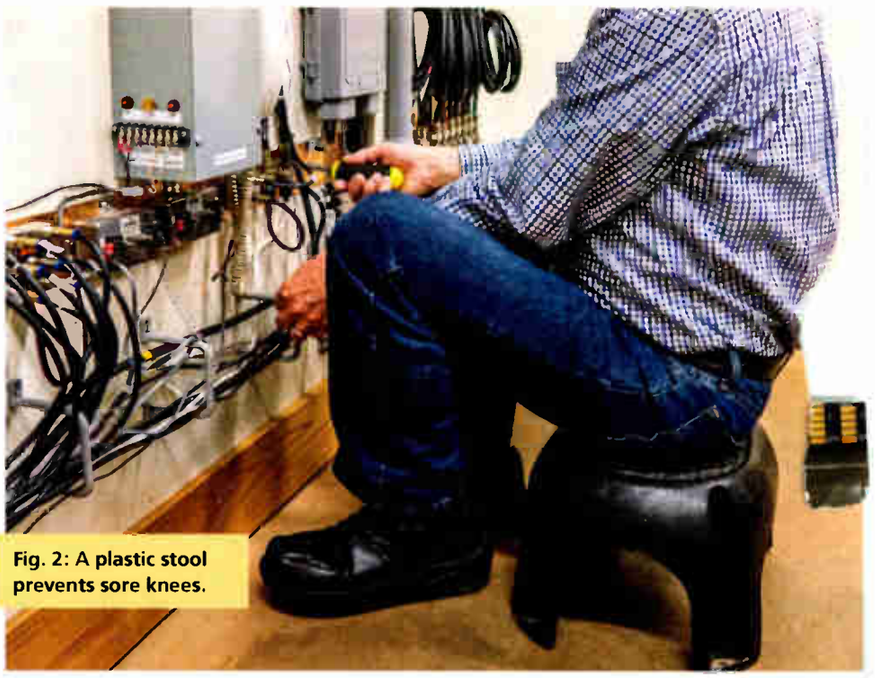


Fig. 2: A plastic stool prevents sore knees.

Here's another basic tip: Use a plastic stool for jobs that would otherwise require squatting. It can also be used as a step to reach up just beyond your normal height. A stool of this type costs less than $4. I carried one in my service van for the last 15 years on the job. It worked great.

For kneeling, use a pad to prevent knee problems. You've seen them: inch-thick rubber or foam sheets that are about 8 by 15 inches. These are as inexpensive as $3. For continuous use on a project that requires more movement, use knee pads that strap to your legs. The construction trade uses them. You can too.

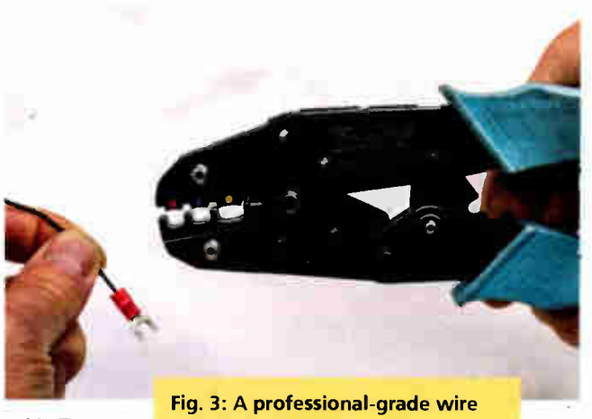


Fig. 3: A professional-grade wire terminal crimper

World Radio History

Photos by Mark Persons

Fig. 4: Use circuit breaker finding tools to trace wiring.

Fig. 5: Use Caig DeoxIT on a BNC connector.

ABOUT THAT CIRCUIT BREAKER

Using a shorted 120 VAC power cord as a test tool to locate a circuit breaker is a bad idea! For starters, the life of the circuit breaker will likely be shortened by such an act.

If you do the math, a 100 foot long 15 ampere circuit will draw 237 peak surge amperes when shorted. A 50 foot 20 ampere circuit could hit 756 amperes of surge current and 90,720 watts on a circuit designed to deliver a maximum of 2400 watts. Ouch, that's 38 times the rated current!

It's hard on the wiring as well. Sure, the circuit breaker will trip quickly, but wire nut splices and other power outlets along the way could suffer as well.

There are test instruments to locate breakers and associated wiring. The one I have is an Ideal brand 61-532 Circuit Breaker Finder. It consists of a low-power transmitter, which plugs into a power outlet and appears to operate below the AM broadcast band.

A hand-held probe is used to safely find the signal when held near a wire or circuit breaker. New, the pair are as little as $75, but $25 can get you the set on eBay. Cheap at twice the price!

INTERMITTENT CONNECTORS

BNC connectors can become troublesome with age. I ran into one on the end of a test lead to my Sencore Z Meter. The shield portion of the connector was not reliable. It wasn't the connector installation but the two connector body parts that rotate on each other. There is the main body that connects to the cable end and then there is the part that grabs and locks onto a mating connector with a quarter-turn twist.

You would think metal to metal contact would be good enough. Well, with years of dirt and corrosion, the two body parts can become electrically isolated from each other. I use Caig Labs D100 DeoxIT D100L-2DB to clean and preserve contacts.

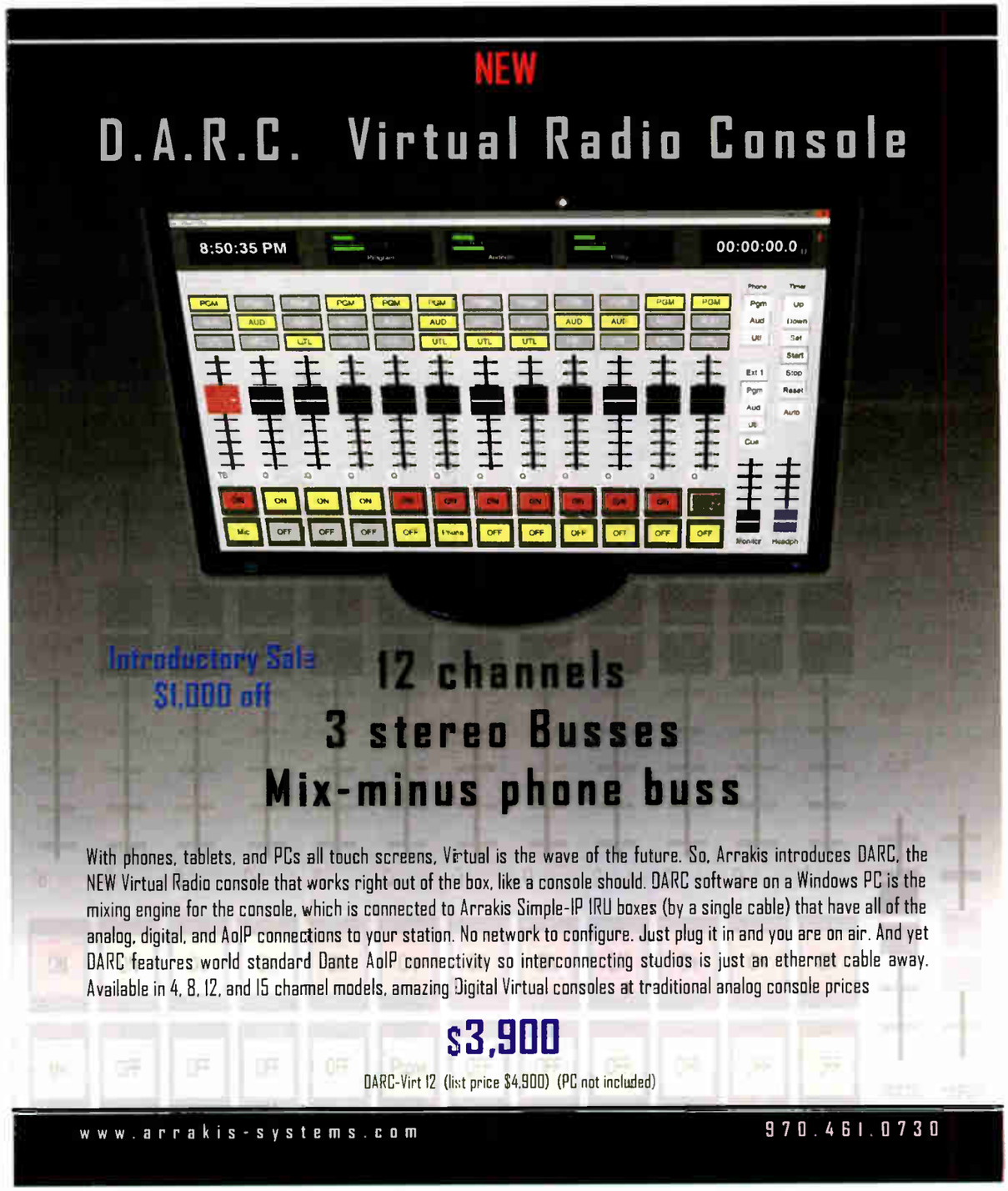
But that didn't work in a recent case. Instead, replacing the connector solved the problem. I often use DeoxIT on the center pins of coaxial connectors to preserve contact integrity.

Use a brush applicator rather, than a spray. That way, you can put as little or as much as necessary to get the job done.

SPEAKING OF CONNECTORS ...

I ran into a problem on a C-Band satellite dish years ago where only some of the transponders came through. On a whim, I replaced two right-angle N adapters at the low-

(continued on page 16)



World Radio History

TIPS

(continued from page 15)

noise amplifier with a short N-to-N jumper cable. Problem solved.

Apparently, the spacing between the two 90-degree adapters was such that it formed a trap of sorts to notch out one or more transponder frequencies. Remember, we are talking 4 GHz. The satellite dish installer must have thought it was a clever idea to install this "U" connector arrangement to join a sky-pointing LNA connector to a half-inch coaxial cable. While we don't see many LNAs anymore, the lesson is that bad/strange things can happen when transporting microwave RF frequencies.

MORE TOOLS

Your tool kit should include a ground fault circuit interrupter tester, even if you are not an electrician. The GFCI shown in Fig. 6 is a hardware store item that typically sells for less than $10. This one has lights to identify five problems, in a circuit, plus a push-button to test GFCI-protected outlets. Best to use it whenever there is a question about 120 VAC wiring at a site.

First, you'll determine if power is available at an outlet, you might find the hot and neutral conductors are reversed or the ground is missing. Now we are talking dangerous. Check the power extension cords you carry. They could be wired incorrectly or have a broken connection.

Fig. 6: A power tester and mirror for your kit.

Photo by Mark Persons

Use tools with three-wire power cables whenever they are not battery powered. A man in my area was electrocuted a few years ago while using an electric drill on a boat dock. The drill was metal-cased and someone had cheated the power cord plug by clipping the ground pin off. He was standing in water and would have been safe if the ground was present or if the power outlet was GFCI-protected. Remember, GFCI outlets are required under the National Electrical Code whenever there is water nearby. Transmitter sites are a good place for GFCI-protected outlets. Sure, it is dry inside, but you might be working outside at the base of a tower where the ground is wet. Be safe rather than sorry.

A dental mirror is also shown in Fig. 6. It is great for looking around corners. Note that this tool is plastic cased to avoid the possibility of shorting a circuit to ground conducting power to your hand. Think safety!

Use the right tools to save yourself time and trouble. It makes perfect sense.

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

Mark Persons, WØMH, is an SBE Certified Professional Broadcast Engineer, recently retired after more than 40 years in business. His website is www.mwpersons.com.

PEOPLE NEWS

Justin Acri
Signal Media of Arkansas
promoted to general manager

Jacky Yee
GatesAir
selected as head of Asia-Pacific sales

Buzz Knight
Beasley Media Group
was upped to serve as executive vice president of strategy and innovation

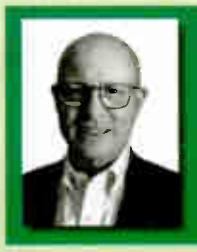
Henry Fries and Chuck Thompson
Dielectric
hired to serve as manager of RF systems/products and second shift production supervisor, respectively

Reto Brader
Barix
will replace current chief executive Ivo Killer as CEO

Martin Coyle
Entercom
named SVP of human resources

Phil Myers
Lawo
appointed as senior director of IP Systems

Stephen George
Louisville Public Media
will serve as the organization's next president and general manager



Mike Jackson
Marketron Broadcast Solutions
chosen to serve as senior vice president of engineering

Society of Broadcast Engineers
made committee chair assignments at its recent annual meeting. They are:

Awards: **Tom McGinley**
By-Laws: **Ted Hand**
Certification: **Ralph Hogan**
Chapter Liaison: **Mark Fehlig**
Education: **Wayne Pecena**
Fellowship: **Troy Pennington**
Finance: **Roswell Clark**
Frequency Coordination: **R.J. Russell**
Government Relations: **Kevin Trueblood**
International: **Charles W. Kelly Jr.**
Membership: **Steve Brown**
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While it looks and feels like its Wheatstone cousins, this digitally controlled analog console operates as a full standalone board. Cue thunderous applause.

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World Radio History

Burk ARC Plus Touch Satisfies Liberman Broadcasting

Features such as linking weather maps into a remote system please Houston broadcaster

USERREPORT

BY MIKE TODD
Chief Engineer
Liberman Broadcasting — Houston

HOUSTON — Liberman Broadcasting has five radio stations and one TV station in the Houston market. All of them are using the Burk Technology ARC Plus Touch Remote Control System, which is monitored and controlled by Burk AutoPilot software.

We chose the ARC Plus for our sites because Burk has always been the go-to company for facilities remote control systems. Before upgrading to the ARC Plus system, we were utilizing the Burk GSC3000, which was also monitored by Burk AutoPilot software.

Upgrading to the ARC Plus system was an easy choice as it used the same monitoring and control software. Burk also made upgrading from the GSC3000 to the ARC Plus a snap because ARC Plus offers the Plus-X GSC Adaptor which allowed us to use all of the previous wiring without needing to reinvent the wheel. The ARC Plus also has the ability to communicate with most IP-enabled broadcast gear using SNMP protocol.

I am currently monitoring and controlling transmitters, modulation monitors, audio processors, power meters, thermostats, UPS and Nielsen PPM encoders and monitors — all done via IP so we did not have to run individual control wires to all of the different equipment. Having the ARC Plus utilizing SNMP has opened up a new world of monitoring and control possibilities.

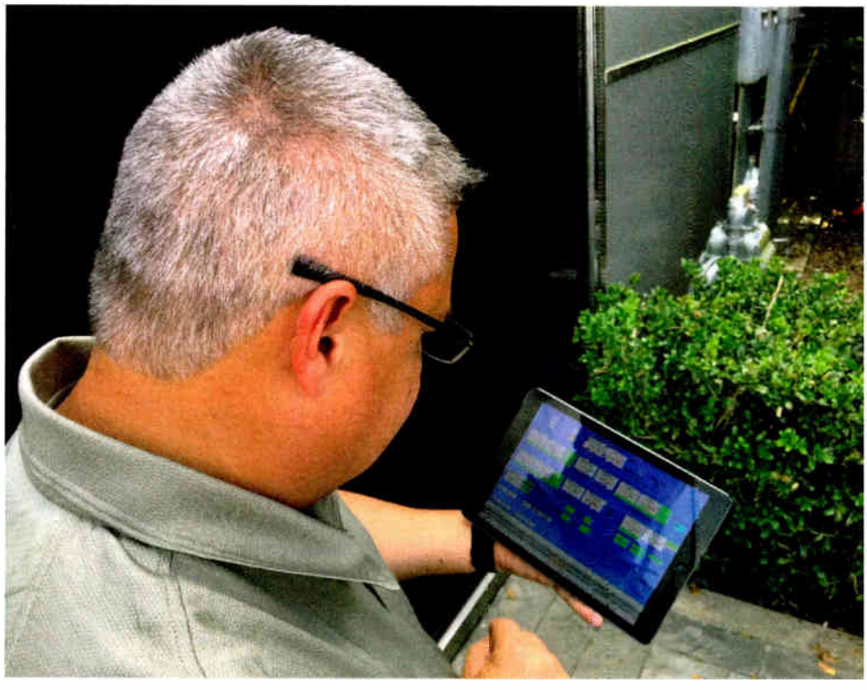
All of my sites are being monitored by the AutoPilot software running on a computer back at the studio, with custom views for each individual station. This enables me to drill down and pinpoint issues that may arise. I have one main custom view that has all of the important data for each site all on one screen. With a glance I can identify any issues on any site on one screen, making it efficient and clear. If there is a parameter out of tolerance, that meter or status is highlighted in red. This feature prohibits information overload, letting me know everything is as it should be.

AUTOPILOT

One of my favorite features of AutoPilot is the custom line charts. This feature allows me to track a trend over a period of time, such as temperature, incoming building voltage, current UPS draws and other variants that would explain an alarm, or a potential issue. I even have custom views with different time durations like 24-hour, 12-hour, and two-hour charts.

Another one of my favorite features in Autopilot software is the link to the National Weather Service radar. This allows me to stay in the program, check my map and know immediately if my generators are running due to environmental conditions, or if there is a separate technical issue. Texas is known for erratic weather, and this option makes checking alarms on sites located all over convenient and fast without the need to switch through a bunch of different browser windows or trying to remember website addresses.

The computer running my custom view screens utilizes Tight VNC for the remote access. I installed the VNC viewer application on my iPad allowing me to connect to the AutoPilot computer from anywhere. My custom view screens have been designed to be in an iPad-friendly format in full screen mode, eliminating the need to "pinch and zoom" or to open multiple windows. The ability to create these iPad-friendly custom view screens is the biggest time saver and is an incredibly efficient route to access the multiple indicators and meters.



In conclusion, the days of carrying laminated cheat sheets in my wallet are gone. I just access every site through one application. Line charts, remote access and weather maps help to streamline the process of identifying issues, and choosing how alarms need to be responded to in a timely and efficient manner.

For information, contact Matt Leland at Burk Technology in Massachusetts at 1-978-486-0086 or visit www.burk.com.

TECHUPDATE

INOVONICS ADDS "LISTENER EXPERIENCE" TO HD RADIO REMOTE MONITOR

The INOmini 638 HD SiteStreamer, made by Inovonics, is now available with "Listener Experience" to enhance remote monitoring of FM and HD Radio channels through the dynamic web interface.

Listener Experience is a new option available on the 638 remote web interface that allows users to remotely view on a single screen all of the FM and HD Radio Channels 1–8 from channel presets on the unit. From a single screen, users can now individually select and view information from the FM channel, and all of the HD Radio channels that are being transmitted. Available information includes station call letters, RDS messaging, artist, title, album and genre. In addition, the 638 allows for remote listening via a live stream.

Listener Experience is available as a free firmware upgrade for the 638. Users need to install the 638 Firmware Update Rev 1.2.0.7 which is available at the Inovonics website.

The 638 HD SiteStreamer lets users monitor up to 30 sources of FM and HD Radio programming from a remote site via the internet. Tune, switch modes, listen and receive email or text alarms for various reception problems. Like other SiteStreamers, the 638 supports "StationRotation" for round-robin sequencing of up to 30 preset channels.

For information, contact Inovonics in California at 1-831-458-0552 or visit www.inovonicsbroadcast.com.

World Radio History

WHEATNET IP INTELLIGENT NETWORK

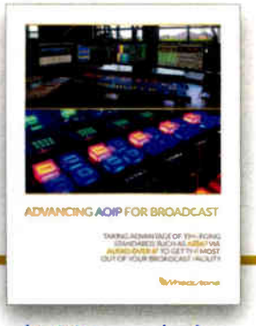
The Future Can Bring Anything

LXE is Ready for Everything

Virtually every button, knob, and display on the LXE is programmable using ConsoleBuilder. And you can design dynamic custom touchscreen interfaces to augment LXE's extensive screen set with ScreenBuilder.™ Need more input faders? Enable up to four layers to multiply the number (up to 32) in the same footprint. Whether it's 2020, 2040, or 2080, your LXE will adapt to your needs.

Your Forever Console

Download your free E-Book: Advancing AoIP for Broadcast



wheatstone.com/wnip-rw

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World Radio History

WRBS Pushes Pathfinder to the Limit

Baltimore broadcaster finds extreme flexibility and reliability with Axia Pathfinder Core PRO

USERREPORT

BY KISHORE PERSAUD
Contract Engineer/Manager
KP Radio Broadcast Engineering

BALTIMORE — As a contract engineer, I work with many stations to help them to get their studios set up and workflows functioning the way that they desire. One particular project that turned out well recently was the work that I did with WRBS(FM) in Maryland.

Axia xNodes and the Pathfinder Core Pro in the racks.

Before I came to their plant, they were using a standard AudioVault automation system, and in an emergency situation they had to run cables across the floor from a second studio up through the ceiling in order to patch through. When I came onboard, I was able to use a couple of Telos Alliance xNodes as well as the Axia Pathfinder system to accomplish the same thing. This facility is now almost entirely an Axia plant, and we've used Pathfinder Core PRO there to make the most of their remote and backup system capabilities.

Their vision was to be able to switch sources in and out seamlessly, in any situation. Most stations these days are manned by a single engineer or contract engineer, and it's important to have flexibility built into the system in case of an emergency situation when there isn't an engineer on site. To interact with the Pathfinder system, the Axia Element consoles in WRBS' facility have Axia SmartSwitch modules in them and they have Axia 10 and 17 button routing control panels. The 10-switch panel is used for AM stations for switching between EAS events, different studios and audio sources. The 17-panel switch is used in the transmitter room and offers extreme flexibility by allowing WRBS to switch out any station, studio, computer, different VMixes from the Powerstations, and more. I also use Pathfinder for silence-sensing, programming timing, and in an emergency, it's just one button to press to get a signal back on the air. When you're in the transmitter room, you just reach up and press one button and, Bam! Back on the air. It's a fast and elegant solution and provides the time necessary to look into solving the source of the problem.

The author, center, is shown with Cornelius Gould of the Telos Alliance and Peter Allen, chief engineer for WRBS.

We are also using the system with our PPM encoders so we can easily switch between them in the air chain. This also goes for any studio, AudioVault, or backup AudioVault that we want to put on the air with the push of a button. The Pathfinder virtual button panel is an extremely flexible solution for when we need to control things remotely.

I've been working with Pathfinder since the first version and it has evolved in so many ways that it's almost impossible to wrap my mind around. As we say, "There is more than one way to skin a cat with Pathfinder Core PRO." Axia just released a new 1RU appliance and VM version; I'm sure I'll be working with those in the not too distant future.

Any time we've run up against an issue or a capability we'd like to see in the product, we take it back to Telos Support where the conversation carries back to the developer who has always been there to provide support and solutions. It's been incredible to be part of the evolution of the product.

For information, contact Cam Eicher at the Telos Alliance in Ohio at 1-216-241-7225 or visit www.telosalliance.com.

TECHUPDATE

RTW UPDATES FIRMWARE FOR TMR7 RADIO MONITOR

RTW says its TouchMonitor R7 caters to monitoring audio for radio. New Version 7 software provides users with improved stability and performance of the monitor, which has loudness, true peak, PPM, vectorscope, moving coil, RTA and correlation tools.

The hardware and software features of the TMR7 are suited to broadcast radio's requirements. The unit's four audio inputs provided by the two AES3 XLR ports are flexibly configurable for mono, stereo or multichannel sources, with separate instruments for each. The monitor's GPIO interface, Ethernet port and VGA output on the external display units offer added functionality.

The TMR7 features four-channel audio monitoring in a 7-inch touchscreen format with modular configuration that is standard with RTW TM7 monitors. Available as a desktop, fitted or OEM unit, the TM7 covers all applications in professional audio metering, and these versatile interfaces simplify studio integration. TM7's RTA provides a 1/12-octave mode and multiple audio vectorscope instruments. Output routing can be individually adjusted for each preset, which can be simultaneously exported or imported.

For information, contact RTW/SCMS at 1-800-438-6040 or visit www.rtw.com or www.scmsinc.com.

World Radio History

RETHINK

LAWO

Welcome to Broadcast 3.0

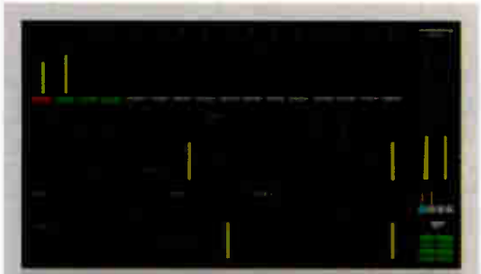
ruby – Radio & Broadcasting Mixing Console.

NEW
DANTE and ST2022-7 support

Feast your eyes on the new ruby mixing console.
Intuitive. Uncluttered. Powerful, yet so refined. Streamlined from every angle. Optimized controls: everything you need, nothing you don't. Only 5 cm (2") tall, from the bottom of its exquisitely cast side frames to the tops of its carefully chosen rotary selectors.

But great design goes beyond mere good looks. Which is why ruby is expertly crafted for both speed and accuracy — controls perfectly placed to fall naturally to hand. Premium-grade displays, faders and switches. Standards-based AES67 networking. Powerful features like AutoMix smart mixing and instant one-button switching between live and production modes. Up to 96 channels of DSP and 1,920 routing crosspoints*. The cherry on top? A customizable, context-sensitive touchscreen GUI that puts virtual control of mixer functions, playout software, studio devices, even Web feeds, social media and video, right at your operator's fingertips.

No other console is this smart. Slim, trim, and sharp as the cutting edge. Engineered and built without compromise by German craftsmen.
Sprechen Sie deutsch?



Welcome to your command cockpit. Graphical, intuitive, customizable: ruby's onscreen interface, powered by our VisTool GUI builder, is so much more than just meters and a clock. Multi-touch controls instantly give what's needed to control studio devices, tweak dynamics, adjust virtual faders, meter true loudness — even design your own custom screens. The possibilities are virtually limitless.

Who says small can't be mighty? ruby's mixing engine, Power Core, is equipped with redundant IP networking, dual-redundant power capability, and tons of built-in I/O – 384 stereo channels, standard – with room to add even more. There are dozens of DSP channels, and a built-in routing switcher, too. It's like 12 rack units of power, packed into only 1RU.

www.lawo.com

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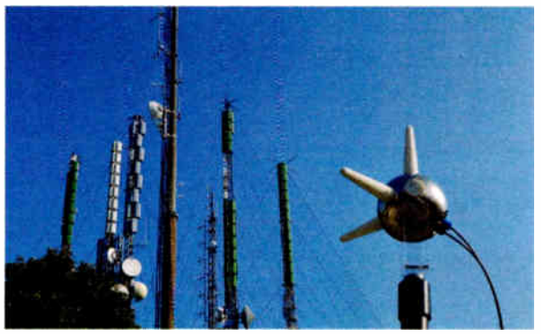
World Radio History

TECHUPDATES

ALDENA OFFERS SEP FOR EMF CONTROL



Attention to electromagnetic pollution has grown in the last decade. According to studies and guidelines released by the International Commission on Non-Ionizing Radiation Protection, the European Union implemented the directive 2013/35/EU in July 2016. The directive sets safety and health requirements regarding the exposition of workers and general public to electromagnetic radiations.

Aldena Telecomunicazioni says its new compact Selective Electric Isotropic Triaxial Antenna Probe is designed to measure the electrical component of the electromagnetic field in the 100 kHz to 3.8 GHz frequency range.

According to the firm, the system also allows users to save time and money on EMF measurement. The spectrum analyzer and three-axis antenna with integrated RF switch are fitted inside one unit. This facilitates field work by the operator, who therefore only needs to calibrate one instrument instead of three (analyzer, cable and antenna).

Aldena says the SEP's three-dipole antennas are directly connected to the receiver, which minimizes isotropy error (typical <0.5 dB). Measurement range is from 0.1 to 200 V/m and correction factors are stored in an internal EEPROM. The lithium battery is replaceable with operation time eight hours.

Users can connect SEP to a PC via a fiber-optic cable to control several functions via dedicated software including Fast setup, Track record channel power, multichannel power, settable markers Conformity reduction, maximum hold, RMS and average in a selectable time.

SEP weights 13 ounces/370 grams and can be mounted on drones.

For information, contact Aldena Telecomunicazioni in Italy at 011-39-9039-0461 or visit www.aldena.it.

BW BROADCAST MODMON ENCORE CONTROLS THE SIGNAL

BW Broadcast's ModMon Encore Dual FM and MPX modulation monitor combines technology from its award-winning receivers with reference-grade audio processing technology to create a box capable of analyzing both FM and baseband signals.

According to the company, the ModMon's time-aligned twin DSP tuners allow crossfading between two radio stations for instant and accurate signal comparison. The DSP tuners have adaptive IF filtering and stereo improvement, with antenna diversity option; even under difficult conditions, the company said, it will pick up weak signals with the best possible sound.

The dual MPX inputs allow crossfading between two MPX inputs for comparison of two processors. BW explains that zero time pop-less switching between two audio processors makes it easy to get a true evaluation between the processors. In addition, it says the system's reference-grade stereo demodulation gives performance stereo demodulation and separation, making it easy to listen to the left-right audio from a composite MPX input signal, or even two.

The firm says that anyone working with FM or MPX signals will find this product useful. Receiving both RF modulation as well as FM signal in one unit makes it easier to make adjustments and prevent overmodulation.

The front panel is machined from a block of aluminum with a high contrast OLED displaying the menu system and tricolored LED blocks providing real-time metering. Three silicone soft keys control significant functions and two illuminated buttons switch inaudibly between each DSP tuner.

For information, contact BW Broadcast at 1-866-376-1612 or visit www.bwbroadcast.com.

NM-250 MKII - Newsroom Mixer

Features:

-Built In Talkback System with 2 Send and Receives
-1 Unbalanced Input /Output for computer Sound Card
-1 Unbalanced Stereo Front Panel Jack Input
-1 Balanced Mono Line Input for Telephone Hybrid
-2 Balanced +4 dBM Stereo Line Inputs
-2 Balanced Mono Mic Inputs
-Monitor Select (Mixer Output or Off Air)
-LED Meter Display
-Phantom Power Built In (48v)
-Built In Cue System with Dimming

Dixon Systems
800-779-7575
www.ram68.com

AEQ DESIGNS REMOTE NETWORK CONTROLLERS

AEQ is known as a manufacturer of broadcast equipment but it is also a developer of control and management applications. These are designed to allow, among other things, the creation of radio broadcast networks.

For instance the Tele Server 3.1program was recently updated and adapted for Radio Popular de Madrid in Spain. It creates four satellite broadcast feeds, to which hundreds of remote stations are subscribing. It allows the stations to broadcast the contents of any of these four programs and switch between them using a scheduler. Further, it allows for the creation of customized contents for each station or group of stations.

The application enables the insertion of advertisement, news and other regional and local contents within the national or general programs. It also provides tools to switch the active signal to each station depending on desired schedule or to prepare programs with specific contents depending on for example, season and fixtures.

Xal Control, implemented in la Xarxa in Barcelona was created to replace an obsolete, unidirectional satellite radio network with a full-duplex network using AEQ Phoenix audio codecs. The system server does not provide network commands but directly controls the codecs at network headquarters and remote stations. It also controls the audio routing matrix at the main station, creating the required cross-points for the routing of the required audio between the codecs and the studio consoles.

For information, contact AEQ in Florida at 1-800-728-0536 or visit www.aeqbroadcast.com

World Radio History

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VX Enterprise

Immense capacity with
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For smaller facilities (2-4 studios)
with 8 fixed hybrids

Today's broadcast facilities require flexibility, uncompromising quality, and a careful eye on the bottom line. Using Voice over IP technology (VoIP) you can have remarkable-sounding on-air phone calls with no 'gotchas'. Our new Telos VX® Enterprise or VX Prime+ phone systems are the right choices for your facility whether you need two hybrids or over 100! Save thousands monthly on expensive T1/PRI/POTS lines by switching to VX VoIP. Many systems pay for themselves in less than 18 months in reduced phone service costs.

And it's not hard to install. VX lets you connect easily to other gear on your Axia Livewire® or other AES67 network. Enjoy the best-sounding caller audio ever! Both VX Enterprise and VX Prime+ include native support of G.722 HD Voice. Our 5th-generation Telos® Adaptive Digital Hybrid supplies the clearest caller audio. Smart AGC and Digital Dynamic EQ by Omnia® assure call-to-call consistency from even the toughest cell phone caller. And our team is standing by to help you every step of the way.

With world-renown quality that's made Telos the industry standard in broadcast telephony, VX will make you the talk show of the town.

Telos®
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TelosAlliance.com/VX-VoIP

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World Radio History

Sentech Relies on Audemat FM MC5

All-in-one measurement solution meets requirements in rugged terrain

SPECIAL REPORT

BY CHANTAL FOURGEAUD
Director of Marketing Communications
WorldCast Systems

GEORGE, SOUTH AFRICA — Sentech, a South Africa-based company, offers signal distribution services to most of the country's licensed broadcasters, which include the public broadcaster, commercial and community broadcasters.

As an owner of 25 Audemat FM MC5 systems with 16 purchased in 2016 and nine more purchased in 2017, Sentech says it is a satisfied customer of WorldCast Systems with its Audemat FM MC5. According to Danie Liebenberg, team leader in operations at Sentech, its team makes use of all the Audemat FM MC5 functions when doing commissioning, development and testing of new FM equipment, fault-finding, alignment and measurements when repairing existing equipment and when doing automated test sequences through script functionalities.

The FM MC5 also helps Sentech carry out its support maintenance which include full mast, cable and antenna inspections as well as drive-by measurements to confirm correct FM antenna radiation patterns and reporting on lack of coverage in new developing areas. The drive-by tests' full reports go straight to the planners, which helps Sentech in their decision-making process when considering possible new sites.

SIMPLIFIED PROCESS

"One of Sentech's key operational imperatives and actually one of our strategic pillars is to operate more efficiently. The FM MC5 provides this in more ways than one and in our opinion, its best features are its all-in-one versatility and drive-by test capability which has massively simplified things for us," said Liebenberg.

"In the past we had to carry multiple instruments of which some were heavy and bulky to transport. We also needed to conduct static measurements using a five-element FM antenna and telescopic pole that we would transport with us when doing our field tests. The size of the antenna in particular complicated our task during windy conditions. The amount of measure points was extremely limited due to this tedious process. Today, all we need to do is attach a small GPS and FM omnidirectional magnetic base antenna onto the roof of the vehicle, quickly configure the FM MC5 for the drive-by measurement, and we're ready to go."

He adds, "Multiple measurements at a magnitude of measuring points get done while driving at normal driving speed. By the click of a button, a professional report gets generated that can immediately be represented to customers."

The Audemat FM MC5 is a lightweight, all-in-one system, and it comes with a durable transport case. With most of Sentech's work taking place in rugged, mountainous landscapes, sometimes taking one hour to travel 6 miles to reach a site, Sentech says the transport case was a key factor when deciding to purchase the Audemat FM MC5.

During its two years as a WorldCast Systems' customer, Sentech has also benefited from expert customer support. "We received their team's support from time of purchase and system deployment, continuing up until now. I would definitely recommend the Audemat FM MC5 as a measurement solution for the FM broadcasting environment," Liebenberg concluded.

Pictured from left are Guillaume Boutin and Olivier Soulié of WorldCast Systems, Danie Liebenberg of Sentech and David Houzé of WorldCast Systems.

For information, contact Tony Peterle at WorldCast Systems in Florida at 1-305-249-3110 or visit www.worldcastsystems.com.

TECHUPDATE

WHEATSTONE METERS THE AOIP NETWORK

Wheatstone IP Meters software for the WheatNet-IP audio network displays a "wall of meters" on a PC screen for ongoing monitoring of audio peak levels, average levels, and various other parameters at selected points throughout the network.

The IP Meters GUI for the WheatNet-IP network lets broadcasters set up ongoing metering of audio levels, signal density, FFT graphs and more. Each meter can be set up with silence detection, so broadcasters can see at a glance if an audio stream has gone down, and where.

Each meter — or cell — in this IP "wall of meters" can be set up as a horizontal, vertical or eyebrow bargraph meter. Users can set up two or 60 or more cells in one "wall." Users determine where and what to meter: console inputs, mic outputs, the satellite receiver, studios, web streams, etc. In addition, a separate analysis window shows one audio stream in a variety of informative ways, including FFT, 3D plot, oscilloscope, energy vs. frequency, spectral dynamic range and more.

For information, contact Wheatstone in North Carolina at 1-252-638-7000 or visit www.wheatstone.com.

World Radio History

2WCOM MANAGES A30 NETWORKS

2wcom offers a remote management solution that enables operators to manage and evaluate numerous 2wcom A30 monitoring receivers via an integrated location/device management program.

For example, the firm says, FM and RDS parameters of A30 receivers can be collected or RDS group parameters and RDS group statistics can be displayed. Also, it is possible to select an individual A30 to listen to an MP3 compressed audio stream of a monitored station, record and store it.

The company calls the A30 a "hybrid, economical and multipurpose monitoring receiver" that includes interfaces such as analog/digital audio input, MPX input, analog/digital audio MPX outputs, GPIs, SNMP and two parallel MP3 streams. It is possible to configure two built-in FM tuners to monitor two separate stations or the second FM tuner can operate in scan-mode, monitoring up to 30 frequencies (round robin).

Operators can use an optional DAB+ tuner to monitor a DAB+ multiplex. In addition, technicians can benefit from accurate measurements of FM/RDS and DAB+ parameters like RF level, no pilot detection, pilot deviation, MPX deviation, MPX power and RDS parameters (RDS deviation, PI, PS, PTY, RT, TA, TMC, etc.).

The system offers a detailed and graphical presentation of MPX peak signal deviation and MPX power to help avoid penalties with regulatory authorities. If a measurement exceeds a user-definable threshold, an alarm can be forwarded via SNMP, email and/or relay and is stored in a separate alarm log.

For information, contact 2wcom in Germany at 011-49-461-662830-0 or visit www.2wcom.com.

DEVA INTRODUCES NEW FM AND DAB MONITORS

DEVA Broadcast says its DB45 monitor guarantees round-the-clock operation and accurate measurement of signal parameters such as RF level, MPX deviation, MPX power, left and right audio levels, RDS and pilot injection levels.

Upon demodulation of the FM signal, the SDR tuner digitizes the RF signal, and all signal processing is achieved through calculations. According to the company, the precision of the tool's digital filters permits the FM multiplex signal components to be accurately and repeatedly reproduced from one device to another. Measurements can be refreshed simultaneously and synchronously, allowing users to obtain detailed readings of the multiplex FM signal components.

The DB45 has a DSP-based core and supports TCP/IP and GSM connectivity. It also features a web interface and adjustable alarms for RF, deviation, pilot and RDS signal.

In addition, the firm's DB46 DAB/DAB+ monitor, which is compliant with the ETSI EN 300 401 DAB standard, supports the latest DAB and DAB+ standards.

DB46 features a selective DSP-based tuner and offers support for Program Associated Data, as well as all standard bitrates and VBR, and automatically displays live metadata. While the signal is being monitored and logged, the DB46 measures the following DAB signals: RSSI, SNR, CNR, FIC quality, FIB errors, FFT offset and the left and right audio level values, and consequently stores them for future analysis. A standard FTP client is all that is required for the collected data to be easily downloaded.

DEVA says that DB46 is easy to set up and control, either through the front-panel menu or remotely through one's PC, tablet or smartphone via a standard web browser; iOS and Android devices can also be used.

For information, contact DEVA Broadcast in Bulgaria at 011-359-56-820027 or visit www.devabroadcast.com.

World Radio History

TECHUPDATES

DAVICOM PRESENTS CORTEX360 REMOTE SITE MANAGEMENT SYSTEMS

The Davicom Cortex 360 remote site management system is built upon a dual ARM hardware processor running an embedded Linux kernel. Its front-panel OLED system display shows detailed system status and alarm conditions. A digital video output is available to drive a monitor directly. Low current draw (300 mA at 12VDC) allows operation for longer periods on battery backup power or from solar-powered installations. Input DC supply voltage can be anything between 10V and 30V.

The built-in SNMP manager (with up to 1024 GET, SET and TRAP commands) is used to manage external SNMP-compatible devices, while the unit's V1, V2c and V3-compatible SNMP Agent interfaces with external SNMP NMS software.

Backhaul operation can be over low-bandwidth communications channels down to 2400 baud. Regular high-speed Ethernet, dial-up modem and DTMF/voice-response connectivity are included.

Dual firmware memory spaces ensure fail-over and roll-back operation during firmware updates.

Metering inputs are differential with ranges between ±0.5 V and ±80 V with a common mode of up to ±80V. All metering inputs also have built-in RMS signal detectors as well as 4–20 mA capability. Status inputs have fully independent opto-isolated ground returns for easy interfacing to various pieces of site equipment.

A built-in four-port Ethernet switch and four-port USB hub reduce the need for other site accessories.

Operates in freezing cold or burning hot environments with an industrial temperature range (–40 to +70 degrees C/–40 to +158 degrees F). It is FCC, IC, CE and RoHS compliant.

For information, contact Davicom in Quebec at 1-418-682-3380 or visit www.davicom.com or http://cortex360.davicom.com.

ORBAN FACILITATES AUDIO ANALYSIS

Orban's loudness meter upgrade V2.7 adds support for up to 7.1-channel surround and the ability to analyze audio and the audio parts of video files offline for their BS.1770-4 Integrated Loudness, EBU R 128 LRA, highest reconstructed peak level, and number of reconstructed peaks above 0 dBFS.

The meter will graph the BS.1770-4 Integrated Loudness and peak swings of the CBS Loudness Meter as a function of time, and can display a histogram of the BS.1770-4 Integrated Loudness.

In addition, the upgrade features several bug fixes. Windows V2.9.6 works with Windows Vista/7/8/10; it is not compatible with Windows XP and earlier. We will continue to make v2.0.8 available for Windows XP users. Mac V2.9.6 works with macOS 10.12 Sierra and earlier versions.

Orban makes this software available free of charge, subject to the provisions of the license agreement displayed by the software installer. This software is sponsored by Orban's loudness controllers for FM radio, television, and streaming.

For information, contact Orban in New Jersey at 1-856-719-9900 or visit www.orban.com.

ABOUT BUYER'S GUIDE

Radio World publishes User Reports on products in various equipment classes throughout the year to help potential buyers understand why colleagues chose the equipment they did. A User Report is an unpaid testimonial by a user who has already purchased the gear. A Radio World Product Evaluation, by contrast, is a freelance article by a paid reviewer who typically receives a demo loaner. Do you have a story to tell? Write to bmoss@futurenet.com.

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GORMAN REDLICH
DIGITAL ANTENNA MONITOR

MODEL CMR — Remote Controllable Digital Antenna Monitor — 2 tower Price $3350 additional towers $200 each

The Model CMR is a state of the art instrument of unequalled accuracy and stability. With typical modulation, the CMR's true ratio readout is a factor of 10 more stable than instruments that measure normalized amplitude. With a 15kc IF for the measuring circuit, this monitor is ideal for diplexed arrays.

- True Ratio reading. Non-Reference and Reference amplitudes are separately measured and divided electronically to give an accurate digital reading.
- Stable, accurate phase reading with automatic phase sign.
- Amplitude or True Ratio may be selected for measurement with a front panel switch.
- Dual Surge Protection.

GORMAN REDLICH 257 W. Union Street Athens, Oh 45701
Phone: 740-593-3150 jimg@gorman-redlich.com
www.gorman-redlich.com

World Radio History

ACOUSTICS

ANTENNAS/ TOWERS/CABLES

WANT TO SELL

CCA FM8000G Trans 107.9, great cond; 4-Bay Jampro antenna w/deicers; 3-bay Shively antenna FM. D Brockman, 606-965-3436.

AUDIO PROCESSING (INCLUDES ON-AIR)

WANT TO BUY

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST · 214 738-7873 or sixtiesradio@yahoo.com.

Wanted: real plate reverb. abgrun@gmail.com.

RADIOWORLD
Equipment Exchange

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO SELL

1934 RCA 77A double ribbon microphone, originally used by Arthur Godfrey at WFBR Baltimore. 100% perfect condition. Contact Bill Cook, 719-684-6010.

WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com.

MISCELLANEOUS

WANT TO SELL

I'm selling between 150 and 200 cassette tapes that consist of old-time radio shows, sports shows, some local New York radio talk shows, etc... Must take entire collection and the price is negotiable. Please call me for details and, my phone number is 925-284-5428.

Radio broadcasts of Major League Baseball, NFL, and some college football games that are on cassette tapes, approx 100 to 125 games, time period of entire collection os from the 1950's – 1970's, BO. Must purchase entire collection. Contact Ron, 925-284-5428 or ronwtamm@yahoo.com

WYBG 1050, Messina, NY, now off the air is selling: 250' tower w/building on 4 acres; 12' satellite dish on concrete base; prices drastically slashed or make offer. 315-287-1753 or 315-528-6040

WANT TO BUY

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 audiovlg@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.

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I'm looking for KFRC radio special of Elvis Presley which aired on January 8, 1978. I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for the Ed Brady radio show in which he did a tribute to Duke Ellington, the station was KNBR, I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for KTIM, AM,FM radio shows from 1971-1988. The stations were located in San Rafael, Ca. Ron, 925-284-5428.

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, KSFX, KOBY, 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 SanFrancisco 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.

Looking for KSFX radio shows, Disco 104 FM, 1975-1978. R Tamm, 925-284-5428.

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.

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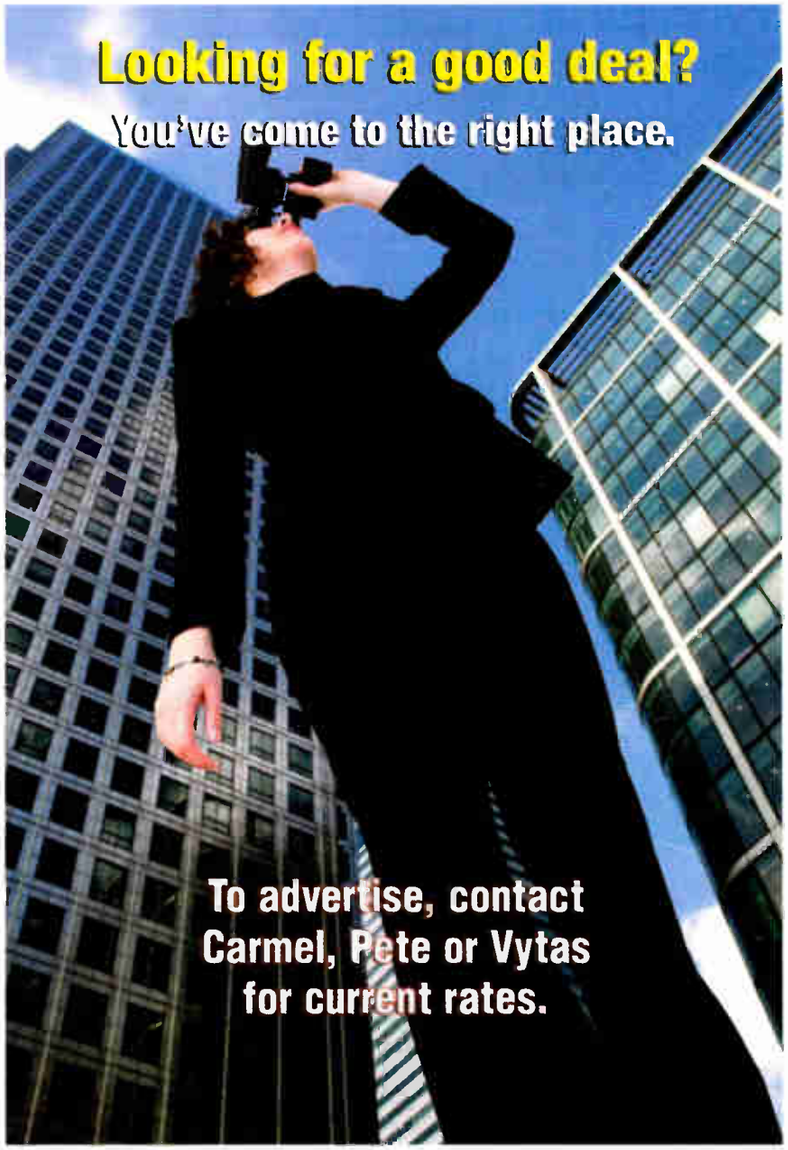
BE-25T 25KW FM transmitter 2007 frequency agile tube transmitter in good working condition on 90.7 (all its life) when pulled from service. Approx. 6 mos. on rebuilt tube and a newly rebuilt fan motor, also spare optical modules, manuals and maintenance logbook. $17,500/OBO. As-is, where-is: Hayward, CA, Jeff Cotton, 530-279-6262 or info@kdup.org.

(2) LPFM radio stations for sale, located in the NW part of central Florida on the gulf coast, covers the county, get out of the cold weather, come to Florida, call or write for particulars, 352-613-2289 or email bocey@hotmail.com or Bob, PO Box 1121, Crystal River, FL 34423.



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World Radio History

READER'SFORUM

MORE PSA SUGGESTIONS

I agree with much that the author, Dan Slentz, states in his article "Underwriting and PSA Tips for Noncoms" (RW April 25). However, I take exception to a few of his points.

When "building your brand," you must be careful to not promote your business or product since "No promotional announcement on behalf of for profit entities shall be broadcast at any time" (from 47C.F.R. §73.503(d)). It also states, "However, acknowledgements of contributions can be made." This does not prohibit an NCE station from running commercials and promoting bona fide 501(c)3 nonprofit entities and for the station itself.

But watch out for prohibited complications involving commercial entities when tickets become involved.

The underwriting rule is for acknowledging contributions, and the FCC therefore allows identification of the donor, but there can be no promotional content. Broadcasters have figured out that the FCC will ding you for calls to action, pricing, comparatives and qualitative statements. Those prohibitions are not specified in the rules but are particular ways the FCC specified as reasons it fined stations for not adhering to the rule prohibiting any promotional announcements for commercial entities. Those are not necessarily the only ways to get into trouble for promoting a commercial entity.

The FCC rules do not have a rule exemption for slogans, so there is nothing allowing promotional or otherwise prohibited wordings when used within a slogan. About 15 years ago, I was on a conference call with a number of NCE stations addressing this very issue. Someone used the example that you could say, "You are in our hands with 'MyState' Insurance" but that "good" could not be used in the popular slogan in an underwriting announcement because it is a comparative word that represents the company. It does not matter whether or not it is in a slogan.

GM JOURNAL

Underwriting and PSA Tips for Non-Coms

LOW-POWER CONCERNS

The author correctly stated that "If it feels, smells, looks, tastes or sounds like a commercial, it probably *is* a commercial!" But I would take that statement farther to say, "If it sounds promotional, then it is not allowed." Permissible underwriting statements usually have passive verbs and do not include adjectives or adverbs.

Also, an underwriting announcement should be short. The FCC in DA-18-74 (a ruling dated Feb. 1) against two NCE stations said underwriting announcements 30 to 90 seconds in length were too long.

In paragraph three, the FCC states: "While an NCE licensee may broadcast underwriting announcements identifying entities that donate to the station by name, such announcements may not promote an entity's businesses, products, or services. In addition, such announcements may not contain comparative or qualitative descriptions; price information (sales or discounts); calls to action; inducements to buy, sell, rent, or lease; and excessively detailed 'menu listings' of services offered by the entity. While the commission has not adopted any quantitative guidelines on underwriting announcements, it has found that the longer the announcement, the more likely it is to contain material that is inconsistent with their 'identification only' purpose. At the same time, however, the commission has acknowledged that it is at times difficult to distinguish between language that promotes versus that which merely identifies the underwriter. Consequently, the commission expects that licensees exercise reasonable 'good faith' judgment in this area and affords some latitude to the judgments of licensees who do so."

I recall reading (I cannot put my hand on the reference right now) that there can be situations when providing contact and location information for the donor's business would be appropriate — if it were not common knowledge, easily obtainable or if the business might be easily confused with other businesses. It communicated the expectation that this would not be common for most underwriting announcements.

Sometimes, when we see a forest we can forget to look at the trees. After all, "promotion" is the term used in the rule for what is prohibited in underwriting statements. Let's get back to basics for compliance. We must stick to what is permitted: Identify the donor whose donation we acknowledge! Then it is a lot easier to avoid what is not allowed — *anything* promotional.

Alan Kilgore, WB4THU
Chief Engineer, WRVM(FM)
Suring, Wis.

UNDERSTANDING PIRACY'S ROOTS

David Honing's excellent article "What Will Take Down Radio Pirates — And What Won't" (RW Sept. 26) hit the nail squarely on the head, particularly with regard to his opinion that minority communities are under-served by mainline radio stations.

While not excusing radio piracy, it does help to explain it. And while illegal interference to licensed stations is unacceptable, I suspect in many cases licensees so challenged object to interlopers in their exclusive game preserves, same as established restaurants harass the hotdog vendor on the corner. I applaud Multicultural Media, *et. al.* for highlighting and championing minority representation on the radio dial, albeit not through piracy.

Licensed stations need to awaken to this market and serve it with its music, news, entertainment and sponsors to diminish the appeal of radio piracy to those underserved communities.

But Honing's best quote is: "First, [Congress] needs to restore the cuts to the FCC's budget that brought about the closure of critical field offices." Hallelujah and amen! That astounding action was akin to closing half the hospitals in the country in the midst of a crippling epidemic. Unfortunately, many highly qualified FCC engineers were cast aside in favor of lawyers who lack grassroots experience with radio communications engineering. Yes, by all means: Ramp-up those shuttered field offices and give the radio cops the tools necessary to patrol the airwaves again!

James B. Potter
Owner/CEO
Cutting Edge Engineering, The Little Spot Shop and JBPotter Agency
Kimberling City, Mo.

ANOTHER RADIO RASCAL

Wikimedia Commons

Responding to "The Rabble-Rousers of Early Radio Broadcasting," RW Sept. 1:

Very good article; well-researched. The one rascal not mentioned, however, is the Rev. Carl McIntire, who lost his FM radio license in Media, Pa., in 1973-74. He then proceeded to run a pirate AM station off the coast of New Jersey for a few months.

McIntire's one-side right wing broadcasts were curtailed because he did not provide opposing views required under The Fairness Doctrine. (In 1987, Ronald Reagan eliminated the Fairness Doctrine, paving the way for Rush Limbaugh.)

Thanks for the great information!

Pete Simon
Arvada, Colo.

Write to RW
Email **radioworld@futurenet.com** with "Letter to the Editor" in the subject field. Please include issue date and story headline.

World Radio History

READER'SFORUM

ALLOCATIONS AND THE C4 PROPOSAL

Responding to "What Is the Real Problem With the Proposed FM Class C4?" (www.radioworld.com, keyword "Haynes"):

iStockphoto/anigoweb

I find this commentary more than a little disingenuous. The author seems to imply that he is somehow losing coverage over his primary broadcast area because he can't have 12 kW.

A cursory check of WRTM shows that unlike the implication in the commentary, it's *not* a signal licensed to Jackson, Miss. It is licensed to a suburb well outside the city (Sharon, Miss.), and clearly it has been shoehorned in as close as possible to the larger Jackson metro using a highly directional antenna that barely covers its community of license.

In other words, instead of working within the established schema for Class A FMs to be local broadcast services — not regional — WRTM has attempted to finagle its way into audience it's not supposed to have, and now is demanding that the FCC give it even more coverage that it's not supposed to have.

If you want to argue that the FCC's system of allocations is a poor fit for the modern radio usage landscape? Fine, I'm 100 percent in agreement with that. But don't pretend that you're somehow magically being deprived of something and doubling your power — no doubt at the expense of both other nearby stations *and* the overall health/noise floor of the band — is going to solve all your problems.

We've been here before when all the Class C AM stations were increased to 1 kW day/night, and look what happened: It just made the mess worse.

If WRTM isn't financially viable for you now, then it should be allowed to go under and re-auctioned to someone else. And if no one claims it, so much the better, as it cleans up the band just that much more.

Aaron Read
Director of Information Technology & Engineering
Rhode Island Public Radio
Providence, R.I.

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9	Tieline Technology	www.tieline.com
2, 17, 19, 32	Wheatstone Corporation	www.wheatstone.com

FINDING AND TRAINING ENGINEERS

A recent Radio World email blast included a link to a piece titled "Help! I Have to Train an Engineer!" (from 2006). I found it somewhat amusing. Until I didn't.

We have a problem finding and training broadcast engineers. It is a demanding career on many levels.

You need to understand audio, RF, computer networking and even computers. You will have to solder and crimp, and you may be asked to perform board level troubleshooting and repair.

This is a skill set that is not taught in most four-year degree programs. More specialized schools will do a better job, but they are not found in every community.

The article listed quite a few programs, but I wanted to make sure folks know about the training provided by Synergetic Audio Concepts (aka Syn-Aud-Con) and, more recently, Pro Audio Training (*www.proaudiotraining.com*).

In the way-too-many years that I've been attending seminars and training programs, this is the one that stands out. Their training is geared toward systems that terminate at a loudspeaker instead of a transmitter, but they cover the fundamentals so well that I recommend them to anyone interested in audio.

Syn-Aud-Con has been at the forefront of audio training since the early 1970s. They are the ones that brought pressure zone microphones, TEF and LEDE to the attention of the audio community at large. Which is kind of cool when you think about it.

But their biggest strength (to me at least) is their coverage of the fundamentals, the math and physics behind sound in the air and in a copper wire (including Ethernet/IP). Students can't help but understand how the decibel and Ohm's Law work and what the terms mean.

They offer both online and in-person training, and I think it is invaluable! I happily recommend it to anyone who asks.

Bill Thompson

CARRIER CURRENT

THE HISTORY OF WCRP

In the late 1960's, "Radio Free Ramah" debuted as a pirate station broadcasting sporadically from bunks 5, 10, and 13.

In 1972, sensing its educational potential, the camp made radio an official camp activity, built the station its first real studio under Bet Travis, and renamed it WCRP.

In the 1970's, WCRP became a Ramah institution. Among its many firsts was breaking the news to the camp of the dramatic Israeli rescue at Entebbe in the summer of 1976.

Meanwhile, the "Camp Radio" concept was spreading around the country. Today, over 250 camp radio stations, modeled on WCRP, operate at all kinds of camps including other Ramah's, Jewish, Christian, Sports and YMCA camps, and camps for special and underprivileged children.

In 1976, a company was incorporated to build these camp stations. Today, this company, Radio Systems, manufactures broadcast equipment that is used at educational and commercial stations around the world.

This new studio equipment, manufactured by Radio Systems, is presented to Camp Ramah in the Poconos on the 25th anniversary of WCRP, the station where it all began.

Daniel I. Rosenbaum
Camper, 1968-1970
President, Radio Systems, Inc.

Interesting article on "The End of Carrier Current?" by Dan Braverman from October 2017.

There are several hobbyists still out there doing it. I've been doing this mode of broadcasting since early 1991, and I find it interesting that, when you see Carrier-Current gear come up on eBay, it sells out almost immediately. So somebody must still want this mode of broadcasting out there.

It is true that in the Part 15 license-free broadcasting circles, the 10 foot antenna to a 100 mW PEP AM transmitter is way more popular. With most folks, the idea of Carrier Current, in which you couple to the power lines, seems to scare people off of trying it. Given that, the majority of hobbyists out there are broadcast engineers of whom know what they are getting into. Nonetheless, it is another permissible broadcasting method that's license-free, and maybe still an LPAM option for those who can't do LPFM, for whatever reason.

Besides broadcast, Carrier-Current operations still exist in places where people don't realize. Those wired-wireless FM intercoms? They use a low frequency of around 170 kHz and couple about 10 milliwatts to your house wiring in order to communicate within your home. Mining companies use it as a means to couple communications to what already exists for them. Power lines that have been installed down through mining shafts. Power companies still use carrier-current techniques for power station switching and monitoring.

Anyway, Carrier-Current techniques still exist, but with both LPB Inc., and Radio Systems, gone, this is indeed a blow to this method of broadcasting.

Phil Schoenthal
Owner/operator, AM610 / AM1620
Poca, W.Va.

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