FACILITY FOCUS: AGM BAKERSFIELD — Page 24

RADIOWORLD

NOVEMBER 7, 2018 | The News Source for Radio Managers and Engineers | $5.00 | RADIOWORLD.COM

INSIDE

Blackloud Releases Soundot FM Radio for Apple

AF-1 uses tiny headset tuner attached via Lightning port

BY MICHAEL LECLAIR

For many in the radio industry, it has been a great frustration to see the wide acceptance of data phones with their powerful interfaces and networking capabilities. Through a combination of capital investment, brilliant design and innovative manufacturing, the data phone has become nearly ubiquitous and revolutionized our telecommunications infrastructure.

At the same time, Apple Corp. has declined to develop a method of using its popular iPhone — over 1 billion sold worldwide since 2007 — to play out over-the-air radio stations as part of its wide range of capabilities (streaming is possible; for example the iHeartRadio app). Some observers say this is because Apple makes a profit on its own music-on-demand services. In 2013, Apple launched iTunes Radio, a service that seems designed to replace commercial radio and that is now known as Apple Music Radio.

Consumer demand for a radio in their

(continued on page 3)

Finally, an FM radio that works on an iPhone.

New Radio Data Service Subcommittee Launched

Also consolidates the European RDS and North American RBDS standards

METADATA

BY RANDY J. STINE

WASHINGTON — Delivering a quality "metadata" experience (for example, song title, artist and album artwork for FM broadcasters) to the digital dashboard is more critical than ever for broadcasters. Now, a new collaboration between the National Association of Broadcasters and the Consumer Technology Association aims to provide a better framework to support the data delivery needs of radio broadcasters.

The National Radio Systems

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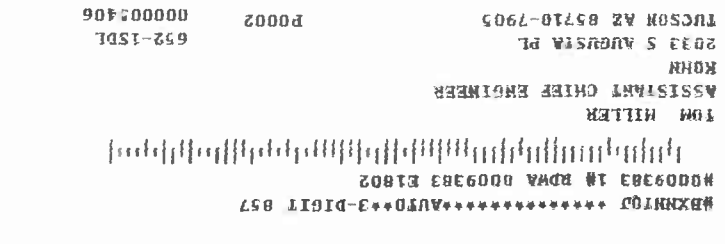

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RADIOWORLD

Vol. 42 No. 28 November 7, 2018

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Publisher, Radio World International
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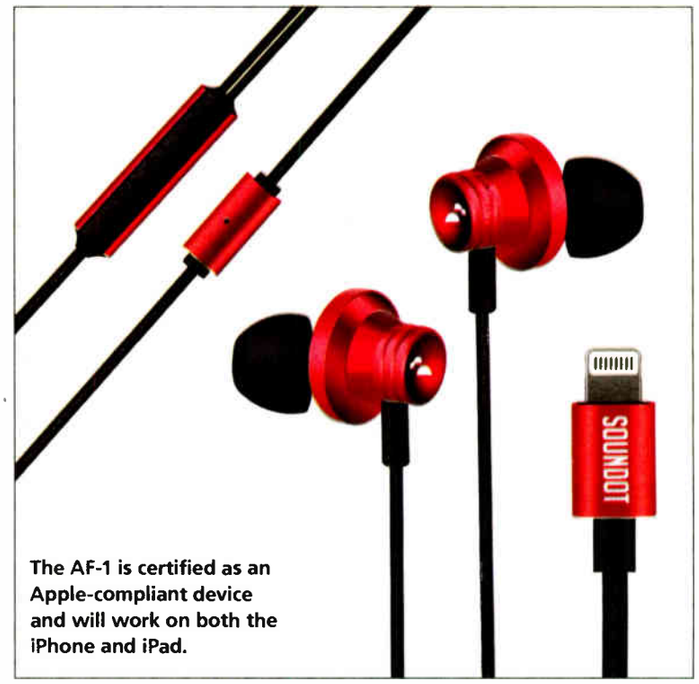
SOUNDOT

(continued from page 1)

iPhones has always been present, and it appeared to peak in 2017, when the head of the FCC itself called on Apple to "do the right thing" and enable FM radio in their phones. This request was based on outside analysts' suspicions that it was potentially as easy as a software download to activate an existing internal communications chip.

Apple responded to Chairman Pai shortly after, saying it had removed FM capability from its internal chipsets years earlier and that even the world's most valuable consumer products company couldn't make it work. And, well, no one could force it to try. If Apple didn't want to. Good talk.



The AF-1 is certified as an Apple-compliant device and will work on both the iPhone and iPad.

RADIO STILL RELEVANT

Yet some who love their iPhones saw good reason to have a radio capable device. For one reason, it permits very efficient listening to the existing FM infrastructure. FM is free and does not require using a contracted streaming service that charges by the amount of downloaded data consumed. Others have pointed out that even if 100 percent of the capacity of advanced 4G wireless systems were fully utilized to simply replicate the volume of drive-time live radio listening in a large city, the 4G systems would fold under the demand.

Not to mention the safety argument. Repeated failures of wireless data services in the aftermath of large storms have demonstrated limited reliability in an emergency. FM broadcasters with their in-house engineering staffs dedicated to maintaining one or a few large transmitters are often better prepared to provide news and vital information to large populations in an emergency. Portable devices, including the iPhone, are ideal emergency radios because they are easily recharged with access to even a small generator and have batteries that will run for many hours working as a radio during times when the wireless networks are not functioning.

Of course, there are many rural areas that simply don't have 4G service outside of interstate highway corridors or large cities. FM radio is an international standard available almost everywhere.

GOOD RADIO

It isn't hard to understand why I have been interested in Blackloud's development of the AF-1 to bring FM radio to the iPhone. I love my iPhone, too, and I can't imagine getting through a typical day as a broadcast engineer without it. But radio is still a relevant and powerful service which is available to everyone for free. When I was offered a chance to review an early release model, I jumped right on it.

I have been running the Soundot AF-1 headset, complete with FM service, through its paces for about 15 days. I'm pleased to report it's quite a good radio. In my attic (where I do my writing), I could pick up about 29 individual stations, some of which were NCEs and some of which are even out-of-market (e.g., from Providence), in addition to all the Boston-licensed Class B commercial stations.

The radio chip itself, the Si4705 developed by Silicon Labs, is tiny. In the photo of the iPhone with the headset plugged in on page 1, the radio module is the 2-inch red cylinder that forms the splitter to the two earbud cables. The chip itself is about 1/8-inch square (3 mm). The antenna is derived from the headset cord.

THERE'S AN APP FOR IT

To operate the radio you must first download the free app, which you can get in the App Store by searching for "AF-1" or "Soundot." I was able to install it and get it running in something less than five minutes.

The main screen features a "tuning dial" in the center that can be spun up or down the radio dial, mimicking the classic tuner knob on a car radio. Tuning is very rapid (there is no need to establish a server connection and initially buffer an audio stream) so that you can move between stations instantly. Favorites can be dragged down to buttons at the bottom of the screen for quick selection. There are tuning "seek" buttons if you don't have favorites. It's so easy to use that I figured out all the controls in just minutes, without having to read any instructions.

Volume control is done via the hardware buttons on the phone used to set the ringer volume or via a small switch pad in the headphone cord. Once the radio is

(continued on page 5)

BLACKLOUD OFFERS STATIONS A CUT

Blackloud has a radio affiliate program to encourage stations to promote the headset.

Stations that join at the company's website receive a code that's unique to them, which they share with listeners. Listeners get a 10 percent discount off the AF1 FM Headset, which retails for $79.89, after entering the code and purchasing the headset on *www.blackloud.com*. Affiliates earn a 15 percent commission on sales associated with their code.

Blackloud also offers an affiliate program for webstore owners.

Inovonics Salutes President/CEO for Three Decades of Hard Work

Ben Barber is celebrating his 30th anniversary working at the broadcast manufacturer

Inovonics Inc. saluted longtime employee and current President/CEO Ben Barber on the occasion of his 30th anniversary at the company.

According to company founder Jim Wood, the business really took off when Barber was promoted to chief operating officer in 2007, and later elevated to president/CEO in 2012.

"Our company has always had a close-knit, family atmosphere," said Wood, "but Ben has brought a new level of discipline and professionalism to its management that has really paid off in sales and corporate growth."

Barber joined Inovonics in 1988, not long after the company's move from Campbell, Calif., to the west side of Santa Cruz. Fresh from a missionary assignment at a Christian radio station in Alaska, Barber rapidly became a key figure in the development of new products and manufacturing

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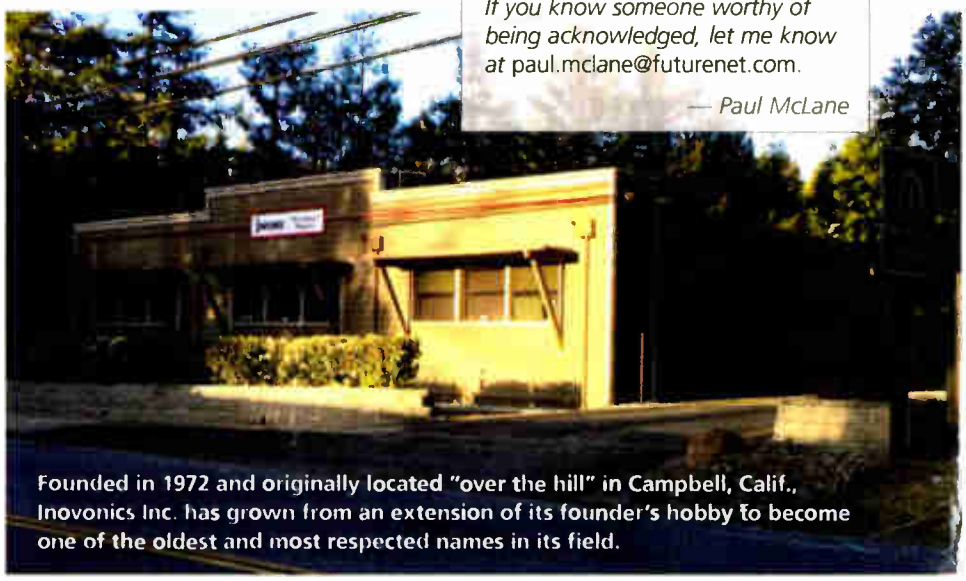
In 1988, fresh from a missionary assignment at a Christian radio station in Alaska, Barber rapidly became a key figure in the development of new products and manufacturing methods at Inovonics.



Founded in 1972 and originally located "over the hill" in Campbell, Calif., Inovonics Inc. has grown from an extension of its founder's hobby to become one of the oldest and most respected names in its field.

FROM THE EDITOR

At Radio World, we celebrate the symbiosis between equipment users and equipment developers, because a healthy supply marketplace benefits all of us. As part of that, we salute people who have made a difference in the world of radio and audio technology, like Ben Barber. If you know someone worthy of being acknowledged, let me know at paul.mclane@futurenet.com.

— Paul McLane

THIS ISSUE

NOVEMBER 7, 2018

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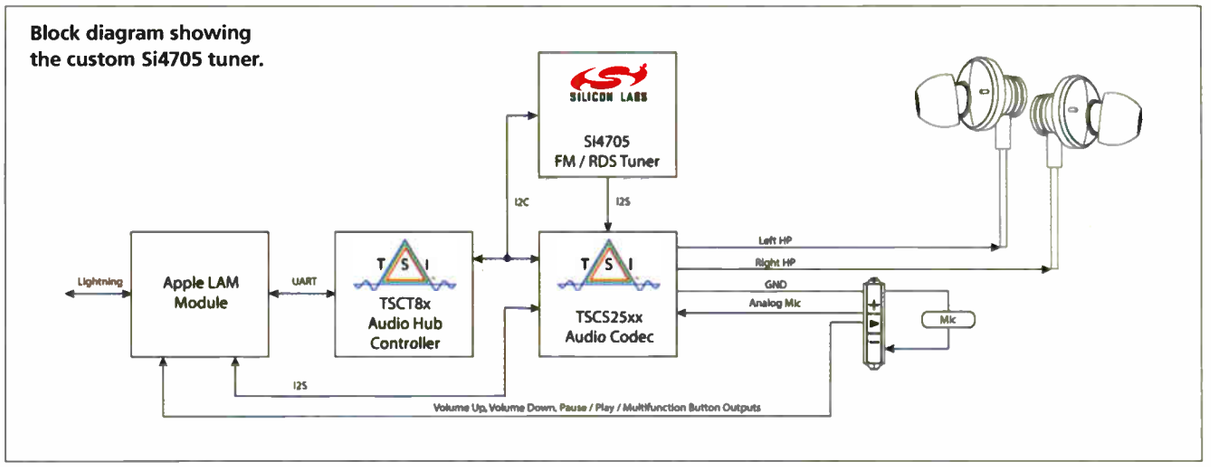
Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by Future US, Inc., 11 West 42nd Street, 15th Floor, New York, NY 10036-8002. Phone: (703) 852-4600, Fax: (703) 852-4583. Periodicals postage rates are paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.



SOUNDOT

(continued from page 3)

playing you can turn off the screen and put it in your pocket and it will continue playing until manually turned off.

Over the course of several hours of listening to the radio I estimated that on my phone I would at least get 20 hours of operation without needing a recharge. Based on the age of the phone this may vary somewhat.

The AF-1 is fully certified as compatible with Apple devices such as the iPhone or an iPad tablet. It was developed to work within the world of Apple products, not as a "jailbreak" or hack.

PACKS A LOT

Modern consumer electronics can fit quite a lot into a small package these days as the accompanying block diagram (above) shows. Not only does the AF-1 include a radio chip, to work with an Apple device it must include other ICs specifically designed to adapt to the Apple Lightning interface. The reference design was developed by Tempo Semiconductor as shown.

Included in the app is a five-band (soon to be six-band) equalizer to allow customization of the sound to individual tastes or by station. The bands run between 50 and 5 kHz (10 kHz).

The current version of the radio app does not allow display of the RDS messaging with the essential Artist and Title fields used by music stations. It turns out that this capability is part of the Si4705 chip and adding RDS can be achieved by an upgrade in the app. The new version is in beta test. Blackloud generously let me try the beta version of the app and indeed it picks up the RDS messaging on stations all over Boston. It adds a nice visual element to the radio that many of us have come to expect.

A few years back, I remember a small portable radio that was offered to stations as a premium for listeners. I can imagine the AF-1 would make a nice station giveaway item, and in the process, it would promote FM radio to many people who would like to have it but can't obtain it on their phones. Perhaps it would also help to introduce a new and younger generation to radio? Only time will tell.

Blackloud announced the AF-1 was available for purchase as of mid-September. The CFI FM Headset for USB Type C Androids is expected in 2019.

Comment on this or any story to radioworld@futurenet.com.

Michael LeClair, CPBE, is manager of broadcast systems at WBUR, Boston and former editor of RW Engineering Extra.

BARBER

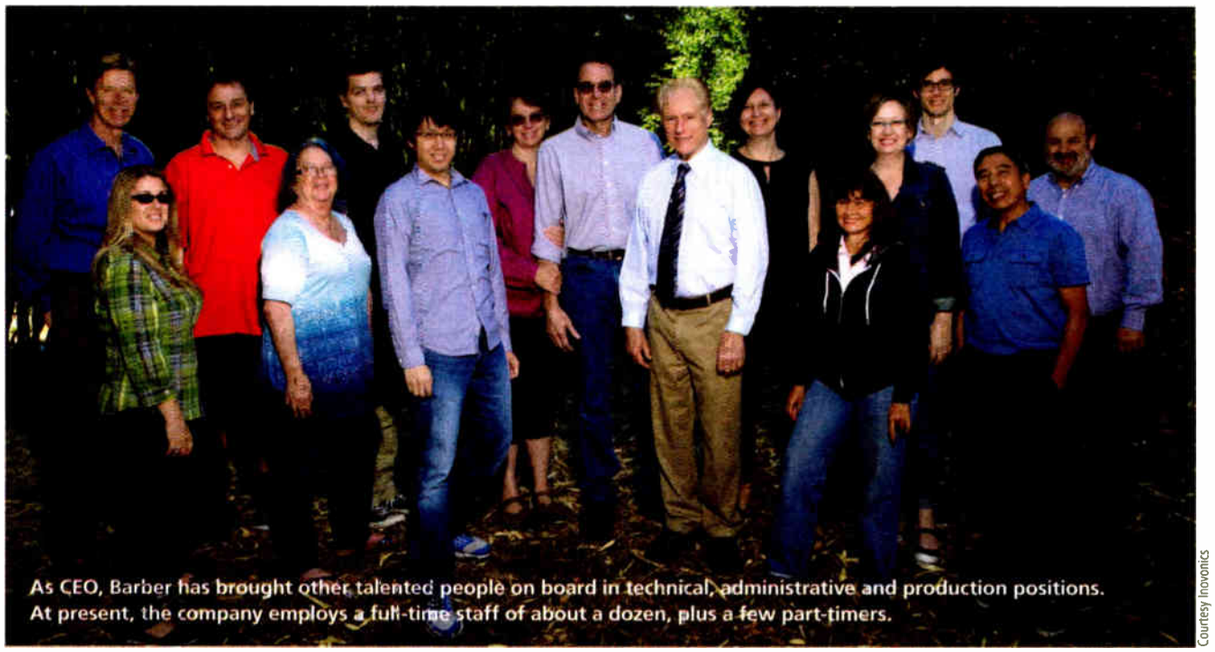
(continued from page 4)

methods at Inovonics, Wood said. This year marks Barber's 30-year anniversary with the company, and the company saluted him.

Barber's experience in broadcasting, coupled with a lifetime interest and formal education in electronics, made him a valuable asset to the company, according to Wood.

It was Barber's decision to move the company to its location in Felton in 2009, according to Wood. The company purchased a property on Highway 9 and made extensive upgrades to the 1951 building.

In his capacity as CEO, Barber has also brought others on board in technical, administrative and production positions, according to Inovonics. At present, the company employs a full-time staff of about a dozen, plus a few part-time helpers, many of whom are also San Lorenzo Valley residents.



As CEO, Barber has brought other talented people on board in technical, administrative and production positions. At present, the company employs a full-time staff of about a dozen, plus a few part-timers.

Courtesy Inovonics

METADATA

(continued from page 1)

Committee, a technical standards-setting body cosponsored by NAB and CTA, has launched the Data Services and Metadata Subcommittee. The new subcommittee, successor to the NRSC's Radio Broadcast Data Systems subcommittee, is chaired by Dan Mansergh, chief technology officer for KQED Inc.

The RDS communications protocol, which allows FM radio stations to incorporate inaudible signals into their broadcasts on a 57 kHz subcarrier, was introduced in the U.S. in 1993 to add data capability but also with hopes to eventually increase revenues through non-traditional services. Since then, radio frequency subcarrier usage and wireless data distribution has grown in this country, observers say. CTA does not track how many vehicles on the road in this country have RDS capability, but it has become commonplace on newer vehicles.

One area the group plans to explore is data broadcasting applications associated with Emergency Alerts, with the goal of helping broadcast engineers understand and deploy the best alerting infrastructure possible, according to a press release.

With the creation of the new committee also comes the consolidation of the European RDS and North American RBDS Standards, according to the NRSC.

Radio World interviewed Mansergh, NAB Vice President of Advanced Engineering David Layer and CTA Senior Director of Technology and Standards Mike Bergman about the new subcommittee and what brought about the need for the change. Their emailed replies to our questions follow.

Radio World: *Why the change in subcommittees at this point, and how long has it been in discussion?*

David Layer: In 2016, the NRSC and the RDS Forum (the group which manages the European version of the RDS Standard) agreed to incorporate the provisions of the NRSC-4 Standard (originally adopted as the RBDS Standard) unique to North America into the IEC version of the RDS Standard (IEC 62106).

The NRSC has been managing the U.S. version of RDS, referred to as the RBDS Standard. The RDS Forum manages the European equivalent, and there were relatively few differences between the two standards. This consolidation of the European RDS and North American RBDS standards is a long-discussed goal and has the advantage of making all RDS/RBDS information available in a single document.

One reason that the NRSC and RDS Forum were discussing this possibility at this time is that the RDS Forum has been undertaking a significant updating and revising of IEC 62106, partly to add RDS2 to that standard. As part of this revision, the RDS standard document was split into seven separate parts, and it became clear that it would be a straightforward matter to create an additional part containing the provisions specific to North America.

Based upon this plan, the NRSC and RDS Forum worked together to create the North America-specific "Part 7" of the updated IEC 62106, and in April 2018 the RBDS Subcommittee adopted this Part 7 document and authorized its incorporation into the IEC Standard. Note that until final adoption of the IEC document by the IEC, the current NRSC-4 Standard remains in effect.

> **Radio has always been** primarily a one-way medium, but by bringing internet connectivity to receivers, listeners will have many more opportunities to interact with radio stations.
>
> — Mike Bergman

Further, broadcasters have been implementing other methods for transmitting station, artist, title and other information with the audio program, in addition to RDS. First, HD Radio with its own rich metadata capabilities, and then internet streaming, came along to supplement the broadcaster toolkit. Consequently, the work in the RBDS Subcommittee has been increasingly broadened beyond the RDS transport.

Given that the NRSC's version of the RDS Standard will soon be retired, it was an opportune time to consider re-naming and re-chartering the RBDS Subcommittee as the Data Services and Metadata Subcommittee.

RW: *So the RBDS subcommittee is gone, but do all RBDS subcommittee standards and guidelines for RDS in this country remain in place?*

Layer: All of the documents that fell within the purview of the RBDS Subcommittee will now fall within the purview of the DSM Subcommittee. The only document that will be retired is the NRSC-4 Standard, and that will happen when the updated version of IEC-62106 is given final approval (expected to occur by the end of 2018).

RW: *What will be the focus of the DSM subcommittee?*

Dan Mansergh: The DSM subcommittee will focus on the digital information that radio broadcasters send to their audiences via various data transmission technologies in use today. Like its predecessor, it is a technical body that will develop guidelines and standards related to these services and technologies.

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METADATA

(continued from page 6)

RW: *You say in the joint press release announcing the changes that "more methods are deployed to transmit data beyond RDS." What other methods are you talking about?*
Mansergh: Since the introduction of RDS, there have been two principal additional methods employed to transmit data to radio receivers: digital radio (HD Radio in North America, with other technologies in use elsewhere) and hybrid radio (over-the-air plus internet protocol). The DSM subcommittee will consider these methods of data transmission and others that evolve over time.

Note that regarding HD Radio, while the DSM subcommittee may consider data services and metadata over HD Radio signals, the DRB subcommittee will continue to have purview over the NRSC-5 standard as well as HD Radio developments pertaining to the transmission of digital radio signals.

RW: *Beyond the predictable broadcasting song title, artist information, station IDs, what types of things are radio stations doing with their RDS displays? For example, alarms, notifications, commercial messaging, couponing and EAS.*
Mike Bergman: Data transmission over RDS is expected to focus on basic information like station information, song title and artist and program service (including genre). There are more capabilities in the RDS technology suite, but these are the most popular with broadcasters and the ones best supported by hardware.

In addition, one of the most important bits of information sent over RDS is the program information code, since this is used to help identify a radio signal's internet information (using RadioDNS), which is used in hybrid radio receiver implementations.

RW: *How do you envision data delivery for radio broadcasters could change in the next decade?*
Bergman: Using hybrid radio technology, one of the main improvements to terrestrial radio services will revolve around the use of interactivity with listeners. Radio has always been primarily a one-way medium, but by bringing internet connectivity to receivers, listeners will have many more opportunities to interact with radio stations.

Likewise, radio stations will have an opportunity to know more about their listeners, not just who they are but where they are, and by knowing this will have the ability to better target content and advertising that is highly relevant.

RW: *How does DSM's work figure to impact the NAB's efforts to collaborate with automakers on the digital dashboard of the future?*
Layer: NAB's auto initiative does not presently intersect with the work of the NRSC.

RW: *Is it possible DSM's work will have ties to any autonomous vehicle development by automakers?*
Layer: The DSM subcommittee is not likely to focus on a project strictly related to autonomous vehicle development in the near future.

RW: *How many members make up the DSM subcommittee?*
Mansergh: You can find a list of DSM subcommittee members here: *www.nrscstandards.org/committees/dsm/dsm-member-list.pdf.*

The members of the RBDS Subcommittee are generally supportive of the change and look forward to continuing their work and expanding to new areas of interest within the expanded scope of the new DSM Subcommittee.

RW: How often will the DSM subcommittee meet?
Mansergh: The subcommittee meets at least three times a year — at CES in January, at the NAB Show in April, and at the Radio Show in September. These are all face-to-face meetings; electronic meetings are scheduled when needed. The DSM subcommittee will establish working groups to do detailed work on specific categories, and these working groups will typically meet once per month, or more or less often as required by current activities.

RW: Describe NAB's relationship with CTA and the importance of the two organizations continuing to work together on radio technical issues going forward.
Layer: NAB and CTA have a long and productive relationship working together as sponsors of the NRSC. Terrestrial radio is a system, with the broadcast/transmission side and the consumer receiver side as integral and non-separable parts. Both organizations recognize this and will continue to work together for the betterment and constant improvement of terrestrial radio services.

REGULATORY

FCC SEEKS WORKABLE SOLUTION FOR BIG AM SIGNALS

The FCC in October proposed revised interference protections for Class A AM stations in the United States. One proposal is for daytime hours, two are for protection during the "critical hours" periods and two are for protection of Class A AM stations at night.

The question of what to do about interference rules concerning these signals has been a notable one. Class A stations operate on clear channels with 10 to 50 kW.

"These alternative proposals are designed to preserve some of Class A stations' wide area coverage, while relieving more local stations of their current obligation to protect Class A stations from interference," the commission wrote in adopting this Second Further Notice of Proposed Rulemaking in its AM revitalization proceeding.

"Our proposals should enable local stations to provide greater and improved local service to their communities, especially at night."

Here are the proposals on which the FCC is asking input:

• *Daytime hours proposal:* During daytime hours, Class A AM stations would be protected to their 0.5 mV/m daytime groundwave contour, from both co-channel and first-adjacent channel stations;

• *Critical hours proposals:* Alternative 1: During critical hours, Class A AM stations would be afforded no protection from other AM stations; or Alternative 2: During critical hours, Class A AM stations would be protected to their 0.5 mV/m groundwave contour;

• *Nighttime hours proposals:* Alternative 1: During nighttime hours, there may be no overlap between a Class A AM station's 0.5 mV/m nighttime groundwave contour and any interfering AM station's 0.025 mV/m 10% skywave contour (calculated using the single station method); or Alternative 2: During nighttime hours, Class A AM stations would be protected from other AM stations in the same manner as Class B AM stations are protected, that is, interference may not be increased above the greater of the 0.5 mV/m nighttime groundwave contour or the 50% exclusion RSS NIF level (calculated using the multiple station method).

As characterized by Commissioner Michael O'Rielly, the FCC here "is considering further reducing the contour by which Class A stations are protected at night, in order to represent a more realistic view of where a listenable signal is, and, therefore, actual listeners. At the same time, the commission also has proposed to enhance Class A stations' co-channel interference protections, thereby reducing the potential impact on Class A stations' nighttime service.

"The commission bases its new proposal on engineering data in the record indicating that protection of the 0.1 mV/m groundwave contour cannot be heard under current noise conditions," O'Rielly continued.

"Therefore, it is contended, that it is only necessary to protect Class A AM stations to their 0.5 mV/m groundwave contour. If true, I would be more sympathetic to this change as it wouldn't alter the realistic reach or expectations of those holding existing licenses. I appreciate the chairman accommodating my request to clarify that, at this time, this is not a universally held viewpoint. I hope the record will reflect a consensus by engineers on how far a listenable signal extends. I will be hesitant to support a final order on this proposal without such consensus." But he favored continuing the process to foster discussion of these questions.

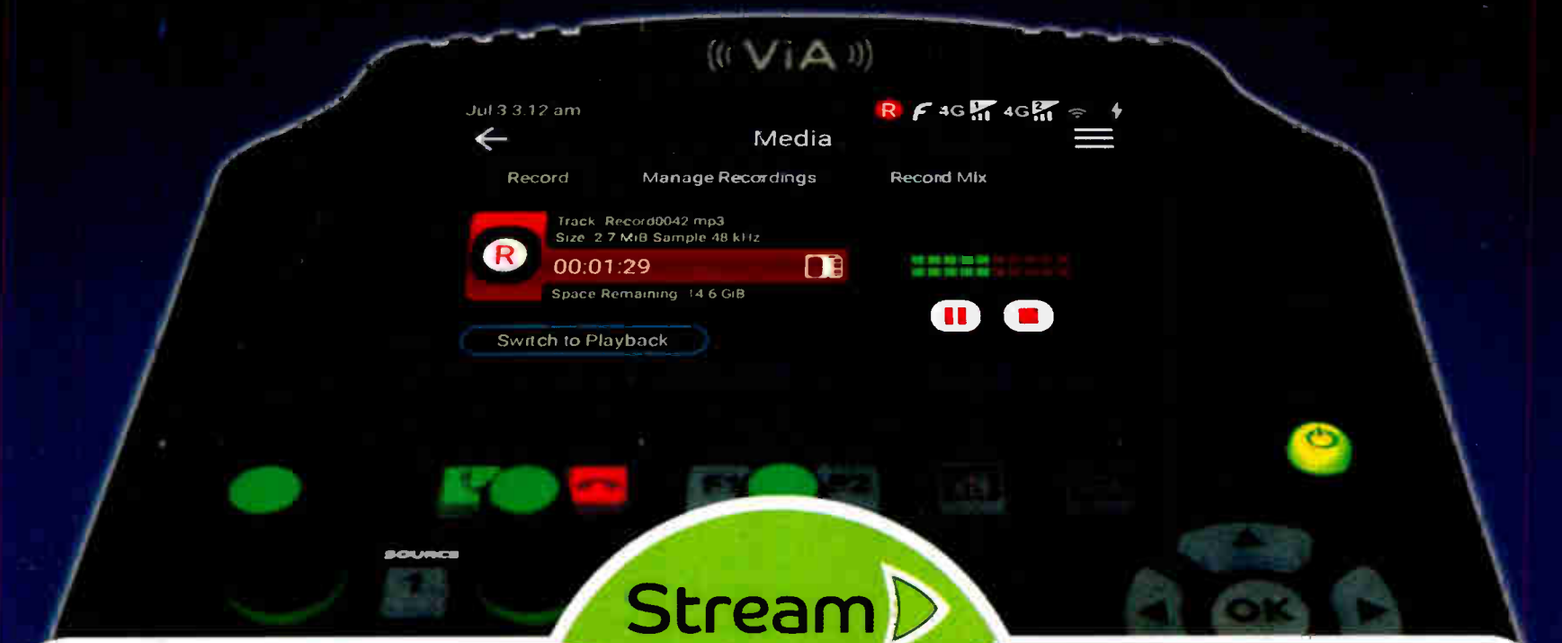
The FCC is asking for comments on those ideas as well as any effects on the functioning of the Emergency Alert and Integrated Public Alert and Warning Systems (EAS and IPAWS).

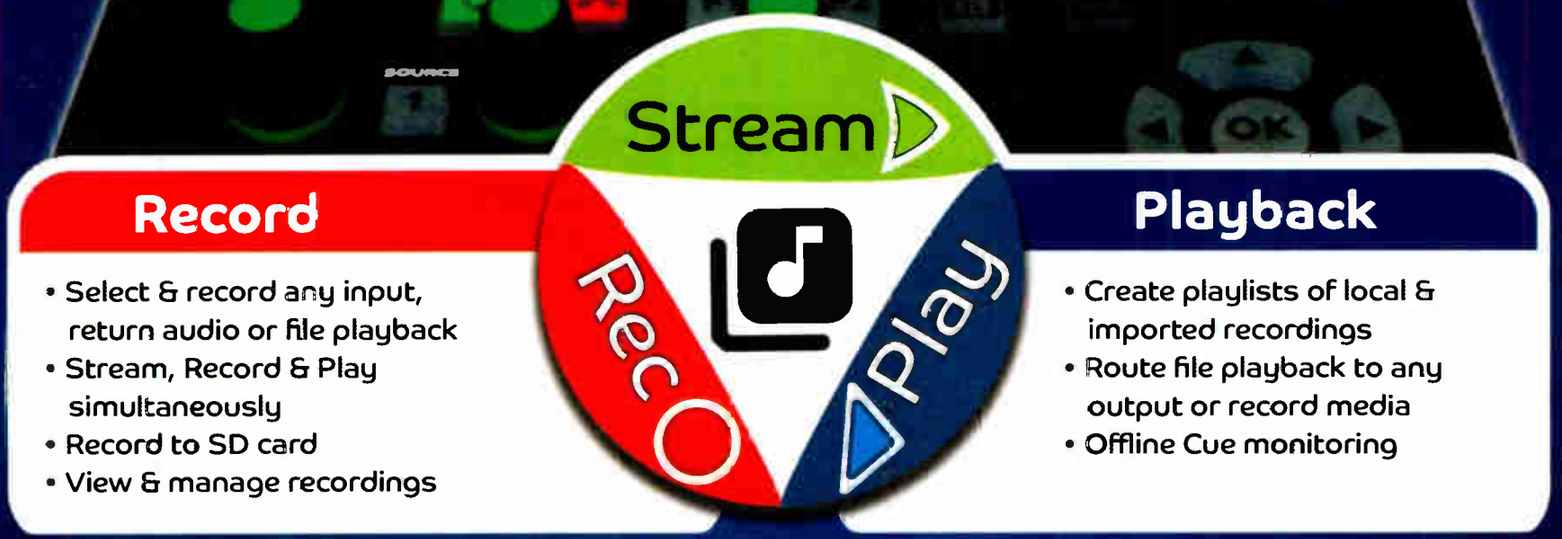
Though it is not revising its proposals for daytime protection for Class B, C and D stations or for changes to nighttime root-sum-square (RSS) calculation methodology, it also wants input about the impact on those of its latest proposals to modify Class A protections.

Comment on the Second Further Notice of Proposed Rulemaking in FCC MB Docket No. 13-249, "Revitalization of the AM Radio Service." Comments and replies will be due 60 and 90 days, respectively, after publication in the Federal Register, which was pending in October at press time.

More than Just an IP Codec

Introducing Record and Playback on the ViA





- Select & record any input, return audio or file playback
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Build This Inexpensive and Versatile "Lazy Susan" Mast Mount

Also, here's a tip to prevent "exploding squirrels" from taking down your backup generator

WORKBENCH

by John Bisset

Email Workbench tips to johnpbisset@gmail.com

Jack Roland is based in Denver and is a field engineer for EMF's K-LOVE/Air1 stations. Jack also writes "The KE0VH Hamshack" article on the Society of Broadcast Engineers Chapter 48 page (found at *http://www.smpte-sbe48.org/wp/*).

After reviewing some commercial offerings for tilting his DX Engineering ham radio 5 BTV vertical antenna, which were all pretty pricey, Jack came up with the concept seen in Fig. 1. Jack then came up with what he calls his "lazy Susan" experimental rig,

Using a couple of pieces of zinc-coated angle iron cut from a piece purchased at Home Depot, seen in Fig. 2, Jack added some self-tapping screws to provide a sturdy-yet-inexpensive mount for a vertical antenna.

In this photo, you can see the wing-nuts to release and move the antenna.

Fig. 1: Jack Roland uses angle iron, hinged with a bolt, to make his Lazy Susan Mast.

Fig. 2: A close-up of the angle iron — note the wing nuts that can be removed quickly to lower the mast.

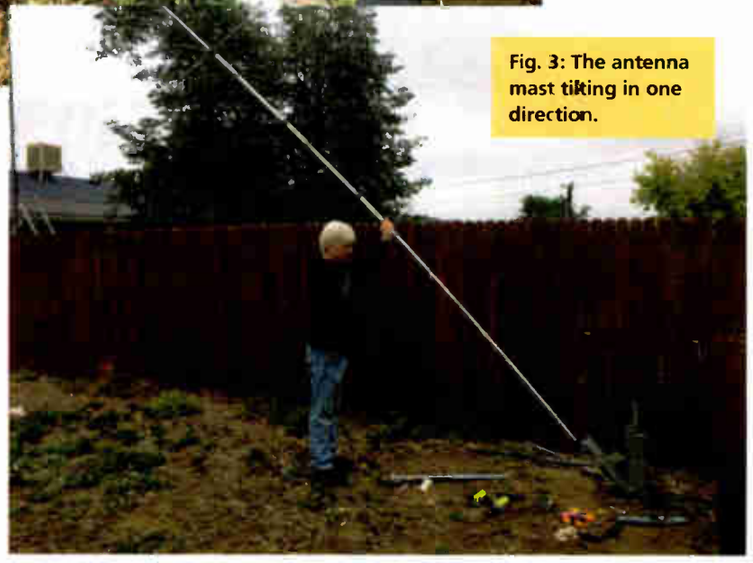

Fig. 3: The antenna mast tilting in one direction.

Fig. 4: And tilting in the other direction.

Fig. 3 shows Jack's friend Harold Hallikainen (W6IWI) holding the antenna mast as it tilts in one direction. Fig. 4 shows the mast tilted in the other direction. The concept is more versatile than anything Jack has seen commercially, is inexpensive to construct and should withstand the 70 mph winds that they sometimes get in Denver.

Since the mast can be lowered, I'm wondering how such a mast could be used in hurricane country. Share your thoughts and your own inventions.

If you are buying Ethernet cable or "IT widgets," you know their cost can nickel and dime you to death. Workbench reader, project consultant and frequent contributor Dan Slentz passes on a great website that an equipment dealer told him about.

The company is found at *www.Monoprice.com*. You'll find that the prices are good, so you'll save money, and the company even offers a lifetime guarantee on their cables.

In addition to Ethernet cables and adaptors, the company sells products for HDMI, USB and video/audio/switching applications. They even sell printer toner!

New Hampshire Public Radio's Stephanie Donnell writes that on the recommendation of the station's generator service technician, she added some coarse (1/2-inch square) screening over the openings for one of NHPR's generators. She thought about using some finer (1/4-inch square) screen, but was concerned about restricting air flow.

Seen in Fig. 5, the larger screen may not keep all of the smallest critters out, such as mice, but it should prevent larger rodents from getting in. The purpose is

(continued on page 12)

HD Radio

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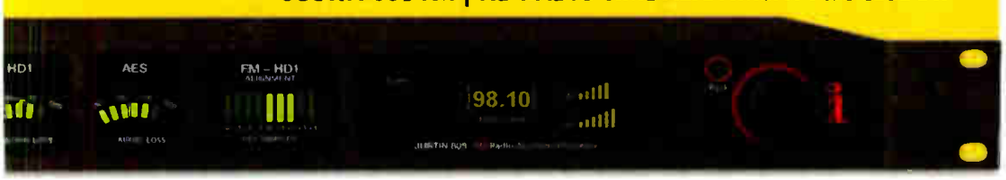

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INOVONICS BROADCAST

Hot Products From Orlando

A sampling of equipment on display at the recent Radio Show in Orlando, Fla.

RADIOSHOW
Produced by RAB and NAB

Comrex HotSwap and Access NX

The latest from Comrex is HotSwap, a feature for Comrex IP audio codecs that allows users to back up STLs or other dedicated links with a wireless modem. HotSwap allows users to designate one network (e.g. a wireless modem) as a "backup" that will only be engaged when the primary fails. This feature is included in the newest firmware version, which is now available for all Access and BRIC-Link II codecs.

In addition, Access NX (shown), the newest portable IP audio codec from Comrex, features an all-new hardware platform that is optimized for improved network performance and user experience.

Info: www.comrex.com

ENCO WebDAD Upgrade

ENCO says the second generation of its WebDAD improves remote control of automated studio workflows.

With this cloud-based solution, broadcasters can take full native control of a radio station from any networked location. Part of ENCO's enCloud family, WebDAD provides users with a virtualized platform to access and control their studio-based ENCO DAD radio automation systems remotely.

WebDAD's platform is built around a redesigned user interface that is optimized through an HTML5 architecture. The company says the open, flexible nature of HTML5 programming ensures that broadcasters are no longer limited to specific browsers, enabling complete native-level control from any workstation or mobile device.

President Ken Frommert said WebDAD is notable among web-based control offerings for the ability to manage and drive on-air presentation, playlist manipulation, voice tracking, and other critical production tasks across the end-to-end workflow.

WebDAD promises operational efficiencies for full-time station personnel, and allows part-time, contract and remote staff to access the playout system from a laptop, tablet, smartphone or other connected device. Stations and networks can establish a decentralized work force, and allow talent to be heard in several markets with the ability to voice track from anywhere.

The company says this further moves broadcasters in the direction of a fully virtualized broadcast and production environment, since the board op no longer needs to be physically at the station to control and play out a live radio show.

Info: www.enco.com

WORKBENCH

(continued from page 10)

to prevent what Stephanie has come to call "exploding squirrels." Fan belts and squirrels don't mix.

Stephanie may add another layer of screen along the lower quarter, and interleave it with the first layer, so as to effectively reduce the aperture of those openings further.

Broadcast Veteran Lou Schneider retired last year as the "transmitter guy" for KCRW's six full-power FMs stretching from San Luis Obispo to Indio/Palm Springs, Calif. — not to mention eight translators covering the high desert areas.

Spending so much time with transmitter sites, Lou knows remote control temperature monitoring, and he's also used Texas Instruments' LM34 Precision Fahrenheit Temperature Sensor to measure site air temperatures. This compact TO-92 package is a three-lead device that directly outputs 10 mV per degree F.

As long as your ambient temperature is above 5 degrees F, just connect it to a source of between +5 volts to +30 volts, and feed the Output and Ground leads to the input of your remote control system, and you're done. Lou has used Belden 8451, two conductor plus shield, cable and it works fine. Use the shield conductor as ground, red for the +V to the LM34 and black for the output return.

Lou also places a piece of heat shrink over the LM34 to insulate the lead connections, and after which, you're done.

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.

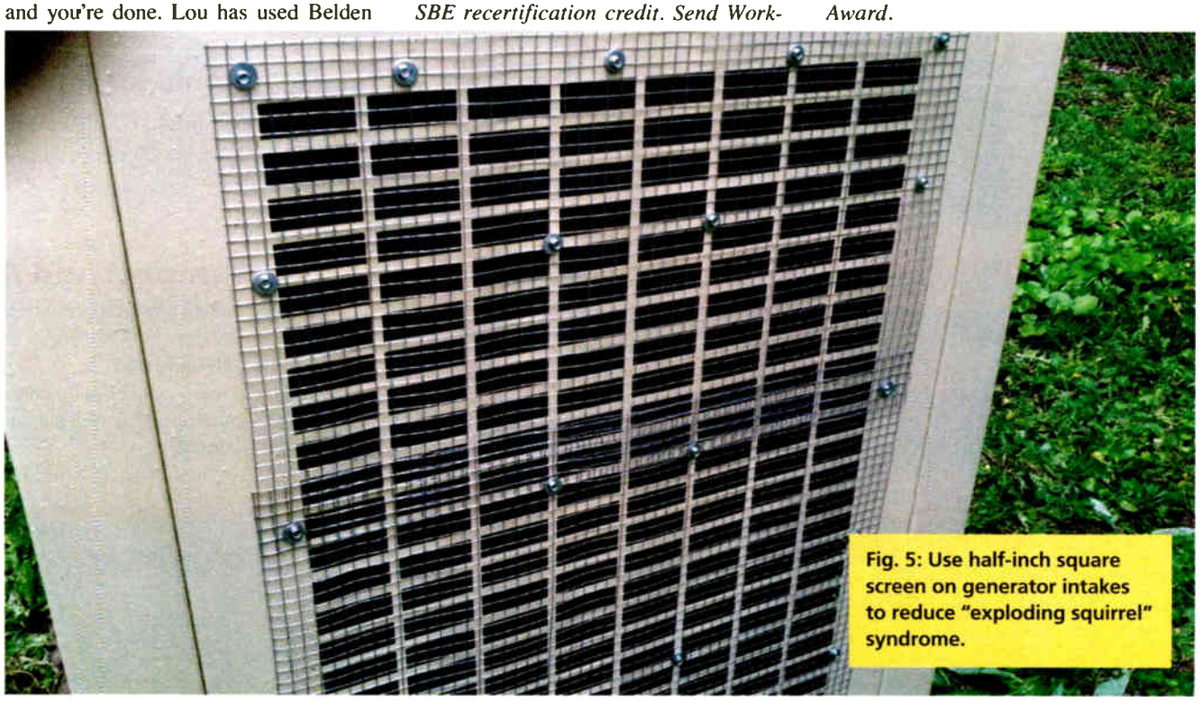

Fig. 5: Use half-inch square screen on generator intakes to reduce "exploding squirrel" syndrome.

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GatesAir Flexiva FMXi 4g

The GatesAir Flexiva FMXi 4g is a fourth-generation importer/exporter. In addition to eliminating maintenance through an embedded architecture that combines both functions, the new Flexiva FMXi 4g is the first HD Radio importer/exporter solution to provide dynamic time and audio correction.

The GatesAir-exclusive algorithm for HD diversity delay is built into the FMXi 4g, and ensures time alignment between analog FM and digital HD Radio signals. This improves the listener experience by removing the objectionable blending artifacts that happen as the digital signal transitions to analog and back. With this proper time alignment, program linearity is restored for the listener by eliminating the eight-second delay between the analog and digital broadcasts.

GatesAir said its approach removes the need for manual time alignment adjustments or the need to rely on interoperability between modulation monitors and exporters (or audio processors). This streamlined architecture, it says, will prove valuable for broader single-frequency networks that have multiple, overlapping transmitters delivering precision-timed HD Radio content across larger markets and terrain-challenged regions.

GatesAir emphasizes further benefits from the convergence of importer and exporter functions into a single software-embedded system. The removal of a standalone, computer-based importer or exporter eliminates the boot-up process, removes moving parts and frees broadcasters from troublesome PC-based applications. HD Radio implementation is simplified by integrating the importer and exporter and eliminating complex external networks, clocking and GPS references between disparate systems that would otherwise raise the possibility of packet loss and other imperfections.

Info: www.gatesair.com

OMT iMediaTouch Enterprise Rain Delay Feature

The OMT iMediaTouch Enterprise Rain Delay feature eliminates the need to manually change Sunday programming in the case of a rain delay in NASCAR races, baseball games, etc.

It works by monitoring the program feed for a Rain Delay Closure. When a closure is detected it deactivates the program feed and activates a preprogrammed rain delay program log. The Rain Delay log can contain a sequential list of local digital items including commercials. Commercial spots would still appear in the .OUT file for validation purposes.

When a Rejoin Closure is sent from the feed provider, the Rain Delay log would stop and the program feed item would again become active from the same point in the main log.

Info: www.imediatouch.com

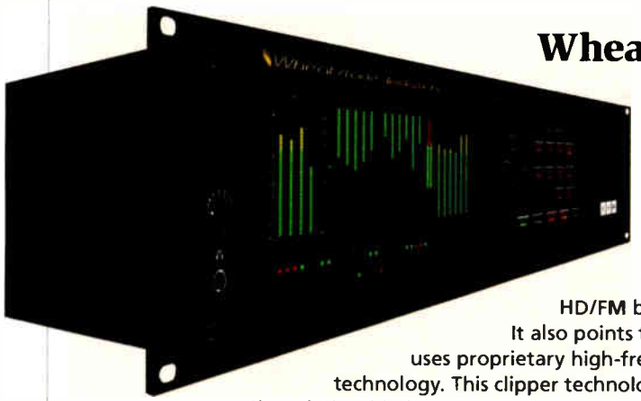
Veritone Attribute

Veritone Attribute is an artificial intelligence-powered application that tracks the efficacy of advertising in broadcast radio and television. The company says that the technology delivers customer behavior impact analytics from prerecorded, native, and organic mentions, enables broadcasters to systematically verify and analyze the effect of the customers' advertising placements in near real-time.

Veritone's Attribute empowers broadcaster sales representatives and campaign managers in demonstrating an advertiser's campaign effectiveness and can reveal data-driven insights for optimization of ad placements to drive greater customer return on investment, helping to drive increases in customer advertising spending, the company says.

Veritone President Ryan Steelberg said, "With Veritone Attribute, we elevate broadcast media measurement to new levels of precision and provide a path to custom attribution modeling. The technology will have a major impact for broadcasters by generating rapid, comprehensive performance and optimization reports that broadcasters and advertisers can use for directional guidance in their radio and TV advertising decisions."

Info: www.veritone.com



Wheatstone X4

Wheatstone's newest processor is the X4, which the company says offers several industry firsts including integrated HD and FM analog signal alignment to keep listeners and people meters tuned in even during extreme HD/FM blending conditions.

It also points to a new clipper design that uses proprietary high-frequency distortion cancelling technology. This clipper technology, Wheatstone says, rethinks the relationship between peak control and HF pre-emphasis, plus a filter design that makes it possible to increase energy and dynamics without adding phase distortion that fatigues listeners.

Info: www.wheatstone.com

WorldCast Audemat RDS Encoder

WorldCast Systems points to 25 years of experience in RDS with its FMB80 model in announcing a successor, the Audemat RDS Encoder, which calls a "future-ready" RDS encoder.

It said that "to ensure the highest levels of spectral purity and audio quality in a digital environment," the Audemat RDS Encoder is ready for MPX over AES. With RDS encoding directly in the digital chain, the same encoder installed now can be used later with MPX over AES, eliminating replacement time and cost for the studio or network.

In addition, the encoder is RDS 2-ready, and through a software upgrade will be up to new RDS standards.

Advanced communications and control are possible with a web interface, and SNMP management provides users with real-time operations monitoring and management. It is equipped with ScriptEasy Apps to connect a multitude of devices via individual apps for 24-hour real-time feedback and remote control of connected devices.

An FM tuner is built into the Audemat RDS Encoder to provide monitoring functions and ease of use, relieving users of a need for separate equipment.

A limited time $400 customer trade-in incentive is available from WorldCast Systems.

Info: www.worldcastsystems.com

Omnia Processor Updates

The Telos Alliance's processor maker Omnia has key updates to its flagship broadcast audio processors, the Omnia.9 and Omnia.11, the company says.

The Omnia.11 v3.5 update includes the new "Pepino" clipper — the latest FM final clipper design from Frank Foti, who designed it to complement the Omnia.11's G-Force dynamics engine. Omnia explains that through research into the peak limiting mechanism and how distortion is created, the Pepino clipper system suppresses both harmonic and intermodulation distortion as the clipping function is realized. This is applied over the entire audio spectrum, and the result is cleaner audio overall, yet without any compromise to the desired competitive loudness level.

The Omnia.9 audio processor has a new hardware update called MKII, which enables Livewire+ AES67 and Kantar Watermarking, available now.

A recent software update for the Omnia.9 v3.18.99 is a major update. New features include a major system rewrite to the audio engine, introducing a new lower-latency clipper; a new streaming engine; an integrated stream server; phase correction with mono bass; expanded SNMP features; shared processing path for AM+HD units; improved BS.412 MPX power limiter; and seamless preset switching. The update enables optional µMPX encoding, which offers full composite MPX over a 320 kbps pipe, as well as optional Livewire+ AES67 for even more flexible I/O.

Info: www.telosalliance.com

XPERI

Xperi Announces Alliances

HD Radio technology owner Xperi has announced a pair of alliances for its DTS audio technology.

An agreement signed with the National Association of Broadcasters is a development and evaluation agreement between DTS and the NAB's Pilot innovation initiative. The details focus on a prototype for new broadcast radio services and user experiences in the vehicle using the DTS Connected Radio ecosystem.

A somewhat similar deal was reached with the BBC, though it involves using DTS audio technology is an 18-month hybrid radio trial in cars.

Xperi's General Manager, Automotive, Jeff Jury, said: "As cars become more and more connected, broadcast radio has a unique opportunity to leverage that connectivity to enhance the broadcast radio experience. The BBC has been instrumental in leading the growth to DAB, we are pleased to work with them to enrich our DTS Connected Radio offering to ensure the next generation of connected DAB radios remain the dominant audio choice in cars."

A release explained both deals: "Utilizing an IP connection installed in a vehicle, DTS Connected Radio delivers an innovative analog FM and digital (DAB and HD Radio) experience by pairing broadcast programming with IP-delivered content. DTS Connected Radio aggregates metadata, such as on-air radio program and talent information, artist and song information, station contact information and more, directly from broadcasters around the world to deliver an enhanced in-vehicle radio experience."

Info: www.xperi.com

Carolyn Keddy in the studio.

Photos by Jennifer Waits

"Hurray for Community Radio!"

KXSF(LP) launches in San Francisco, reanimating the KUSF(FM) spirit

PROGRAMMING

BY JENNIFER WAITS

In a tucked away, nondescript complex in an industrial section of San Francisco, community radio fans gathered on Sept. 4 in anticipation of the launch of KXSF(LP) by nonprofit group San Francisco Community Radio.

A rare opportunity to witness a terrestrial radio station's debut in San Francisco, the celebratory low-power FM party spilled over into an adjacent room at Lightrail Studios, the music recording and rehearsal space that houses KXSF(LP).

While KXSF volunteers, listeners and other interested parties nibbled on pizza and sipped wine, a videographer roamed about, bearing witness to the launch. Although it's a brand-new LPFM radio station, the story of San Francisco Community Radio has attracted both local and national attention because of its connection to the former full-power college radio station KUSF.

KUSF AND KUSF.ORG

Well-loved college radio station KUSF operated on 90.3 FM in San Francisco from 1977 until early 2011. The license holder, the University of San Francisco, opted to cede control of its airwaves, ultimately selling the 90.3 FM signal to Classical Public Radio Network to be used as a KDFC-branded classical music station.

Today, the license is held by University of Southern California and the 90.3 frequency continues to carry KDFC programming. The call letters (changed from KUSF to KOSC in 2012) changed to KDFC in 2017.

Even after KUSF left the FM dial, *KUSF.org* remained, at first airing a loop of music post-shutdown. By 2012, college students at University of San Francisco were running and programming *KUSF.org* as an online radio station, which is alive and well today.

Prior to 2011, KUSF(FM) had a roster of programmers who ranged from college students to long-time community-member volunteers. The loss of the FM station was met with anger, sadness and protests. Although the university did not waver in its decision to dispense with the license, committed radio enthusiasts, including many former KUSF volunteers and DJs, resolved to return to the airwaves.

After forming the non-profit San Francisco Community Radio, the group applied for a new low-power FM license at 102.5 FM on the crowded San Francisco radio dial.

San Francisco Community Radio — KXSF(LP) — and San Francisco Public Press — KSFP(LP) — emerged victorious and were granted construction permits for a timeshared facility in July, 2016. Two years later, KXSF(LP) was ready to launch, while KSFP(LP) was preparing for its debut scheduled for July 2019.

(continued on page 18)

Shown are just a few touchscreens, created by users and deployed in broadcast facilities today, utilizing our ScreenBuilder virtual development platform.

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KXSF

(continued from page 16)

Photos by Jennifer Waits

TECHNICAL DIFFICULTIES

After tackling mounds of paperwork and engineering challenges, KXSF set its inaugural broadcast for Sept. 4 at high noon. As San Francisco's weekly emergency siren blared at 12 p.m., eager listeners leaned in to a boombox at the station's headquarters — and were met with static. Undeterred, the party and the programming carried on as technical experts sorted things out behind the scenes.

KXSF engineer and board member Bill Ruck explains, "We had been checking and testing the transmitter for a couple of weeks, and we thought that we had exorcised the gremlins. Tuesday morning, I checked the transmitter around 10 a.m. and realized that there was no modulation."

Fellow board member and KXSF's IT expert Ted Dively did some troubleshooting, trying to get the audio working with the station's Comrex BRIC-Link II.

Dively recounts, "In the moment, I was just trying to 'make it go,' and of course, I was disappointed, but I knew we'd figure it out. Working with the fine Sutro tower staff, we think the issue was radio frequency interference — RFI — causing our network gear in the cabinet to go sideways. One of the things I learned during this exercise is that Ethernet cables can act as antennae, which can create odd-to-diagnose connectivity issues."

Within a week, on Sept. 10, KXSF was on the air at 102.5 FM. Regarding the fixes, Dively notes that, "Bill has reworked the wiring in our cabinet to better shield everything from free-floating RF, and so far, everything seems very stable."

For now, KXSF is the sole station on 102.5 FM in San Francisco, airing its programming from 10 a.m. to 4 p.m. and from 10 p.m. to 4 a.m. every day. When San Francisco Public Press is ready to launch, its programming will run during the remaining hours. For now, the transmitter shuts off automatically during non-broadcast hours.

An unusual set-up, KXSF is operating at a miniscule 2 Watts of power due to the tricky, hill-filled San Francisco landscape. Ruck sought a central location in the city for the transmitter to reach as many listeners as possible, choosing Sutro Tower.

"The problem, though, was that the middle of San Francisco is higher than the edges due to Twin Peaks, Mt. Sutro, Mt. Davidson, etc., so even at the lowest height we could use at Sutro Tower, the second level, our ERP became 2 Watts," Ruck clarifies.

Unique content is encouraged. For music shows, focusing on local music, new music and underground music is important — it's our mission statement.

— Steve Zweig

UP AND RUNNING

A couple of weeks post-launch at another KXSF gathering, volunteers swapped tales of listening reports, chiming in with places where they had unexpectedly heard the station on FM and pointing out interference from a faraway broadcaster. As San Francisco Community Radio settles into its 102.5 FM home, it also runs programming online 24 hours a day, seven days a week.

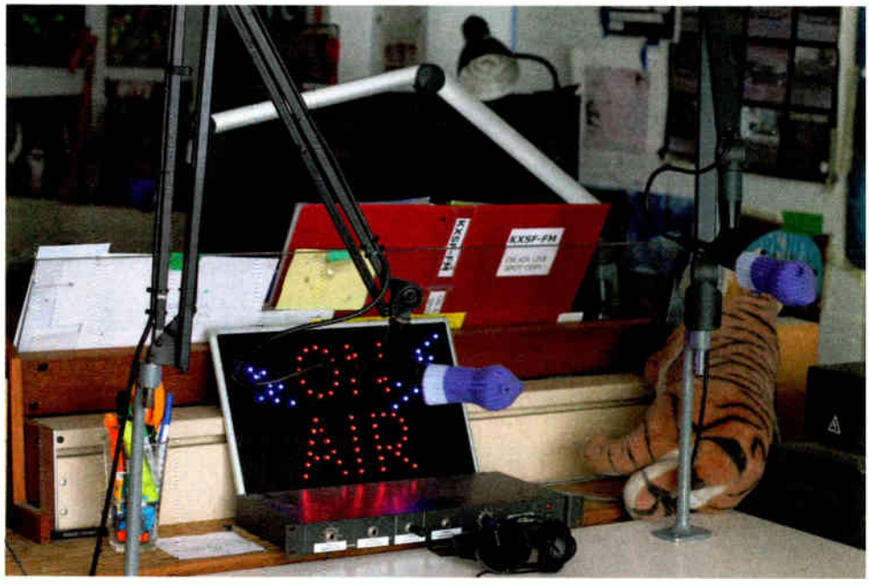
San Francisco Community Radio secretary and board member Carolyn Keddy was a veteran KUSF DJ and began working on efforts to get back on the air starting in 2011.

Pleased to have reached this point, she shares, "I am looking forward to the sense of community we had with the old station. People do not really call into internet radio stations because you are usually listening at work in your cubicle or listening on your headphones while commuting. But people listen to the radio at home or in the car or outside, and if you get the urge to call, you can and do. I am looking forward to more requests and just hearing from more listeners."

The current roster of around 30 shows includes a mix of adventurous music and talk programming, dual language shows, a kid-hosted music show and a radio theater program.

Program Director/Executive Director Steve Zweig says, "Unique content is encouraged. For music shows, focusing on local music, new music and underground music is important — it's our mission statement."

Regarding San Francisco Community Radio's long journey to FM, Keddy expressed her gratitude, reflecting, "I appreciate everything everyone has done to get us back on the air. There have been so many people, groups, bands, organizations and businesses over the years that have helped out that is hard to thank everyone in one shot, but I will every time I get the opportunity. Thank you San Francisco, and the world, for sticking by us and getting us here! Hurray for community radio!"



Jennifer Waits is a co-founder of Radio Survivor and a research associate on the Library of Congress' Radio Preservation Task Force. She obsessively tours radio stations, which she chronicles on her blog Spinning Indie. A college radio DJ since the 1980s, she's been at four stations and has hosted a music show at KFJC(FM) since 1999.

MORE TECHNICAL DETAILS

From Engineer Bill Ruck:

"We are using a Comrex BRIC-Link II from the studios at Light Rail to Mt. Sutro via the internet. Our ISP at Light Rail is Sonic and at Sutro is Sutro Tower. There the BRIC-Link II audio is connected to a Nautel VS300 with Orban Inside. The VS300 then feeds an EMR isolator and two cavities to minimize potential issues with Intermodulation Distortion. The second level at Sutro Tower is where some of the auxiliary antennas are located, and we did not want to ever have IM problems. All of the equipment is located in a DDB weathertight cabinet on the second level of Sutro Tower. Our antenna is a Jampro JLLP-1."

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A single AES/EBU cable between the processor and a current solid-state FM transmitter carries the digital baseband signal for exceptionally clean sound.

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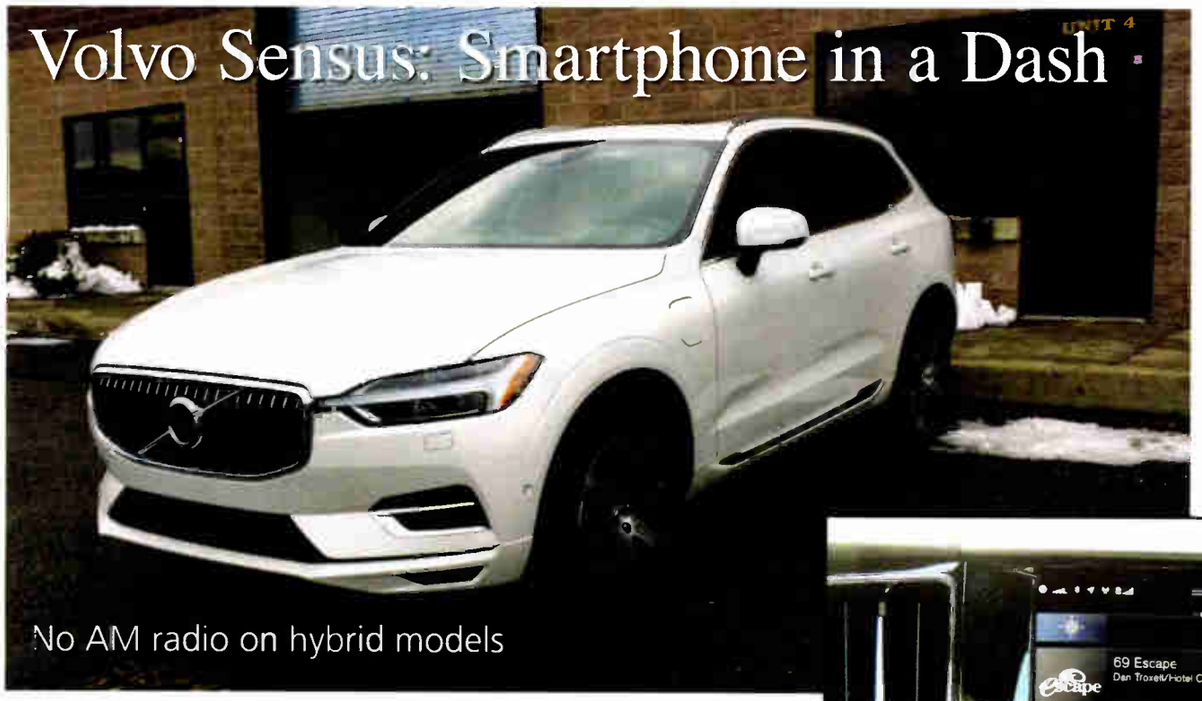
Wheatstone
BROADCAST AUDIO PERFECTIONISTS

Volvo Sensus: Smartphone in a Dash



No AM radio on hybrid models

CONNECTED CAR

BY PAUL KAMINSKI

The future is electric for the iconic Swedish Volvo brand, with the company moving to offer a mix of electric and hybrid electric cars exclusively.

But that move could inconvenience some Volvo owners who may also listen to AM radio over the air.

I experienced that when I test drove the XC60 T8-E All Wheel Drive Inscription model for the *msrpk.com* program "Radio-Road-Test."

The XC60 was named North American Utility of the Year for 2018. The model I drove was a gas-and-electric plug-in hybrid, equipped with Volvo's Sensus infotainment system as standard equipment.

Sensus has a lot going for it, with a smartphone-esque user interface, Apple CarPlay and Android Auto connectivity, Wi-Fi hotspot and internet connectivity by subscription, and a 9-inch touchscreen in the center stack of the dashboard.

Volvo's suggestion for people who wanted to listen to an AM station involved taking advantage of the internet connectivity and finding an internet stream for that station.

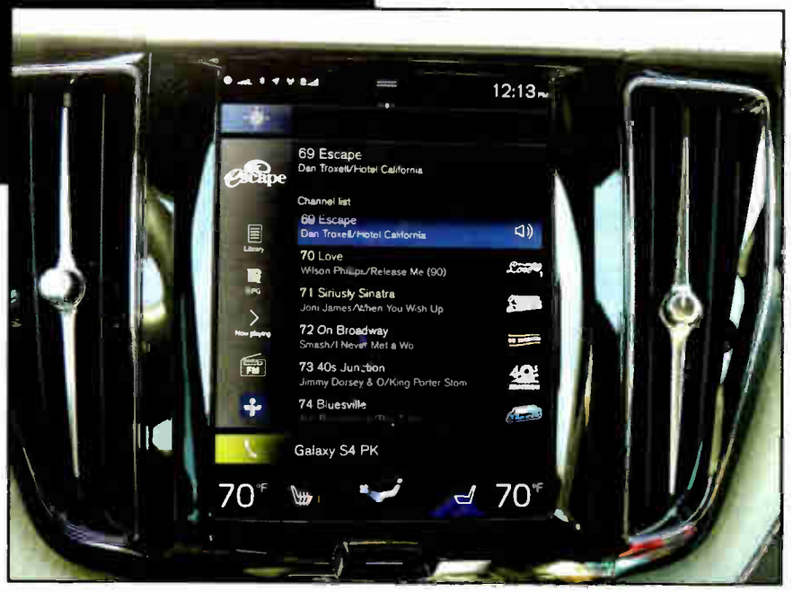
On the test XC60, Sensus controlled an optional $3200 Bowers and Wilkins Premium sound system, which received satellite and FM/HD radio and offered other audio choices via apps. In plug-in hybrid and full electric models of the Volvo XC60, AM radio reception is not offered.

In 2019, all Volvo models will have some sort of electric power component, be it plug-in hybrid, full electric or "mild hybrid" (the system where the traction battery is charged through regenerative braking).

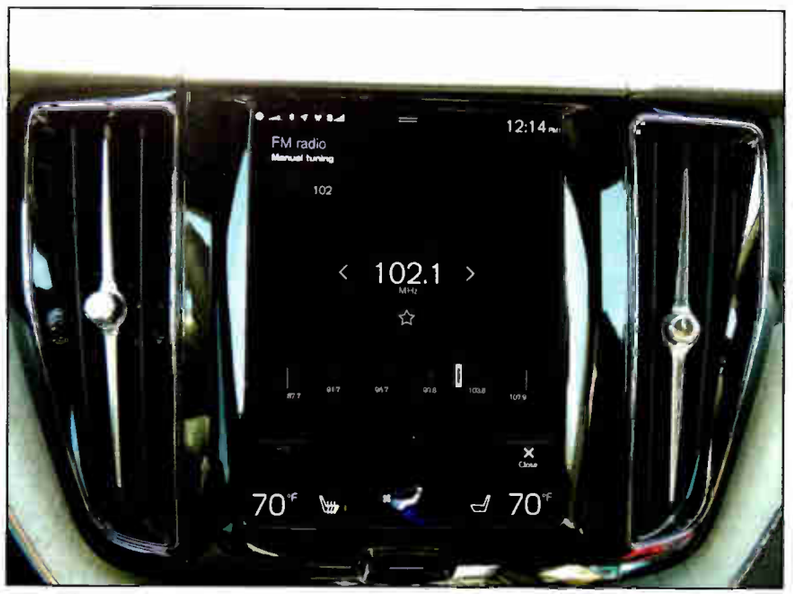
When I asked Volvo why the AM reception option was not offered on the hybrid and plug-in hybrid models, the company answered that the hybrid system caused interference with the AM receiver circuitry. Volvo's suggestion for people who wanted to listen to an AM station involved taking advantage of the internet connectivity and finding an internet stream for that station — assuming that particular station streamed live.

Future versions of the Sensus infotainment system will have Google Assistant voice interface app, Google Play Store and Google Maps embedded as menu choices.

(continued on page 22)



Volvo XC60 with Sensus infotainment system center dashboard stack.



FM radio screen.

Making Local Radio That Isn't

How has radio changed without the Main Studio Rule?

21ST CENTURY PD by Dave Beasing

It's been a year now since the Federal Communications Commission regulation widely known as the "Main Studio Rule" was abolished. Local radio stations are no longer required to operate a studio and have a physical presence within the city-grade signal contour of their official city of license.

"I have not seen any widespread move to abolish studios and to consolidate operations," says David Oxenford, partner in the D.C. law firm of Wilkinson, Barker, Knauer. He cautions that, "Stations still need to address the issues of importance to their community in their programming, and maintain a toll-free phone line that's answered during normal business hours."

David Oxenford

Of course, those requirements can be fulfilled from a distance, and the Main Studio Rule itself was — in reality — treated as a formality at times, an expensive one.

A TRUE ONE-MAN STUDIO

For example, freelance broadcast and recording consultant/engineer Chuck Ide recalls installing remote control operations for KSRY(FM) in Tehachapi, Calif., in 2007.

"We followed the rule," says Ide. The 103.1 signal began re-transmitting programming from sister KYSR(FM), about a hundred miles south in Los Angeles, and — in a practical sense — its day-to-day operations originate there, too. "We had a tiny local studio behind a Ford dealership. There was one lonely employee who reported to work every day as the official operator and general manager."

In that case, Ide saw the logic of the strategy. The tiny Class A station — in LA's shadow — hadn't drawn much audience or revenue on its own, so providing a better signal to a nearby metro station made better business sense and still does.

"Now that the Main Studio Rule is gone, the KSRY transmitter sits in a windmill farm" with no local staff, he says.

Chuck Ide

OFFICE SHARING, NOT ELIMINATING

Matt Moore is the kind of young entrepreneurial broadcaster that local radio needs. He and his partner Brent Lee formed Spoon River Media to build their first station in 2016 — WILP(FM), licensed to Cuba, Ill. (population: 1,294). The studios are located in the larger town of Canton.

"We believe in being local, engaging and active in the communities we serve," regardless of where the studios are, Moore says. "This rule change promotes efficiencies by sharing staff between offices, and that encourages our company to continue to grow."

Oxenford says WILP is the type of situation in which he sometimes sees companies doing away with main studios. "These are often stations serving rural areas where a studio would be a burden without any benefit, but radio remains primarily a local business," says Oxenford. "In the short term, I expect that most broadcasters will continue to operate with local studios. In the longer term, there may be some experimentation with more regionalized operations, especially if there is an economic downturn. But broadcasters will be able to determine the best choice based on their experience rather than some arbitrary regulatory requirement."

LESS LOCALISM

Still, some industry veterans like Ide fear that the rule change could lead to more centralized operations for cost cutting reasons — with less local content and fewer jobs.

(continued on page 22)

NOT LOCAL

(continued from page 21)

Ide explains, "As an example, what would stop a company from shifting all their operations from Riverside/San Bernardino over to Los Angeles? Why have a staff in Bakersfield? A music station in Tucson can now be contained in an equipment rack in Phoenix or New York."

The technology to automate vast networks of stations from a distance has existed for years, says Ide. "All they needed was a rule change to drop the hammer."

SATELLITE DELIVERY, LOCAL SOUND

Creating content for hundreds of stations from a central location is what satellite-delivered format services have done for years.

"When you do it right, radio that's created from a distance can actually be very local sounding," says Gary Thompson, who has been a programming executive with the former Dial Global and Westwood One networks. "If someone at the network is always researching a market, looking for local events and topics — and there's a plan to work those in every hour — that's more local content than many locally operated stations do."

As for the imaging production of a radio station, "Who produces just one or two stations?" asks Thompson. "That job doesn't exist anymore. At the network, I would often produce the imaging for 40 or 100 stations at one time."

After creating the custom pieces that included station brand names and frequencies, the rest of the imaging tracks were essentially the same by format — identical effects, positioning slogans and song hooks. Assembling all those pieces manually was time consuming.

"I realized a monkey — or a computer — could do that part." So Thompson spent 60 to 80 hours a week over a three-year period writing the code to invent ImagingThing.com. Virtually every radio brand name and imaging line you could imagine is stored on his site, and — with the click of a mouse — Thompson's software creates ready-to-air customized radio production in just seconds.

Gary Thompson

Will tools like these cause fewer people to be employed in local radio? "This is a continuation of a trend that started decades ago," says Thompson. "If the industry is changing, you need to change to stay relevant. Whether it's creating audio production on a larger scale, building a large loyal fan base as an air personality, shooting and editing video for social media, mastering new technologies, whatever... Learn the skills to become indispensable."

While being "live and local" has been a popular battle cry in radio,"topical and relevant" content may be what radio's future listeners and owners come to value more. Where it originates may not matter.

After 9 1/2 years as the creator of LA's 100.3 The Sound, Dave Beasing has launched SoundThatBrands.com, *the company that co-produces the popular "Inside Trader Joe's" podcast with fellow radio veteran Steve Goldstein.*

VOLVO

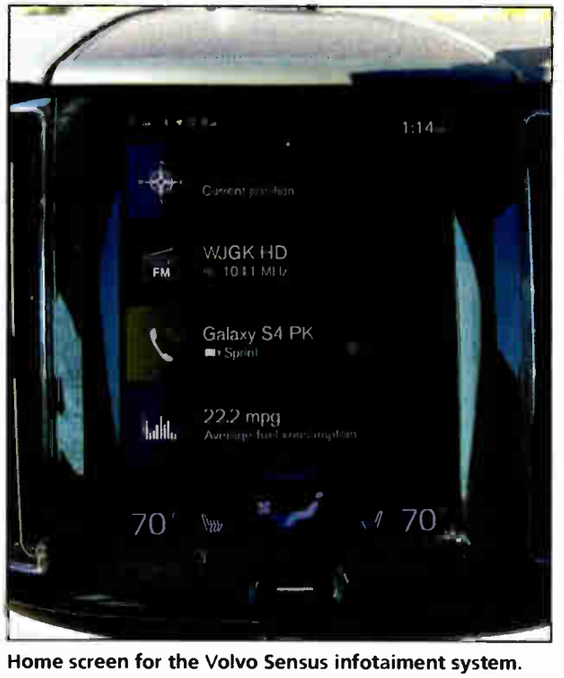
(continued from page 20)

HD FM radio screen.

Other manufacturers that don't offer AM radio reception in some models of electrified cars include BMW and Tesla.

As if AM managers didn't have enough to deal with — noise floor, interference, etc. — they have to consider this trend, as more vehicles are sold with some sort of electric power component (hybrid, plug-in hybrid or full electric) and some of them may not have AM receivers. One strategy is for the station to field a skill for Google Assistant or Amazon's Alexa, so the station stream can be found easily in cars so equipped.

If a station has significant automotive business, it would behoove those responsible for that business to get to know more about the connectivity options for the cars at that dealership. Perhaps that relationship could extend to having the station's frequency pretuned as part of the delivery process. Once an car owner sees and hears how easy it is to find your station on a web stream or the radio, they just might keep the radio locked right there — depending, of course, on the requisite compelling content.



Home screen for the Volvo Sensus infotaiment system.

Paul Kaminski writes about connected cars for Radio World, and hosts the msrpk.com weekly program, "Radio-Road-Test." His Twitter handle is msrpk_com; Facebook: PKaminski2468.

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AGM Rebuilds in Bakersfield

New Wheatstone AoIP system and legacy Scott automation are part of the solution after big fire

FACILITY PROFILE

BY DOUG IRWIN

American General Media, based in Bakersfield, Calif., is a broadcast and digital media company, owning and operating radio stations and media outlets throughout the southwestern part of the country, including Albuquerque, Santa Fe and Farmington in New Mexico; Durango and Cortez in Colorado; and, Bakersfield, San Luis Obispo and Santa Maria in California. It's a family-owned company with 32 stations overall. Rusty Burchfield, a 21-year veteran of the company, is its corporate director of engineering.

A serious incident two years ago necessitated the rebuild of AGM's Bakersfield facility. "The building in which all the studios are located was in a fire and deemed a complete loss," said Burchfield. "However, all the stations still continued to operate and none went off-air, even during the fire. The staff continued to work in the building and we built the brand new facility while the stations were on the air. It was a bit of a juggle — a feat in itself."

AOIP

Burchfield and Bill Bordeaux of Interstellar Communications (based in San Luis Obispo) designed and oversaw the construction of 12 new studios, most of which are built around Wheatstone IP-12 consoles, integrated into a WheatNet-IP AoIP system.

The IP-12 is a 12-fader control surface (as the name would suggest) and each of its input modules is equipped with an LED source name display and an A/B source selector (sources can be set via a rotary encoder in the master section). Each input module has access to four program busses and has cue and talkback switches. The master section has control room, studio and headphone controls with source selection, and an onboard headphone jack and amplifier. Timer controls, a master talkback button, and a built-in cue speaker with volume control are provided as well. There are four event switches and six programmable buttons available for user functions; the meter bridge has three stereo pairs of bright 30-segment horizontal LED bargraph meters.

The IP-12 control surface connects via Ethernet to its audio engine, the WheatNet-IP IP88CB console audio blade, a single RU device containing the console's digital signal processing, input, output and logic circuitry. The engine has no fans and may be located either next to the console or at a remote location.

In addition to the IP-12s, four Radio Systems 12-channel consoles were installed and integrated in to the new studio system by way of various Studio-Hub accessories that allowed easy "plug and play" connections.

The studio builds were greatly simplified by the decision to use an AoIP system. "It was plugging in a Cat-6 cable and walk away. It was that simple," said Burchfield. "And we built each studio, start to finish, in less than a day." Between individual studios and the TOC Burchfield used all Cat-6

New on-air studio installation for KKXX (Hits 93.1) showing Voxpro, Wheatstone IP-12 and furniture provided by SCMS.

Talk show going out over KERN (96.1 and 1180). From left: a station guest; Scott Cox, KERN talk show host; Steven Nicholas, KERN co-host.

cabling. "So literally going from one studio to TOC is just a Cat-6 cable — from the console to a patch panel into TOC," he said of system programming.

In addition to the 12 studios, Burchfield built a new technical operations center and made it a focal point of the facility.

"There are large glass windows in the front of the TOC so as you walk through the facility, either as a guest or as talent, you see all the large racks which are filled with blades," he said. "There are a lot of really neat things to show as people come in to take a tour. Ultimately the TOC is something to take a look at — 12 racks full of equipment, servers, automation systems and just rack after rack of blades. It's all nice, neatly, done. It's a showpiece for sure."

Burchfield used Wheatstone's Navigator software to perform the original configuration of the system, and now uses it to make changes on the fly, as necessary, during the day to day operations of the station group.

"The way we designed it using Navigator is that any studio can essentially become whatever station you want, with a simple click of a button, which is very cool because we can move around on-air stations if we need to," said Burchfield. "All the studios are exactly the same with exception of our talk studios, which of course contain blades, and those allow us to send out audio to anyone of the studios.

"On occasion politicians come in and want to do shows on various stations. You just put them in one of our talk studios, and using Navigator remotely with my cellphone, that audio can be routed into whatever other studio we want," Burchfield said. "Or if someone wanted to listen to CNN in one studio, they can simply walk over to the accessible computer in the hall way by TOC, go to Navigator, and map that audio to their studio. They can use it for show prep, or just for monitoring, or what have you."

He adds, "No more having to run down at 10 o'clock at night to resolve an issue with a satellite receiver. It's simply a click of a mouse button, and you can map that audio anywhere from A to Z."

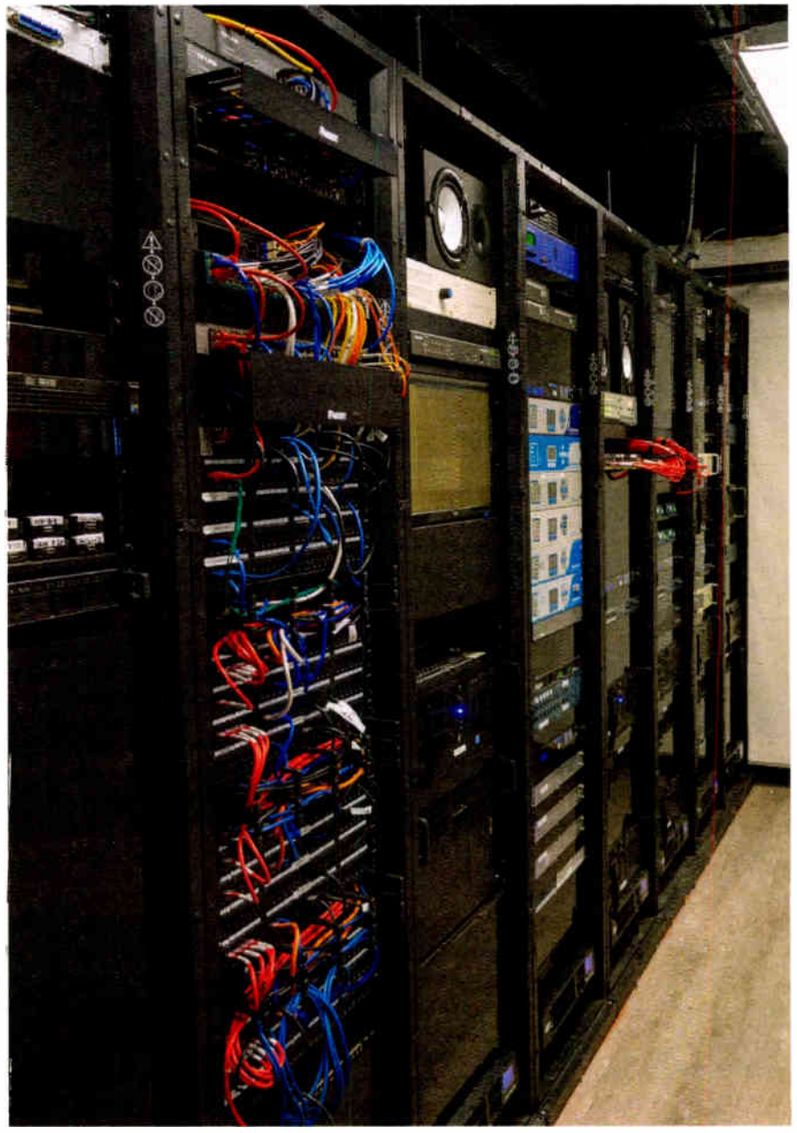
SCOTT STUDIOS

I asked Burchfield about their automation system and the ways in which WheatNet-IP integrates with it. "We use Scott Studios automation systems, which hasn't been supported since 2005. It's antiquated, outdated — yet it integrated very well with Wheatstone product. Wheatstone gave us tips and tricks and knowledge on how to integrate with our new IP system, and it works great in fact. We aren't even using sound cards anymore — it's all over network cards using Ethernet," he said. "If a studio fails, it's not a problem at all because the audio is essentially coming from the TOC — and that was built with all kinds of redundancy."

AGM Bakersfield provides programming for eight different radio stations. "Every station has its own streaming computer, and we didn't have to do any wiring — we simply just installed their drivers and connected a Cat-5 cable to one of the network switches and now the audio is sent over the network using a blade," Burchfield told me.

He also integrated his on-air processing systems with WheatNet. "The way we wired our technical operations center, using the Wheatstone software and hardware, allowed us to route that audio to our processing chain which then integrates with our microwave systems for our stations that use radio

(continued on page 26)



The TOC is a centerpiece of the new facility. Where "old-fashioned" patch-bays would have gone in years past, Ethernet patch-bays are now the norm.

Well-organized cable runs in the new infrastructure for AGM's Bakersfield facility.

AGM BAKERSFIELD

(continued from page 25)

STLs," Burchfield said. "We also integrated Wheatstone with some GatesAir IP Link systems, which is what we use for the stations that don't have radio STLs. We really didn't have to make any wiring changes or any change to our configurations of the STL and processing — all of that remained untouched. We simply just plugged a cable in, coming from the TOC.

"We use both Orban and Omnia on-air processors, and WheatNet-IP works with both of them. We also have a backup N+1 transmitter site that has a processor and STL at the studio that is fed by the audio network. Whatever we route to it goes out to this backup transmitter site. Before the WheatNet-IP installation, if one of the stations were to fail, either I or my assistant would have to talk someone through moving XLR cables around to get the correct feed. Now it's simple — I go on my iPad or iPhone and via Navigator, I make the necessary changes."

IP FEARS ABATED

I also asked Burchfield if, prior to their purchase and installation of the system, there were any reservations on the part of management. "We have a 50 kW AM station, KERN, the only one in town, and because it's a historic station we were hesitant to switch because we were fearful of audio over IP. The owner was very hesitant, very fearful of

One of four studio installs that use Radio Systems consoles. Integration in to Wheatnet-IP is managed with use of StudioHub accessories.

making that change because IP relates to internet and so he had some reservations about it," said Burchfield. "I explained to him how making this change will be seamless, and actually, when we did make the change, and went to Wheatstone, the audio actually cleared up and sounded even better than it did previously. It's all digital from the studio all the way straight through to the transmitter."

One feature that was added to AGM's Bakersfield facility during the recent rebuild is a performance studio that can accommodate up to 150 people. "It's a fairly large performance-oriented facility that we built in an adjacent building. There's a stage, cameras and remote studios," said Burchfield. "As artists are traveling to and from or up and down the state, we reach out to them and get them to come in and do interviews with our stations. We hope that they put on shows, and we've already had a couple. We then send the audio over the WheatNet-IP system to our websites and the video to YouTube and stream that so that viewers, listeners, can participate.


Hose Juan Leal "El Cascabel" works at one of the Wheatstone IP-12 installations on KEBT(FM).

"We also built a really cool video green screen room — when artists are here we photograph them, and afterwards we can add artwork images behind them for marketing purposes and social media and that kind of thing," Burchfield said.

Burchfield praised Wheatstone for its ongoing support. And he expressed pleasure at how many people, including other broadcasters, have wanted to tour the plant. "It's nice, neat and clean, functional, state of the art, with room for advancement."

Radio World is on the lookout for new or upgraded broadcast facilities to profile. Send your suggestions about studio or RF projects to radioworld@futurenet.com.

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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.

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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

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

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

I'm looking for 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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Johnson Electronic SCA880 module, 67/92 Khz, 417-881-1846.

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Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-684-6010.

Standard Short-tune series. Bill Cook, 719-684-6010.

(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 boceey@hotmail.com or Bob, PO Box 1121, Crystal River, FL 34423.

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Trade Deal Could Have Major Impact on Radio Industry

The cultural industries exemption was one of many hot potatoes during negotiations

COMMENTARY

BY KEVIN CURRAN

For as long as there has been broadcasting, the North American nations of Canada, the United States and Mexico have closely guarded their domestic radio and, later, television, industries.

The U.S. Federal Communications Commission would not permit a licensee to have more than 25 percent foreign ownership, while Canada and Mexico forbid non-citizens from owning a broadcasting station. Recent changes in these rules could have a major effect in the U.S. and Mexico. However, it does not appear that change is on the horizon in Canada, and that could have made it difficult to negotiate a three-nation free trade agreement.

Students of broadcast history will remember the "Border Blasters" — high-powered AM stations along the Mexican line that carried programming for an American audience.

Dr. John Brinkley used his 500,000-watt station across the Rio Grande from Del Rio, Texas, to promote his male rejuvenation surgery using goat glands. While his broadcast operation was outside the FCC's jurisdiction, the commission found a way to act against him. While running for office in Kansas, Brinkley would continue to do his talk shows via a broadcast loop. The commission instituted the "Brinkley Rule," or Section 325c, which prohibits sending a program destined for U.S. listeners to a transmitter in another country without FCC authorization. Years later, Wolfman Jack used XERB in Tijuana to serve African-American listeners in Los Angeles.

The "X" stations in San Diego that operate in English from American studios are owned by Mexican companies and leased to U.S. operators. They all have section 325c permits from the FCC's International Bureau. These arrangements could be in for a major change.

Mexico's 2014 Telecommunications and Broadcasting Law allowed foreign interests to own up to 49 percent of a radio or television station. However, that percentage can increase to the amount of Mexican ownership permitted in the purchaser's country. In 2016, the FCC changed its rules to allow 100-percent foreign ownership after a detailed review. Therefore, an American concern can now own a Mexican broadcaster outright, and a Mexican firm could take total ownership of an American broadcaster.

The XEWW sale shows once again that radio along the border provides a continuing source of intrigue.

Across the northern border, Canada's 1968 Broadcasting Act involved much more than foreign ownership restrictions. Canadian music stations must play a minimum amount of songs that meet two of four criteria that measure Canadian production. These Canadian content, or CanCon, rules are cited as one of the reasons CKLW in Windsor went from one of the most listened-to radio stations in the U.S. to oblivion. They are also subject to an involuntary assessment to help produce that music.

Cultural industries, including broadcasting, were exempted from both NAFTA and the U.S.-Canada free trade deal that preceded it. Prime Minister Justin Trudeau has warned that he will stand against any change in that exemption, fearing that American broadcasters may buy Canadian stations.

The second purchase agreement approved by the FCC under these new rules was the buying of two radio stations by Mexican investors. But the approval by Mexican regulators of the sale of a legendary border blaster to an American interest has drawn attention on Capitol Hill. Mexican authorities have approved the sale of XEWW (formerly XETRA) in Tijuana to an American interest. The new owners plan to provide programs for the Chinese-American audience in southern California from studios near Los Angeles. A Section 325c application has been filed to program the station from a U.S. location. The operators of KQEV, a suburban Los Angeles LPFM serving a Chinese audience, have filed a petition to deny that application. The first of two reasons given for the petition was XEWW's potential negative effect on their listenership.

It is not often that a U.S. senator pays attention to a foreign radio station. In 1982, Sen. Daniel Patrick Moynihan (D-N.Y.) mentioned the U.S. revenue of CKLW in a floor speech criticizing a Canadian decision to remove the tax deductibility of advertising on non-Canadian stations.

In September, Sens. Marco Rubio (R-Fla.) and Ted Cruz (R-Texas) announced their opposition to XEWW's proposed operation. They were concerned with the second reason in KQEV's petition. The Washington Free Beacon reported that XEWW's owners would rely on a programs produced by a Chinese firm called Phoenix TV that reportedly has ties to the Chinese Communist Party.

The cultural industries exemption is just one concern was mentioned frequently as American and Canadian negotiators try to hammer out a new trilateral trade agreement. Mexico has agreed to make the kind of changes in its broadcast ownership rules that it appears would be difficult to find approval for in Ottawa. The XEWW sale shows once again that radio along the border provides a continuing source of intrigue.

Thinkstock/conniechua

Kevin Curran is a Ph.D. candidate at the University of Oklahoma studying cross-border targeted radio in North America. He is also a faculty associate at Arizona State University's College of Integrative Sciences and Arts. He has held a variety of positions in radio news, sales and management. Reach him at kevin_curran@ou.edu.

CORRECTION

A Tech Update in the Oct. 24 Buyer's Guide highlighted an upgrade to the Inovonics INOmini 638; however, the device shown was the INOmini 662. At right is a photo of the correct INOmini model. Thanks to Bob Meister for pointing this out.

READER'S FORUM

ARGUMENTS FOR C4

Responding to "NAB Sets Out Reasoning for Its Opposition to Class C4," RW Sept. 12 issue:


RADIOWORLD

NEWS

NAB Sets Out Reasoning for Its Opposition to Class C4

C4

1. There have already been several "windows" for new translator applications, and most of those have been granted. So now, in the most populated markets, there are no more frequencies available for new translators.
2. The C4 proposal makes the most efficient use of the spectrum; isn't this what the FCC was created to do?
3. With mileage separation requirements, a C4 either "fits," or it doesn't.
4. All the FCC Class C and B "zones" have rural areas, so the whole country should be able to do this upgrade for Class As if they "fit" from a mileage separation chart, maybe call the B zone upgrades a "B2."

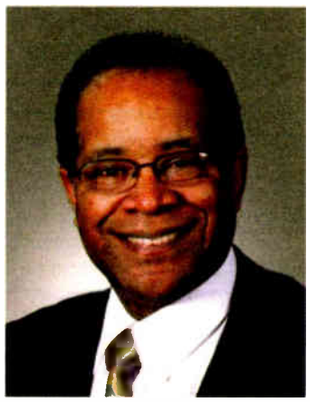
Bob "Doc" Fuller
Investor, Atlantic Coast Radio
Portland, Maine

Let's Toss Another Expensive and Useless Rule!

The seemingly obsolete NRSC mask measurement for AMs is a waste of time and resources

COMMENTARY

BY LARRY LANGFORD


Larry Langford

When I got in this business in the early '60s (the days before unattended operation), we had to fill out a transmitter reading log every 30 minutes.

The FCC required you to write down parameters of the transmitter oscillator and final power amplifier (PA), such as plate current, plate voltage, computed power output in watts, RF line current and frequency tolerance. You had to trim the values if they were out of limits. If you had a directional, you had to take phase and ratio readings as well for each tower and common point RF current. It took a few minutes, especially if you were on remote control and had to listen to the chunk-chunk, as the two-wire remote system counted through the steps as the system responded to the phone dial that you had to use to read different stages.

If you were a combo DJ on a live board, it was tight to get it done during one record. Wow! One thing I found out early, the chief engineer was very serious about you filling out those reading logs. But as you can imagine on at least a few occasions there was a little "faking" going on …

In later years, the FCC backed off, and we could take readings less often. I think it was then every three hours. Then, the commission tossed the daily requirement all together. The idea was that transmitter systems and DA systems had become very stable and the readings were just not necessary as long as the chief kept an eye on things as often as necessary to ensure compliance.

At one time stations were required to keep a modulation monitor and a frequency meter in full-time operation. Back then, it was possible for an AM transmitter to drift near the edge of the ±20 Hz limit, especially if the crystal oven was faulty, but now transmitters are rock-solid and easily maintain frequency within a cycle or two. So while the chief is still responsible for keeping things within legal limits no longer do we need full time equipment to make sure. So it is in that spirit that I question FCC 73.44, the requirement that AM stations do NRSC mask measurements.

The masks were required after the NRSC 10 kHz limit was adopted. And many stations complied with some form of outboard adapter on the processor. The rule is now decades old and compliance is a breeze because every processor built for use in the U.S. has the mask built in and all greatly exceed the required limits of the FCC. So why are we still mandated to do the annual readings?

Sure it's a good way to meet your friendly consultant face to face now and then but are the measurements really necessary? Unless the station has museum-like equipment in operation, like a Gates BC1T driven by a Volumax, it should be assumed that occupied spectrum limits are good!

If we don't have to certify on frequency operation daily, why must we bear the expense of a compliance measurement every year for occupied spectrum? A long time ago, we got rid of twice-hourly station identification at the top and bottom of each hour; having an engineer at the transmitter site full time; having operators post a Third Class Radio Telephone permit; annual "proof of performance" audio chain measurements and much more, while recently we have eliminated the Main Studio Rule, and on-site public files. I think is just natural that we should dump the required spectrum annuals as well!

Larry Langford is owner of WGTO(AM) and W244ds in Cassopolis, Mich. He has been in radio since 1965.

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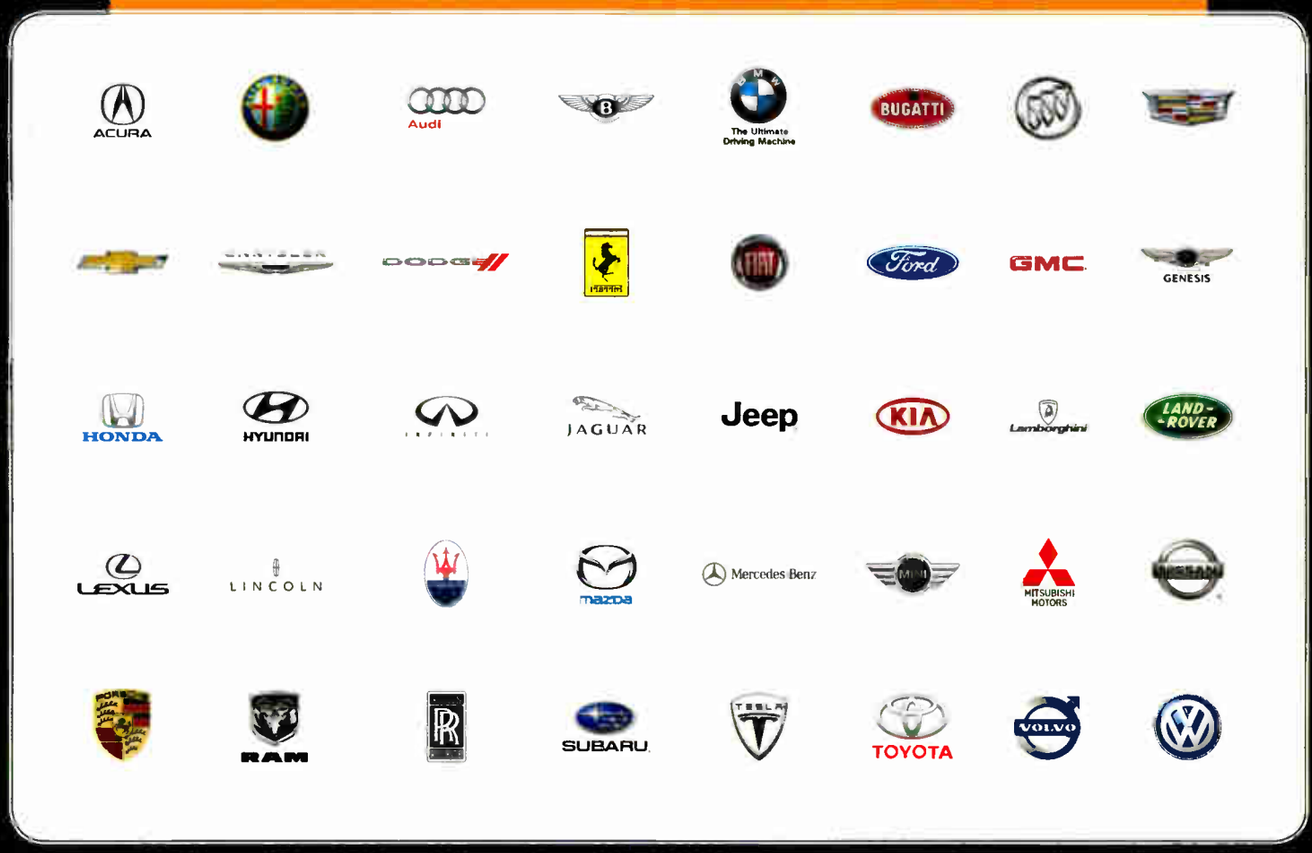

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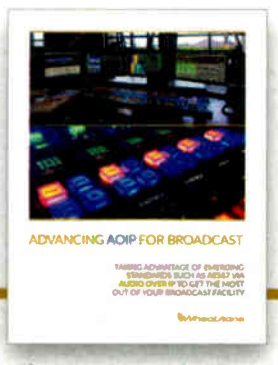

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