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IBiquity, OEM Spar in Court

Tech developer is in a licensing dispute with receiver supplier

BY LESLIE STIMSON

IBiquity Digital wants a federal court to dismiss a patent suit filed by an automotive receiver supplier.

The case between the HD Radio developer and plaintiffs Continental Automotive GmbH and Continental Automotive Systems Inc. involves multiple back-and-forth legal actions. It is interesting in part because court documents give some insight into how iBiquity structures intellectual property licensing arrangements with receiver suppliers. This is an area of increasing importance, given the technology's growth in the car environment, but it is one generally unfamiliar to broadcasters, whose

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FCC Pushes EAS Improvements

Event, location codes suggested ahead of next national test

BY RANDY J. STINE

WASHINGTON — The FCC's latest rulemaking proposal to improve the Emergency Alert System appears to track closely the recent recommendations of industry experts on ways to solve lingering operational and security issues.

The commission's Notice of Proposed Rulemaking (EB Docket 04-296) takes some, but not all, of the recommendations from several subgroups of the Communications Security, Reliability and Interoperability Council, a communications and public warning advisory group established by the FCC.

The discussions are likely to affect how much cost and effort will be required of radio stations and equipment makers in future EAS improvements.

The agency is paying particular attention to equipment and technical issues identified following the first nationwide EAS test in 2011, according to broadcasters and gear manufacturers. Normally the FCC, along with the Federal Emergency Management Agency and the National Weather Service, implements the EAS. FEMA is responsible for initial transmission of presidential alerts and overall administration; the FCC says its own role is to adopt, administer and enforce EAS.

FEMA, with help from the FCC, coordinated the national test.

Overall, federal officials deemed the first nationwide EAS test successful, but there were technical glitches. Some stations never received the test; others aired garbled audio. There were problems reported due to the short test length and equipment differences in handling the alert header codes. Many of the issues identified during the national test, such as audio problems, have been fixed, according to regulators.

The FCC required stations to submit their test results. Based on that data, the commission concluded that the national EAS distribution architecture is fundamentally sound, but the agency solicited input from key stakeholders seeking improvements in advance of another national test. A significant development since 2011 has been the changeover to alerting that uses the Internet-based Common Alerting Protocol, as the

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Radio, and All That Jazz

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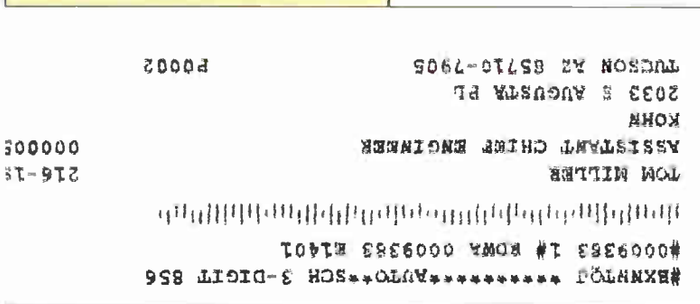
Public radio engineer David Antoine helps keep WBGO's sweet music coming.



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IBIQUITY/OEM

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interactions with iBiquity typically involve transmission licensing.

CONTRACT TERMS

The case stems from 2005, when iBiquity licensed its receiver technology to Siemens VDO Automotive Corp. Siemens agreed to pay iBiquity HD Radio patent royalties every quarter. Continental, an OEM that sells infotainment systems to automobile manufacturers, acquired Siemens in 2007 and inherited the contract.

Continental has told the U.S. District Court for the Northern District of Illinois, Eastern Division, that for eight years, it paid iBiquity royalties based on the price of the entire receiver, but after reviewing the agreement, Continental decided it was paying too much.

It told the court it interprets the contract to mean it could have been paying as little as $1 in royalties per receiver, up to a maximum of $6 per unit, depending on volume sold. But Continental says it always paid the higher amount because of iBiquity's incorrect interpretation. It believes it has overpaid iBiquity by more than $1 million.

According to Continental, iBiquity bases the royalty payment on the price of the entire head unit, not only on components of the receiver implementing proprietary HD Radio-related patents. Therefore, it continued, the tech developer is trying to expand the scope of its "patent monopoly" to include receiver components that are not patented.

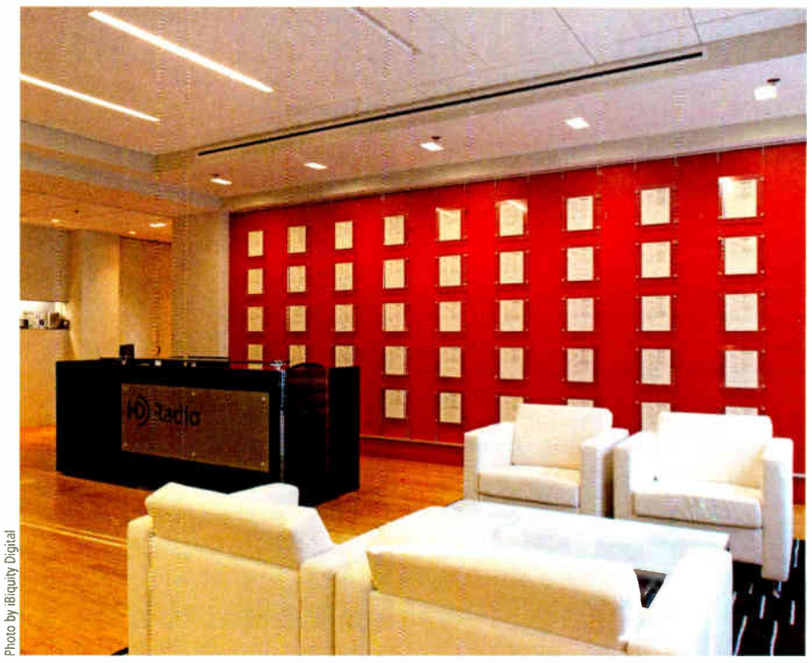

Photo by iBiquity Digital

A wall of patents at the iBiquity headquarters in Maryland. Continental believes the company is trying to expand the scope of a "patent monopoly" to include receiver components that are not patented.

Continental told the court that for eight years it paid royalties based on the price of the entire receiver. It later decided it was paying too much.

IBiquity believes 25 patents from its portfolio are "essential" to the HD Radio portion of a receiver. These include "Joint Equalization System for AM Digital Receiver," "Method and Apparatus for Simultaneously Broadcasting and Receiving Digital and Analog Signals," "Audio Blend Method and Apparatus for AM and FM In-Band On-Channel Digital Audio Broadcasting" and "Method and Apparatus for Reduction of Interference in FM In-Band On-Channel Digital Audio Broadcasting Receivers."

Continental isn't disputing the actual 25 HD Radio receiver patents; the OEM supplier is saying it should pay only for the iBiquity patented components, not for other features and functions of the receiver. Continental emphasizes that its headunits have functions beyond receiving and decoding HD Radio signals, such as navigation, Bluetooth, telematics and multimedia playback functions like DVD and CD as well as receiving and decoding analog AM/FM.

The Illinois-based company has purchase agreements with third-party component manufacturers to buy HD Radio semiconductor components for use in Continental's headunits. Receiver-makers can either build HD Radio receivers from scratch or buy certain components and integrate those, as Continental does. One advantage of the latter approach is that products can be finished faster, iBiquity has told Radio World over the years.

The supplier decided that iBiquity had misinterpreted its own agreement, and so it stopped paying in the third quarter of 2013.

According to a letter from iBiquity to Continental that was submitted to the court, iBiquity wanted to renew Continental's licensing agreement for a 10-year period under the original terms and does not agree with Continental that it had misinterpreted its own contract. "Specifically, Continental made it clear to iBiquity that Continental would not pay a royalty based on iBiquity's method of calculation, a method that has been accepted by all of iBiquity's other licensees," the company stated in its November 2013 letter.

IBiquity warned Continental it was "prepared to take action" if the auto supplier didn't pay, and that Continental would also be liable for 1.5 percent per month interest on top of the overdue and (publicly unspecified) total debt.

PATENT VS. CONTRACT

When Continental didn't pay, iBiquity filed a breach of contract suit in Maryland this February, seeking to recover monetary damages. Much of iBiquity's paperwork has been filed to the Circuit Court in Montgomery County, Md. under seal and/or with portions redacted, so it's difficult to determine how much money it seeks from the auto supplier. Continental then filed its federal court suit in March.

In a motion to dismiss the Continental lawsuit, iBiquity attorneys claimed the federal court lacks jurisdiction. They told the court that the dispute boils down to an interpretation of an intellectual property license agreement. "Despite Continental's assertion that its complaint invokes substantial questions of patent law, the only valid and ripe issues arise under state contract law," says iBiquity in a filing.

According to iBiquity, Continental's claims of patent exhaustion and patent misuse are not proper but rather are defenses to a "hypothetical" patent infringement suit. The supplier's claim, iBiquity argues, fails to mention that iBiquity had just filed its own suit in

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Antoine Builds on a Sound Education

Early audio work led to his job helping WBGO keep the flame of jazz alive

One of the pleasures of my job is introducing you to folks I've come to know and respect in our industry. Accomplished people. Good people.

One is David Antoine. Born and raised in the Bedford-Stuyvesant section of Brooklyn, David started out learning audio sound engineering as a working member of the East Cultural and Educational Center in 1969. Soon moving into the world of radio, he worked his way up in engineering circles to become chief engineer of WBGO(FM) in Newark, N.J., and a member of the board of the Association of Public Radio Engineers. He also has done engineering and IT work for WQXR(FM)/WQEW(AM) New York Times Radio; he was sales engineer and tech support engineer for manufacturer AETA Audio and worked as a project engineer for DSI RF Systems, building transmitter rooms and servicing the broadcast community in the New York area.

I asked David to tell me a bit more about himself as part of Radio World's coverage of successful and interesting engineers in our industry.

What's the scope of your responsibilities as chief engineer of WBGO?

As chief engineer for WBGO(FM) 88.3 MHz, it is my responsibility to keep the station on the air and sounding good, maintaining FCC compliance, EAS compliance, and everyday management of the technical plants that make WBGO run. In this digital age additional responsibilities include maintaining the broadcast computer networks and our in-house LAN, which facilitates the staff desktops and laptops, printers, etc.

Our broadcast studios and offices are located in downtown Newark, N.J. WBGO has a primary transmitter site in the heart of Manhattan, at 43rd Street and Broadway in Times Square. Our backup site is our old primary site, which is in downtown Newark.

You had a big RF project in the past few years; describe that.

WBGO is the last remaining full-time jazz music radio station here in the New York tri-state area. When we

used to broadcast from Newark we got out pretty good, had decent coverage; but we were always lacking in the five boroughs of New York City, where a lot of our core audience and donors lived. When I was hired as chief engineer in 2009, there were plans on the table to move the main transmitter into Manhattan to provide better New York City coverage. I picked up those plans and reworked them, and we signed a lease and built a new transmitter site at the Durst building at 4 Times Square.

It was a fun project for me, as I was shown an empty room on the 51st floor by John Lyons, Durst vice president of communications and broadcast operations, and basically told to have at it. I put on my project manager hat and proceeded to solicit quotes and plans for antenna, transmitters, and the equipment needed to build a state-of-the-art transmitter site. That was early spring 2011.

WBGO went on the air from 4 Times Square in late December 2011. WBGO's coverage was increased within New York City as planned. We now get better signal penetration in the buildings in Manhattan, whereas before it was really hit and miss where reception of 88.3 MHz was concerned.

What's your background and how did you first get involved in audio, recording and radio?

My humble beginnings: I grew up in a wood frame house in the Bedford Stuyvesant section of Brooklyn, N.Y., about half a mile from Pratt Institute. I always had an interest in electronics and technical things. Won a citywide science fair while in the sixth grade at Junior HS 117. My project was a basic telephone transmitter made from parts that I got from Canal Street and the Bell Telephone central office in downtown Brooklyn.

In my mid-teens I took a summer job at a cultural center called The East. The East became a place for locals to go and listen to top-named jazz and Latin jazz artists perform on weekends. It was a family atmosphere, as they did not serve alcohol. So I was able to hang out and work there and learn audio engineering putting microphones in front of people like Max Roach, Betty Carter, Freddie Hubbard, Pharaoh Sanders, Sun Ra & his Orchestra, and other top-named jazz greats.

While working there I was introduced to my mentor and friend "Q.J." Simpson, who was a local mobile DJ. (No relation to OJ). Q.J. had a big following and had his own DJ equipment which he would haul around in Oldsmobile 98. People would hire him for dances, weddings and any event that required music. At some point he added microphone setups to his system. We began doing small venue shows and concerts. We became sought after by many of the event promoters in New York, as we had a rep for being very professional and knowing what we were doing. And we provided real good sound.

At some point I branched out and wanted to tour. A friend of mine, another mobile DJ named "Plummer," was working with the Trammps out of Philadelphia. They were getting lots of tour dates and Plummer needed help. I was asked if I was available and began touring with them in the fall of 1977. For the next five years I toured with various bands as a front-of-house audio engineer. Learning and honing my skills as an audio engineer and a technical manager.

Around about 1980, during some down time and a slow touring period, I decided that I wanted to get a steady job. I always had an interest in broadcasting. I signed up for classes at ATS, Announcer Training Studios. They taught a course that prepared you to take the First Class FCC exam. Having an audio background made the course work very easy for me.

I passed all three elements of the FCC exams got my First Class "ticket" at the end of 1980. I began sending out résumés. Thirty to 40 mailings later I was hired as an assistant chief engineer under Richard Koziol for WNCN(FM) 104.3 MHz GAF Broadcasting in New York City. My first job in radio. The rest as they say is history. Thirty-three years to the date.

Favorite smartphone app?

FING gives you a snapshot of the network you're connected to. Shows all IP addresses current and some that were used by equipment that may be dormant. Next would be Maps ... use that every day, practically.

Your most interesting experience in radio engineering?

Setting up for a live interview with Nelson Mandela at Gracie Mansion in New York City during his visit to New York after he was released from prison. I got to meet him, shake hands and take a picture with him.

Words of wisdom for young people interested in a career in broadcast technology?

Walk into a broadcast facility and find the engineer and make him your mentor.

Find out when and where your local SBE chapter meets; visit *www.sbe.org* under the Chapters tab. Attend the meetings. They are free and they are glad to have you walk in the door.

IT skills are a big help. Cisco training goes a long way. Electrical engineering. Learn the sciences that compliment broadcast engineering.

And while you are at it, learn some people and management skills. Because you will have to interface with your coworkers and if you are responsible you will be given a project and a budget to manage.

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

Antoine got his First Class "ticket" at the end of 1980; his first engineering job was under Richard Koziol for WNCN(FM) 104.3 MHz GAF Broadcasting in New York.

FROM THE EDITOR

Paul McLane

THIS ISSUE

AUGUST 1, 2014

IBIQUITY/OEM

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Maryland. "Viewed in that context, it becomes clear that Continental's complaint is an attempt to manufacture federal ... jurisdiction to evade iBiquity's first-filed state law claims."

What's clear from the paperwork that Continental filed with the federal court is that the automotive supplier didn't like the agreement it inherited from Siemens. Continental asserts iBiquity has misused its patents "through its attempts to improperly expand the scope of its patent monopoly by demanding royalties over components not within the scope of the patent claims, or both."

IBiquity says in response: "Continental's complaint is a transparent and baseless attempt to recast its defenses to iBiquity's state law breach of contract action into affirmative claims 'arising under' federal patent law."

Continental wants the $1 million it believes it has overpaid iBiquity, and a new licensing agreement based only on on royalties for iBiquity's patented receiver components. Among other things, Continental is seeking monetary damages for what it considers to be unjust enrichment from overpaying in the past; the firm also sought an injunction to stop iBiquity from "interfering with Continental's business relationships" by telling customers that the OEM was no longer an HD Radio receiver supplier.

Both sides also disagreed about when their arrangement ended. Continental said its license agreement with iBiquity expired June 29 and asked the court to enforce the deal until the latest litigation played out; iBiquity believes the license expired earlier because the companies couldn't negotiate an agreement after Continental's payments stopped.

IBiquity Digital told the federal court the basic dispute boils down to an interpretation of an IP license agreement.

The auto parts supplier wanted the court to force iBiquity not to terminate what Continental considered to be an existing licensing deal.

Continental had filed a request for a temporary restraining order and preliminary injunction against iBiquity related to this goal. Then in July, it withdrew those requests as the OEM supplier and iBiquity extended the current licensing contract regarding iBiquity's intellectual property for receiver technology. But the monetary terms and length of the contract are unclear because portions of the document filed with the federal court are redacted.

So while it appears the sides may have settled one portion of the federal proceedings, their dispute over patent infringement continues in federal court. IBiquity recently asked the court to dismiss Continental's patent infringement claim related to the sale of HD Radio receivers while Continental opposed that request.

Meanwhile, the Maryland case is ongoing. Continental tried to get that case stayed but this was denied in June. Both companies have asked the court for the right to file documents confidentially. Discovery in the case is set to be completed by mid-October.

NEWS ROUNDUP

WESTWOOD ONE: Cumulus subsidiary Westwood One will sell spots on NextRadio's behalf and pay the proceeds to Sprint. Participating broadcasters have been asked to commit either ad inventory — two minutes per day per station — or dollars toward the Sprint effort. More than a year ago, NextRadio proponent Emmis — acting as a stand-in for the industry — negotiated a deal with Sprint that called for the wireless carrier to embed and activate the FM app in a minimum of 30 million devices over three years. In exchange, radio groups committed to provide Sprint with $15 million worth of station ad inventory for each of those years. Emmis had been handling the payments; now WWO will.

Westwood One

EAS

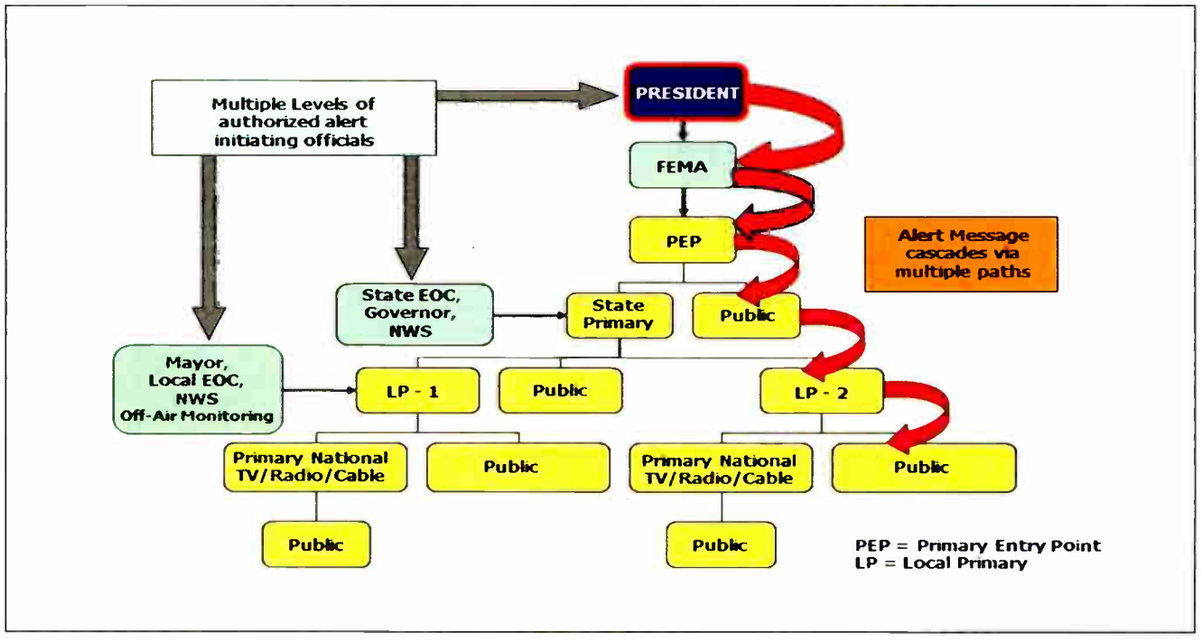
(continued from page 1)

commission spells out in the proposed rulemaking released in June. (CAP was not included in the first national test; TV and radio stations were not required to have CAP-compliant EAS equipment until mid-2012.)

Gary Timm, broadcast chair of the Wisconsin EAS Committee, said every one of the FCC's new proposals, if adopted, will have some impact on EAS participants. "However, the commission does a very good job in this NPRM of not only explaining its intentions, but also detailing the possible pros and cons of each proposal."

The commission spells everything out in the NPRM, according to Timm, giving broadcasters the ability to evaluate the impact of the proposals.

In the rulemaking, the agency suggests using the existing event code "NPT" for National Periodic Tests. The FCC says this proposed change and others are necessary to conduct future nationwide national EAS tests. FEMA would like to hold another test "in the near future," according to the commission.



Traditionally, EAS alerts are distributed via the so-called daisy chain, a hierarchical, broadcast-based alert message distribution architecture in which a message originator at the local, state or national level formats a message in the "EAS protocol." The originator initiates the alert transmission at a designated entry point; that alert is relayed from one designated station to another until all EAS participants have received it and delivered it to the public.

NPT GEAR GUIDANCE

FEMA and other stakeholders have asked the FCC to give guidance on how EAS equipment must process the NPT. Most EAS experts contacted for this article agree substantial software and hardware upgrades for stations will be required if the commission revises its rules so that the NPT test code fully emulates an Emergency Action Notification, the live code to be used by the president or his representative in an actual emergency, in all of its characteristics.

An alternative is to have the NPT activated similar to any other alert, without the benefits of the full EAN, meaning it would not override other EAS alerts or test the functionality of EAS equipment by lasting longer that two minutes. While local and state EAS messages are time-limited to two minutes, there is no limit for national EAS alerts, according to FEMA.

The impact on broadcasters and their EAS encoders/decoders will be determined by which tactic the FCC chooses to pursue, said Sage Alerting Systems President Harold Price. "As the NPT code has always been a part of EAS, all devices, legacy and otherwise, should be able to accept and relay an NPT as it is currently defined — a regular alert with a two-minute time limit," Price said.

If the commission decides to make NPT work like an EAN — with no time limit — a more significant source code change would be required, Price said. "In the case of Sage grey box legacy equipment, there is no workaround treating an NPT like an EAN; the hardware would need to be replaced."

It's unclear exactly how many stations might need to replace EAS gear under that scenario. Much of the equipment tested in 2011 has since been replaced with new CAP-aware gear, EAS observers said.

The commission also proposes testing the Emergency Activation Notification — which can only be activated by the president or his representative — every three years. Adoption of a national location code, 000000, for both EAS and NPT is being recommended to prevent confusion with a specific city code.

Broadcasters will most likely have to update EAS equipment to receive the new national location code, according to experts.

"I can't speak for other manufacturers of CAP EAS equipment, but our assumption is that a software or firmware update may be required," said Ed Czarnecki, senior director of strategic development & global government affairs for Monroe Electronics. "From some legacy equipment, there is the

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CSRIC ADVISES EAS IMPROVEMENTS

The Communications Security, Reliability and Interoperability Council, an FCC advisory committee, established 10 working groups to examine areas of concern about EAS infrastructure; its Working Group 3 focused on improvements.

Based on the work of its subgroups, CSRIC adopted those recommendations and gave them to the FCC.

Suggestions included improving EAS operational issues and security, and the commission responded with its NPRM soon after in June.

EAS experts said the agency viewed CSRIC's work favorably, though the commission did not act on every recommendation, such as those addressing State Emergency Communications Committees, state EAS plans and cybersecurity.

Clay Freinwald, Washington State Emergency Communications Committee chair and co-chair of CSRIC's State EAS Plans subgroup, said his group's suggestions would not affect broadcasters significantly.

The subgroup recommended steps to improve the process for developing and submitting state EAS plans to the FCC. As part of the plan, broadcasters would be asked to step forward, lending their expertise and technical assistance in support of SECC.

"We also need to get more people from the radio management and programming side involved in EAS. It's not just an engineer thing anymore," Freinwald said. "EAS is a cooperative and collaborative, and to get to that level we need all sides coming together, from the local emergency manager to the broadcast and cable systems."

Meanwhile, CSRIC's EAS Security subgroup's list of best practices pressed broadcasters, manufacturers and all participants to adhere to stricter security standards to protect EAS from cyberattacks. Nevada EAS Chair Adrienne Abbott said the goal of the subcommittee was to look at every angle of cybersecurity.

"Our recommendations came down to the basics. Access, good password hygiene and constant updating are all very important. Keeping EAS gear in a secure physical environment is important, too," Abbott said. "There will be a cost to radio broadcasters for good cybersecurity."

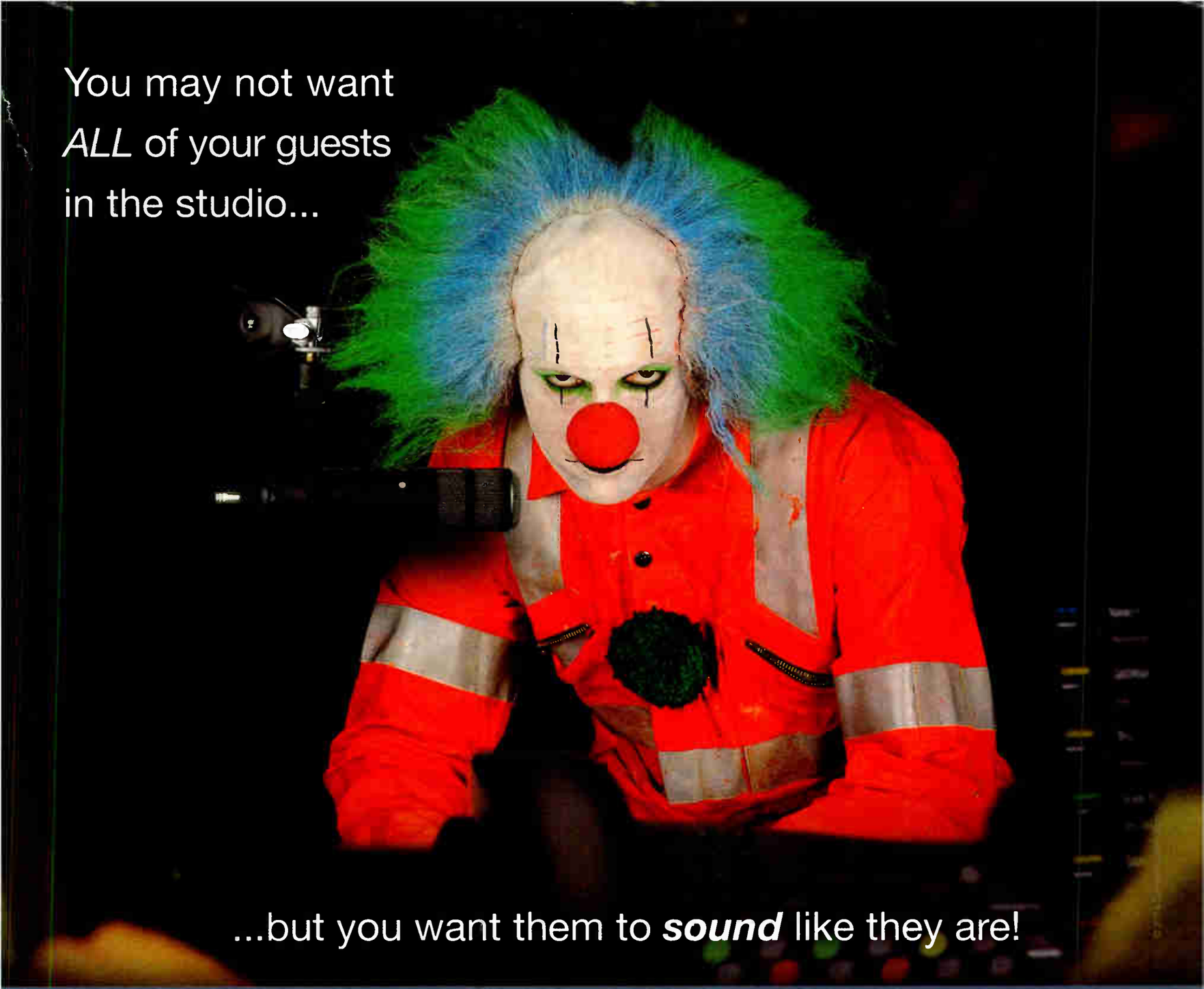
Abbott said most radio station managers don't believe they have a cybersecurity issue even though their EAS equipment is connected to the Internet. Broadcasters "will padlock the prize closet yet have a Windows XP computer back in the jock pit for [EAS] stuff," Abbott said.

The EAS Security subgroup, which consisted of broadcasters, cable operators, SECC representatives, equipment manufacturers and government reps, members recommended radio staffs undergo periodic IT security training.

To read the recommendations, go to *fcc.gov/pshs/advisory/* and click on "CSRIC."

— Randy J. Stine

You may not want
ALL of your guests
in the studio...



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EAS

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possibility that a software or firmware upgrade would be also needed, assuming that legacy equipment is even being supported by a manufacturer."

If the station's legacy EAS device is not supported, it may become a question of equipment replacement, Czarnecki said. "The FCC did caution about the potential impact of rule changes back with the Fifth Report and Order on EAS in 2012. The handwriting has been more or less on the wall for the past several years."

It could cost about $2,500 to $3,500 to replace a typical radio station's EAS encoder, according to experts.

Adoption of a national location code (000000) for both EAS and National Periodic Test is being recommended to prevent confusion with a specific city code.

ELECTRONIC REPORTING

In addition, the FCC wants to simplify the use of the online Electronic Test Reporting System, used by participants to report test results.

The commission reported that more than 16,000 EAS participants submitted test result data following the 2011 national test. However, some respondents used paper forms. The agency asks for comment on whether to mandate use of the electronic filing system in the future.

The FCC also seeks input on whether to require stations to meet minimal standards to ensure alerts are accessible to all members of the public, including those with disabilities, though the agency is mindful of concerns about potential implementation costs. "However, all members of the public should be able to receive timely and accurate EAS alerts. It is critical, therefore, that that the EAS be accessible to all members of the public, including those with disabilities," the commission wrote in its NPRM.

The Minority Media Telecommunications Council has proposed that the commission change EAS to require Primary Entry Point stations to air presidential-level messages in both English and Spanish. This is the subject of a separate rulemaking, as Radio World has reported (June 18, "EAS: Lost in Translation?")

More concise EAS standards are needed to aid broadcasters and planning, said Gary Smith, chief engineer for Cherry Creek Radio's Utah station cluster.

Along those same lines, the FCC seeks comment on ways to ensure EAS audio and visual elements convey the same meaning during an event.

Ultimately, more concise EAS standards are needed to aid broadcasters and planning, said Gary Smith, chief engineer for Cherry Creek Radio's Utah station cluster.

"Current language that allows for shortcuts has hurt the broadcaster who least can afford CAP equipment. They have been allowed to add a CAP decoder to legacy equipment and now may find themselves in a position where they need to purchase new CAP compliant equipment to replace the legacy equipment."

A firm understanding of the FCC's expectations for EAS "will help manufacturers to further develop their EAS products," Smith said.

The FCC said it does not comment on pending rulemakings. Comments to EB Docket 04-296 are due Aug. 14 and replies Aug. 29.

Comment on this or any story. Email radioworld@nbmedia.com.

NEWSROUNDUP

C4 CLASS: The FCC is taking public comments on a proposal to create another FM station class, to be located between Class A and Class C3. SSR Communications CEO Matt Wesolowski and the Minority Media and Telecommunications Council have spearheaded the effort; Wesolowski owns a 5 kW Class A in Flora, Miss. They say if approved, the Class C4 would enable many Class A facilities to upgrade to a maximum effective radiated power of 12 kW from a reference antenna height of 100 meters above average terrain. Public comments are due to the commission on RM 11727 by Aug. 18.

LOS ANGELES PPM: Nielsen ended its investigation of ratings issues in the Los Angeles market without sanctioning Univision and deciding against reissuing a year's worth of Portable People Meter ratings for the market. Nielsen told clients it found big swings in ratings for only one station, Univision-owned KSCA(FM) in Los Angeles. After reviewing L.A. PPM data going back 12 months, Nielsen decided a ratings reissue for that period would be of limited commercial benefit and result in further market disruption. Univision in June fired an employee from KSCA who was related to and living in the same household as a Nielsen PPM panel member.

HD RADIO: Alpine Electronics' new X009 series Audio/Video/Navigation system includes a 9-inch screen which is meant for truck and SUV owners. The X009-GM and X009U have an HD Radio receiver and offer Pandora control from iPhone and Android smartphones. The inclusion of HD Radio

is notable as automakers and aftermarket receiver manufacturers migrate to center stack infotainment systems. The units are "Made for iPod and iPhone" compatible and feature rear USB access. They are compatible with SiriusXM satellite radio when used with a separate tuner. The X009-GM and X009U can be used with TuneIt 2.0, Alpine's smartphone app for in-vehicle sound tuning. The X009-GM lists for $3,000 and the X009U lists for $2,700. Both models are available now at Alpine retailers (*www.apline-usa.com*).

NEXTRADIO: Approximately 1,130 stations are delivering elements such as album art and other enhanced content through the NextRadio app, including approximately 760 Educational Media Foundation stations that recently began using Emmis' TagStation to deliver the interactive features of the NextRadio FM smartphone app. Another 3,800 stations are using the free logo-only visual, according to Emmis. Sprint has invested an undisclosed amount in an on-air campaign with 100 stations in 11 markets. The campaign runs through the end of September. Also, NextRadio, NPR and American Public Media launched a website (*www.freeradioonmyphone.org*) to market the app on the air and on other platforms. In a letter, NPR and APR urge member stations to sign up with NextRadio.

HUBBARD: Family-owned Hubbard Radio promoted its executive vice president and chief operating officer, Drew Horowitz, to president and chief operating officer. Ginny Morris will remain chair and chief executive officer; she reclaims the latter title after the departure of Chief Executive Officer Bruce Reese.

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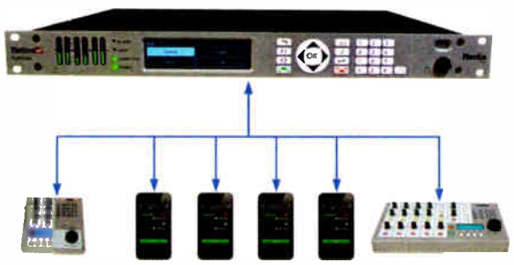

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Sense Lightning Strikes to Minimize Risk

And don't get locked out in an emergency

WORKBENCH
by John Bisset
Read more Workbench articles online at radioworld.com

Summer is prime time for thunderstorms. Broadcast engineer Ron Gnadinger has come across a great tool for RF tower engineers.

It's the AS3935-DB. This device is a lightning sensor, and Ron ordered an evaluation kit from Digi-Key. He installed it inside a clear Pelican Case brand shipping container to make the sensor completely portable.

Seen in Fig. 1, the evaluation kit centers around the Franklin Lightning Sensor IC. Manufactured by AMS, this IC senses lightning activity nearly 25 miles away, well beyond human sensing. The sensor also estimates the distance to the head of the storm and displays it.

Fig. 1: The Franklin Lightning Sensor evaluation kit.

The AS3935-DB will detect both cloud-to-ground and cloud-to-cloud lightning strikes.

The device is suitable for low-power portable use and can be modified, as Ron did, to accept D-cell batteries.

Ron uses the device, in its portable case, when working at the base of a tower or on the tower itself. The indication of storm activity gives advance warning to hazardous lightning. But perusing the application notes, he discovered that it's possible to use the lightning sensor in conjunction with the station weather instrumentation.

Another bonus: Using this lightning sensor beats listening to the static crashes on a portable AM radio.

The AS3935 can discriminate between true lightning strikes and interference from common manmade sources like fluorescent lights, arcing switch contacts and microwave ovens.

It's a robust chip, and the cost of the evaluation kit is under $260. Digi-Key has a wealth of information on this chip, with application notes, specifications and even a video. The AS3935 chip is manufactured by Austrian company AMS (*www.ams.com*), which is known for its development of a variety of sensors.

For more information on the evaluation kit from Digi-Key, go to *www.digikey.com* and search for Digi-Key part number AS3935-DK-ND.

Ron Gnadinger recommends the device for any engineer who might be working at or on a tower — after all, you never know when a surprise storm may be approaching. Ron can be reached at *rong@up.net*.

Positive Radio Group Project Manager Winston Hawkins has followed our transmitter site security discussions over the years.

At sites where there are multiple tenants (and multiple locks), a cheap and dirty way to secure the gate is to loop the locks through pieces of chain. But when locks are looped this way, someone inevitably gets locked out of a site. And, of course, the lockout will occur when your station is off the air and you need to get into that gate. Some engineers figure that bolt cutters are the answer.

Fig. 2 shows a solution at a cellular site where Winston has a translator. The device is called a Stymielock, and it eliminates the lockout problem because it enables any individual lock to be removed without affecting the remaining tenant locks.

It's cost-effective and easy to install on any type of fence gate. The standard Stymielock will handle up to four locks but it can be expanded to 12 or more.

For information visit *www.stymielock.com*, and when you order one, tell them you heard about their product in Radio World's *Workbench* column.

Reach Winston Hawkins at *winhawk1@comcast.net*.

Fig. 2: Use the Stymielock to end tower site lockouts.

Fig. 3: Beam tilt on a tree?

Steve Tuzeneu writes from Abilene, Kan., with a fun cell tower picture, shown in Fig. 3.

Yes, the tower is disguised to look like a tree; but is it my eyes, or is the tower leaning? Perhaps some kind of beam tilt?

Steve can be reached at *stuzeneu@gmail.com*.

Smartphone apps are amazing, and there are more than thousands on the market. What's just as amazing is the number of apps that are useful *and* free.

Do you have an app or two that you couldn't live without? Share them with your broadcast engineering brothers and sisters by emailing your finds to me. We'll publish the most popular and useful apps, which in turn, should make your job easier.

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

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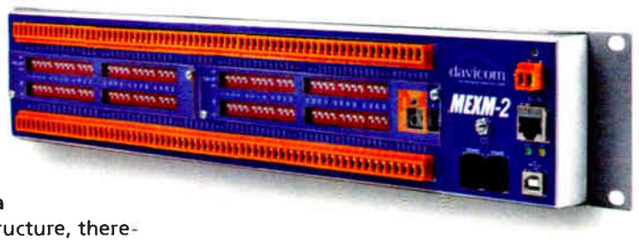


Davicom's new MEXM-2 (shown) provides 64 opto-isolated, wet or dry contact digital inputs for use with any product in the Davicom DV line of remote monitoring and control systems. These extra inputs are integrated into the DV-Micro's control structure, therefore taking advantage of the unit's control, monitoring and automation functions.

Also, the company's new Android application provides information needed, when and where needed. Whether on the road, at the office or at the site, a connection can be made to any Davicom DV-208/216/Mini unit and receive critical site information. DV-Units can also call and send alarm notifications to a smartphone or tablet.

The new FM broadcast monitor receiver (FMBM-2) adds MPX input and output capability and optional AES-EBU digital outputs to the FMBM-1. The FMBM-2 offers a number of advanced features in a compact, low-cost package. Designed for integration into Davicom's control and monitoring structure, the FMBM provides the benefit of remotely monitoring the key RF parameters of an AM or FM transmitter to ensure regulatory compliance.

And Inovonics and Davicom announced the release of the first direct connect interface between their products. Thanks to Davicom's SNMP manager and to the Inovonics 610 Internet radio monitor's SNMP agent, the interface allows one-cable interconnection between the units. The interface consists of a Cat-5 cable, a DV configuration file that can be downloaded into any Davicom Mini or Davicom 208/216 unit and a DavLink Workspace file for the PC.

INFO: www.davicom.com

LIGHTS! CAMERA! RUSHWORKS!

For radio stations looking to get onto the Web but without actually having to hire a video crew, automated video production products maker Rushworks might have your solution.

Ctrl+R is a touchscreen PTZ camera control software application for

Windows 7 and Windows 8 systems and supports up to four standalone PTZ cameras. The new PT-Mini pan/tilt head (shown) lets users use a preferred HD camcorder that supports LANC (Sony) or JLIP (JVC) control protocol. Pan, tilt and zoom are controlled via VISCA command protocol from the Ctrl+R software.

VDESK LITE is a new entry-level offspring of the company's VDESK/REMO Integrated PTZ Production System. It has four inputs that can be configured for analog or SDI sources, and it supports SD and HD production switching, encoding and streaming. PTZ camera control is included.

Segment is a new standalone video file segmenting utility that supports fast, accurate trimming of segments within MPEG-2 or MP4 files. Segment information can be saved as metadata within the file or the individual segments can be exported as discrete files. It's interfaced with the Contour ShuttleXpress for maximum speed and efficiency when segmenting.

INFO: www.rushworks.tv

NETIA SHOWCASES MEDIA, MANAGEMENT SOLUTION

At the 2014 NAB Show, Netia said it addressed two major trends across the broadcast industry. The first concerns mobility and the concept of broadcasting everywhere, and it demands that companies capitalize on mobile technology and evolving user behavior with cross-platform collaboration.

The second trend concerns engagement with audiences through social media, a process that requires effective management and repurposing of video, audio, images and associated metadata to adapt to a converging market.

While Netia has long offered two product ranges, one dedicated to audio/radio broadcast and the other to video/TV broadcast, the company says it is merging those platforms and technologies to offer a media management and distribution solution, easily configured, managed and accessed via a Web-based interface.

With this platform, Netia says its customers can establish a mobile presence — on the Internet, smartphones and tablets — while continuing to create content for traditional broadcast, and they can connect and interact with their audiences without the cost of additional tools.

Netia says this platform accelerates creation and production processes while enabling broadcast professionals to connect across multiple devices and platforms, and to handle multiple formats, anytime and anywhere.

INFO: www.netia.com

THE SCISYS DIRA! GOES SELF-OP

Scisys offers radio production and playout systems for major broadcasters, its client list including the BBC, Deutsche Welle and Arqiva.

The latest addition to its dira! range of products is the dira! Onair Player. Designed with the needs of popular, DJ-operated radio broadcasting in mind, it is described by the company as "a configurable, all-in-one studio command center."

A newly designed software interface screen is optimized for self-operated output and offers switchable modular layout customization.

The Onair Player can operate four playlists simultaneously, with two faders used for each to provide for manual crossfading. Each individual playlist can be operated in a range of modes ranging from fully manual to fully automatic. An integrated segue editor is built into the software, which provides for crossfading between tracks and dropping in jingles or prerecorded voiceovers.

INFO: www.scisys.co.uk

SATELLITE SIGNAL LEVEL METER AND SAT IDENTIFIER

Our TURBO-S2 meter makes satellite antenna aiming fast and easy. Now you can perfectly peak all your dishes, to achieve maximum performance and reliable reception of "finicky" new digital channels. The unit powers the LNB for convenient work at the dish site. The TURBO-S2 shows the name of each satellite, plus displays key signal quality specs for all

MPEG2/MPEG4/DVBS/DVBS2/QPSK/8PSK channels. Adjust to perfection when viewing readouts for carrier-to-noise (C/N), signal quality (EbNo), and Bit Error Rate (BER). This USA-built unit comes with English speaking tech support, and our customers widely praise the unit for its features and reliability.

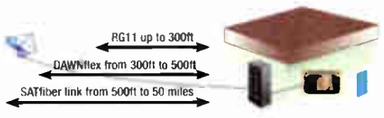
SURGE SUPPRESSOR FOR LIGHTING NEAR SATELLITE ANTENNA

Place "LNB-Zap-Stop" in the coaxial cable line that runs from the dish, to the satellite receivers. Think of it as an "insurance policy" to protect expensive indoor equipment from lightning hits. Transient

Suppressing Diode technology works to block high voltage lightning surges. The lightning protection units can take multiple hits, with no need for reseting or replacing.

CHOOSE THE BEST LNB SIGNAL CABLE

On long satellite signal cable runs, avoid using "noisy" amplifiers, so that you maintain the maximum C/N performance that your dish can deliver. Choose DAWNflex low-loss coaxial cable for dish-to receiver distances from 300 to 500 feet. This flexible cable passes satellite L band signals with very little loss. It is flooded for direct burial, and the quad shielded design



offers the best protection from signal ingress. Choose the SATfiber link for dish-to-receiver distances from 500 feet to 50 miles. Eliminate long distance signal attenuation, and lightning surge problems, when you install SingleMode fiber running out to the dish. Place our SATfiber Transmitter and Receiver units on both ends of the fiber, and pass 45 to 2800 Mhz with perfect quality. Call DAWNco to hear about our easy-install fiber, and for help choosing the best SATfiber system for your needs.

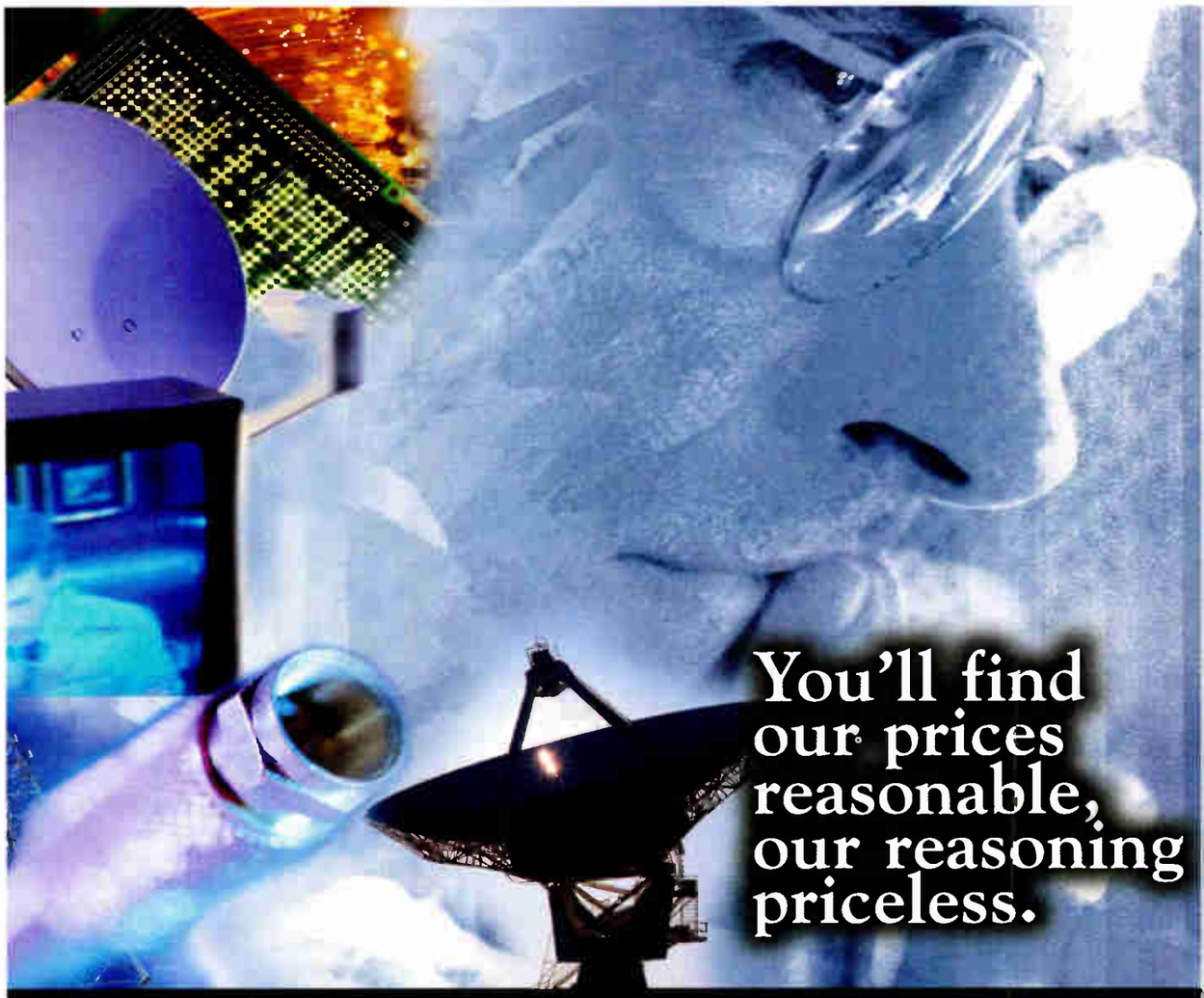
HD GRADE LNB AMPLIFIERS ARE NEEDED FOR NEW SAT CHANNELS

Several networks have made the switch to DAWNco's new "L series" of C and Ku band LNB amplifiers, to accommodate the "finicky" nature of new HD satellite receivers. This new generation of LNB has improved specs that can make a real difference in the reception of high-definition and 8PSK satellite channels. These new LNBs feature best-in-industry specs for "1dB gain compression point" and "phase noise." Internal circuitry has been completely redesigned for reduced power draw, so that indoor receivers and power supplies will never be overtaxed. In order to prevent video picture tiling and signal outages, when outdoor temperatures fluctuate, DAWNco's best LNBs feature a highly stable +/- 2 Khz rating. Make sure to upgrade to the new DAWNco "L series" LNBs, and watch for improved EbNo readings on your digital satellite receivers.

HIGH GAIN 4.2 METER SATELLITE ANTENNA

In stationary or motorized configuration

Bigger is better, when you consider satellite antennas for optimum MPEG4 satellite channel reception. The 4.2m is the largest and highest gain dish that still mounts on a single pipe. The unique aluminum reflector can be delivered in 1-piece on a special factory truck, for fast installation, or in an 8-petal configuration for easy-carry to a rooftop location. Call DAWNco for help choosing the most cost effective satellite antenna to improve your satellite reception.



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JÜNGER PROVIDES AUDIO CONSISTENCY

Audio processors have come a long way since digital signal processing hit the mainstream. Jünger Audio's latest D*AP4 VAP, part of the company's Slim Line range, takes a new approach to maintaining the consistency of presenter voices.

Designed for use in radio and television studios, the D*AP4 VAP employs Jünger Audio's Spectral Signature dynamic equalizer to analyze incoming voice audio and compare it to individual predetermined "voice fingerprints," the company says. These can be stored on a central server for network access in multiple studios. To achieve a consistent sound impression, dynamic EQ correction can then be applied to the incoming audio such that it closely matches the version previously on file.

As well as various optional input and output boards, the D*AP4 VAP can also be fitted with Level Magic II loudness management processor and a separate loudness logging tool to help ensure level compliance and consistency. As with other Slim Line units, the D*AP4 is compatible with Jünger's J*AM Application Manager, which provides detailed statistical information about system performance.

INFO: www.junger-audio.com

JBL INTRODUCES 3 SERIES

Speaker specialist JBL has a new LSR powered studio monitor line, the 3 Series.

According to the company the 3 Series leverages the "new technology developed for JBL's flagship M2 Master Reference

Monitor." A key feature for the series is JBL's Image Control Waveguide, designed to help listeners "hear greater depth and ambience in recordings."

The 3 Series is initially available in 5-inch (LSR305 — shown) and 8-inch (LSR308) two-way models and a 10-inch subwoofer. Specs according to a release are: LSR305, 43 Hz to 24 kHz and a peak SPL of 108 dB; LSR308, 37 Hz to 24 kHz and a peak SPL of 112 dB. Class D 200 W amplifiers power them.

The LSR310S has high- and low-pass filters and an expected low-frequency output of around 27 Hz with 113 dB peak SPL.

The speakers have JBL's double-flared Slip Stream port.

INFO: www.jblpro.com

VIDIGO VISUALIZES RADIO'S FUTURE

VidiGo Visual Radio, an automated software solution, can turn a radio show into an entertaining visual show, the Netherlands-based company says.

VidiGo Visual Radio automatically switches cameras and plays graphics by analyzing audio signals and XML data from the radio station's automation system. The solution is able to mimic a real director, explains the company, leaving radio presenters to do what they are good at, making radio.

With six years in the visual radio arena, VidiGo's most recent generation of its software is the fruit of the company's experience as well as customer feedback, it says. In addition to switching cameras and showing graphics, VidiGo Visual Radio now features video content, thus making it possible to show video clips in sync with audio or play-back "video jingles" triggered by the audio table.

INFO: www.vidigo.tv/engine

EVENTIDE PLUGS IN NEW OPTIONS

Eventide's H3000 Ultra Harmonizer was a production room staple two decades ago, but there's no need to haunt eBay for a vintage example, thanks to the H3000 Factory Harmonizer software plug-in that emulates many of the favorite effects of the original H3000. Featuring 450 presets, including 100 presets from the original H3000, the H3000 Factory is now 64-bit-compatible with ProTools 11. Eventide's Ray Maxwell says due to popular demand, the updated versions of H3000 Factory, 2016 Stereo Room, Omnipressor and Blackhole reverb plug-ins no longer require a dongle.

Eventide is also now shipping its MixingLink mic preamp. Priced at $299, the compact box features a studio quality mic pre with an effects loop. MixingLink can be used as a simple mixer or a simple way to add effects to a mic or line input.

INFO: www.eventide.com

RAMI PORTA-REPORT IS A MIXER WITH A HYBRID

Broadcast equipment manufacturer Rami launched the Porta-Report portable hybrid/mixer.

Designed for field reporters, the unit allows users to plug in up to three mics and to monitor production with two preamp headphones.

Porta-Report connects to the main studio via a traditional RTC/landline or a GSM using a cable or Bluetooth. It is fitted with a telephone hybrid, allowing the user to receive incoming calls, and features dedicated output to let operators record the show.

The Porta-Report, which weighs 3.5 pounds and is 10.5 inches wide, is approximately the size of an iPad. The unit runs on an adaptor or 2 AA batteries, providing up to eight hours of autonomy under normal working conditions.

INFO: www.ramiaudio.com

THOMSON BROADCAST TOUTS S7HP TRANSMITTERS

The Thomson Broadcast S7HP transmitter range is designed for high-power AM/DRM duties.

According to Thomson, the S7HP features a sturdy design and promises ease of use. It can be switched from AM to DRM mode with the push of a button.

The S7HP family offers a solution for all levels of output power and includes an "all-in-one" power amplifier block — or multiple blocks — with a combiner system that does not require the extra complexity of a balancing load, explains Thomson Broadcast. Each compact amplifier block provides up to 400 kW RMS.

Able to run a large number of the same modules in parallel, the design of the S7HP provides strong performance and minimizes the cost of ownership, says the company.

Thomson Broadcast also offers professional services such as on-site installation, product commissioning and training programs.

INFO: thomson-broadcast.com

KINTRONIC LABS PROMOTES QUALITY AM RADIO

As the FCC contemplates dozens of filings in the recent AM improvement rulemaking proceeding, Kintronic Labs says it has backed up its own extensive filing with demonstrations of how good AM audio can sound if proper wideband transmission and reception standards are in place.

Kintronic Labs

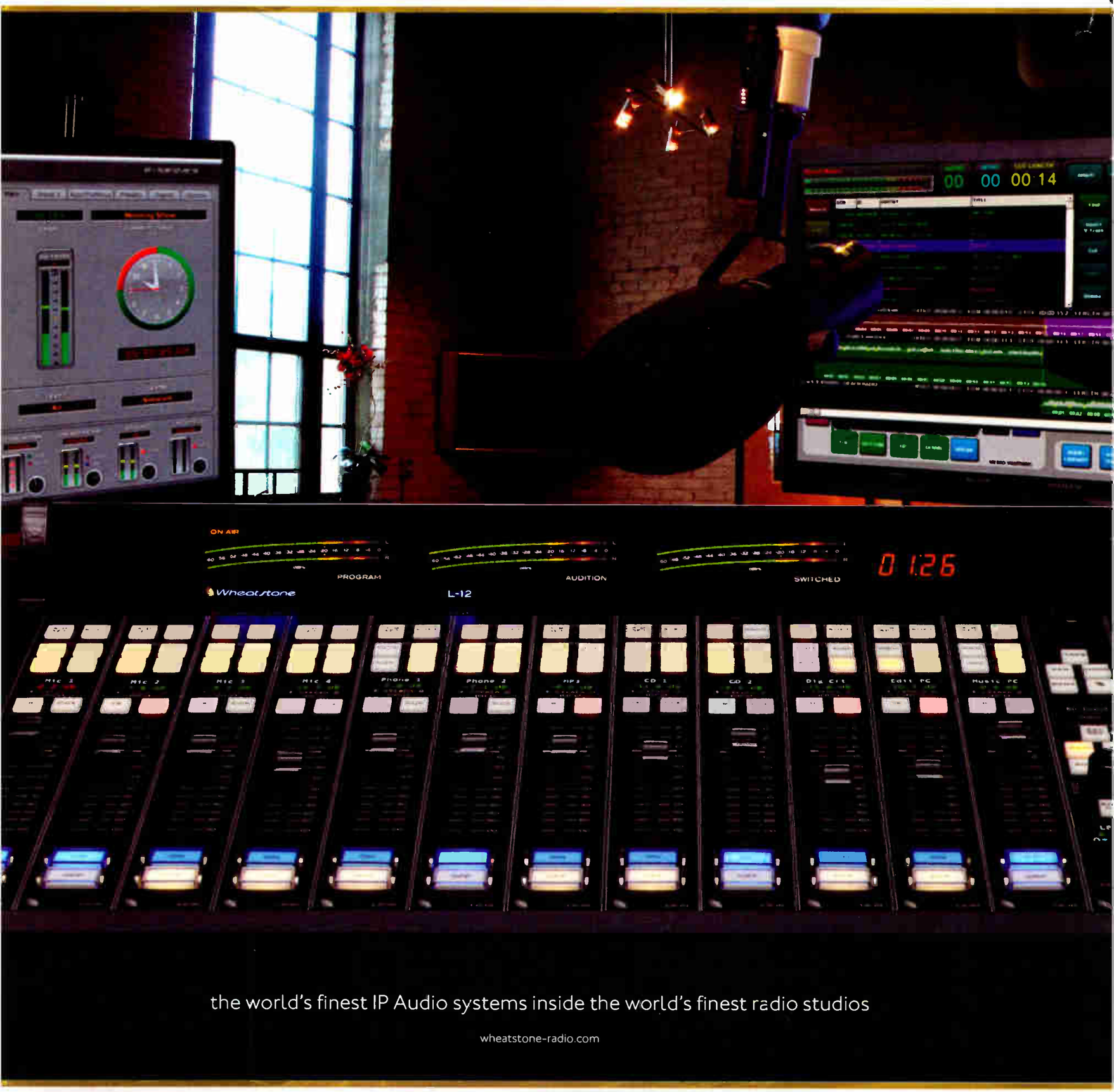
"We believe there needs to be a minimum set of technical standards for AM receivers," says the company's Tom King. "We want to work with the FCC to develop those standards to allow AM radio reception to be equal to FM."

Kintronic's demonstration includes the use of adaptive filtering and noise blanking to help combat rising noise levels on the medium-wave band, as well as A-B comparisons to today's extremely narrow-band AM receivers.

Kintronic Labs has been a longtime advocate of the increased use of synchronous AM repeaters, and King says the company is working on developing hardware to be able to demonstrate the advantages of synchronous AM.

In addition, Kintronic Labs this spring showed an antenna load simulator that it initially developed for its own internal use. The box includes three user-selectable banks of resistance, capacitance and inductance. King says it's now being offered to outside clients who might find it helpful for simulating complex AM antenna systems.

INFO: www.kintronic.com



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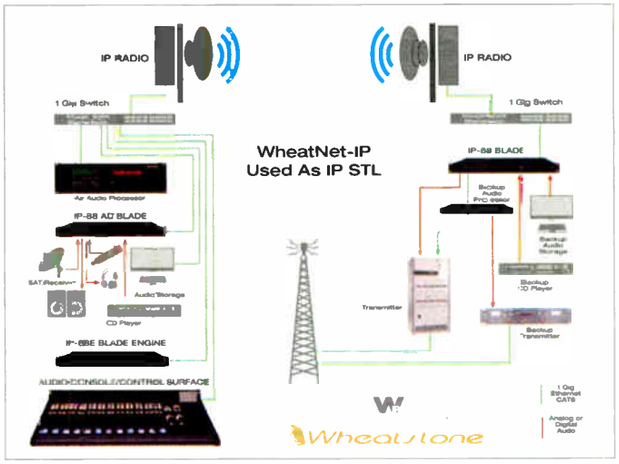
They're unstoppable, those BLADEs. By connecting a WheatNet-IP BLADE I/O unit to each end of an IP wireless audio STL, you can continue IP audio from the studio to the transmitter site. IP radios connect to the switches on each end, which can connect to BLADEs already in use for managing audio and any devices hanging off the network. If the IP radio should lose connection, the BLADE3 will not only detect silence, it can trigger the startup of playback audio stored on the unit itself.

For other helpful uses for new or existing BLADEs go to...

INN13.wheatstone.com



Multimedia Madness

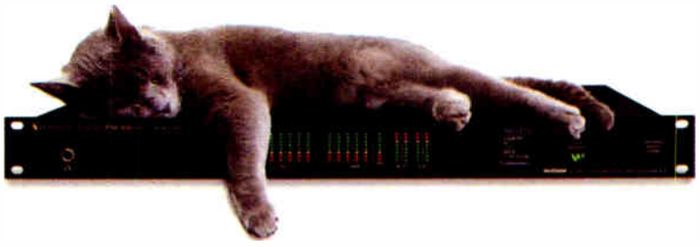
Rethinking radio because of multimedia? We're putting more shared resources on the WheatNet-IP audio network and discovering some interesting uses for logic, including video following audio.

If you wanted to mess with cameras all day you wouldn't have gone into radio, right? It's not just YouTube, either. Or the station website that needs a continual stream of video and audio, or the photo bombs that are going off all day, every day. Or even that the morning guys are running all over town with a microphone and a camera.

Multimedia is requiring all of us to rethink radio.

We're putting more shared resources on the WheatNet-IP audio network in order to clear the studio of old gear and other camera eyesores, and we're putting audio processing at every access point in the network for the disparate sounds coming off the Internet, for example. We're finding a lot of new uses for logic control, too — like, triggering the studio camera to take a picture for Instagram or record video for YouTube whenever talent talks into the mic. For more ideas on how to deal with multimedia madness, go to...

INN13.wheatstone.com



Something New is in (on) the Air

Yep. You guessed it. The new FM-55 processor is out there and it's purring right along...

If the station across town suddenly starts to blow everyone else off the dial, blame it on Wheatstone's new FM-55 audio processor. We let the cat out of the bag a few weeks ago and there's no putting it back.

We put some interesting new circuitry in the FM-55, and there's no question that our intelligent five-band AGC coupled to a multiband limiter is getting those highs, lows and mids to sing. The real kicker is the price, though. The processing intelligence needed for that kind of sound improvement historically came at a price — typically, three to four times that of the FM-55. Which is another reason why you'll be hearing a lot more about the FM-55 from here on out. For more, visit...

INN13.wheatstone.com

YAMAHA DEBUTS THE QL LINE

Yamaha's latest, the QL series of digital mixers, are digital mixers aimed at a variety of jobs — from production to installation to live sound. Physically, a number of configurations are available with up to 34 faders. QLs can be linked to other QLs or Yamaha CL mixers. The QL has a large touchscreen controller. They can also be remote controlled via Mac/PC or iPad tablet.

One interesting feature for broadcasters is onboard Dan Dugan Sound Design automatic mixing technology.

Onboard digital processing includes Yamaha VCM and an emulation of the Rupert Neve Designs Portico 5033/5043 EQ and compressor. The QL is compatible with Steinberg Nuendo Live software and Dante audio networks. It ca be rackmounted as well.

INFO: www.yamahaca.com

NEW SHIVELY ANTENNA GOES BROADBAND

As tower space remains in ever-higher demand, the pressure is growing on FM stations to multiplex into shared antennas. Shively Labs is hoping to meet some of that demand with its new 6828 circular-polarized broadband ring-stub antenna. The 6828 offers a power-handling capacity of 20 kW per bay and can operate over a 12 MHz spectrum.

Shively has also increased the power rating on its 6832 side-mounted broadband antenna, which is now rated at 7 kW per bay, up from a previous rating of 2.5 kW per bay. The company also introduced a new radome option for its 6825 log-periodic antenna, which boasts solid elements instead of the hollow elements used by other manufacturers.

INFO: www.shively.com

BROADCAST PIX SHOWS VISUAL RADIO VOX

Despite its name, Broadcast Pix says it is eager to work with radio broadcasters. As the lines continue to blur between visual media and radio, the company has enjoyed particular success with its Vox visual radio solution.

Used by the likes of NRK in Norway and Capital FM in the United Kingdom, Vox is compatible with any of the company's Flint, Granite or Mica video production systems.

Housed in a single 1 U box (shown), Vox reacts to activated microphones switching cameras and changing shots. It can also trigger Fluent Macros, which provide more complicated actions such as rolling videos, inserting a video box, adding titles, flashing an animation or a web address, etc. The system can also be used to swap webcams as different studios go live to air or to put a studio guest in picture when being interviewed.

INFO: www.broadcastpix.com, visualradio.eu

DELTA MECCANICA COMBINER PROVIDES HIGH POWER OUTPUT

Delta Meccanica's P/N 20041-S4+3x20041-DP618 FM combiner unites seven channels of 20 kW output each for a total output power of 140 kW.

The company says it will soon deliver the new unit — its largest combiner yet as regards power output — to Fujairah Media Group in Dubai.

Last year Delta Meccanica delivered a 120 kW version of the combiner to the Balashikha transimission site in Russia for use by the private radio network Prof Media Broadcasting Corp.

The P/N 20041-S4+3x20041-DP618 FM features a mixed-configuration design and is equipped with a star point combiner module fitted with four inputs plus three double bridge module combiners. This particular configuration, explains Delta Meccanica, allows broadcasters to combine frequencies with a minimum spacing of 1.4 MHz. The combiner destined for Dubai measures 6 x 2 meters (20 x 6 feet) and also features system insertion loss of better than 0.35 dB as well as isolation of better than 30 dB, says the company.

INFO: deltameccanica.com

BROADCAST TOOLS MONITORS THE INTERNET

Widget box maker Broadcast Tools is bringing its Sentinel line of monitoring products to the Internet.

The Streaming Sentinel 4 is a four-stream IP monitor. A stream can be monitored for silence. All streams can be programmed to trigger an alarm. Alarms can be emailed to up to eight addresses and phone calls to up to four numbers. Greetings and alarm messages are stored as MP3 files on an internal micro SD card.

The Streaming Sentinel 4 can also ping programmed addresses to ascertain valid addresses. Confirmation of a valid address can generate an alarm. A headphone output on the half-rack box has a level control. The front features an LED meter and activity LEDs.

INFO: www.broadcasttools.com

HIGH CAPACITY
EVENT STUDIO TRANSMITTER LINKS

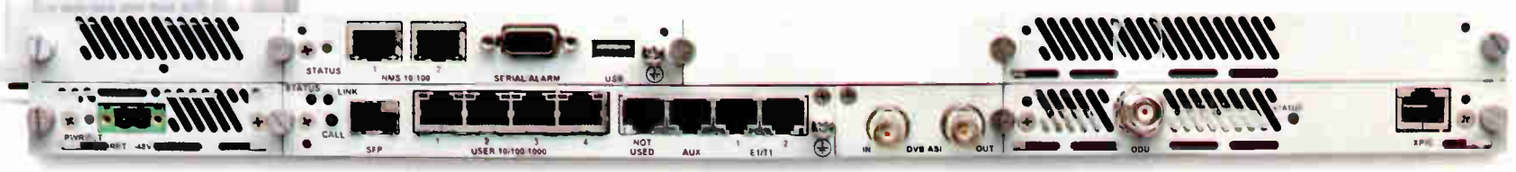
outdoor unit

TAKE ADVANTAGE OF WIRELESS HIGH PAYLOAD STL/TSL CAPACITY

Moseley EVENT STL/TSL systems provide up to 155 Mpbs combined IP, T1/E1 payloads. Multi-station clusters can convey multiple linear uncompressed audio pairs for a truly cost-effective STL/TSL link. Connect your existing T1/IP audio hardware directly into the EVENT system, or use Moseley Rincon for your audio payloads. An optional DVB-ASI module is available for full duplex video.

EVENT systems are fully bi-directional including a Software Defined Indoor Unit (SDIDU) and Outdoor Unit (ODU), eliminating the need for costly waveguide hardware. The ODU is available in the license free 5.8 GHz band, or licensed 11, 18, or 23 GHz bands. Appropriate external antennas are selected based on path length.

indoor unit



INTELLIGENT SYSTEM DESIGN

Spectrum-scalable digital radios with user-selectable data rates enable broadcasters to have greater flexibility in STL planning and future growth. The integrated T1/E1 and Ethernet interfaces allow for a combination of T1/E1 and IP packet data.

IP APPLIANCES AND APPLICATIONS

Offer IP transmitter control, surveillance security, and site monitoring to reduce downtime, and protect valuable station assets while saving travel time to the site.

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SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)

Full SNMP package with GUI provides easy monitoring and configuration changes.

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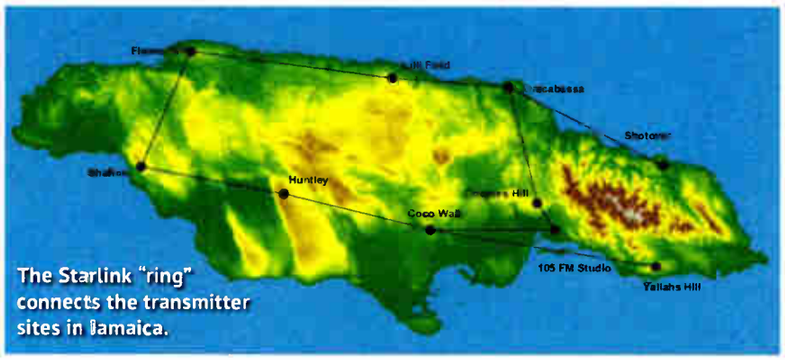
Moseley Provides Digital Links for Jamaica

Starlinks and Rincons create digital STL network that circles the island

USERREPORT

BY ROY PRESSMAN
Owner
Pressman Engineering

MIAMI — The challenge was to serve 95 percent of Jamaica with a superhigh-quality FM signal. This project was ambitious and never had been attempted in Jamaica, the land of analog composite STL links that were daisy-chained around the island. The objective was to build a large studio complex and nine transmitter sites on remote mountaintops all around the island nation. We wished to create a redundant STL system that would provide high-quality digital audio to each transmitter site. It would also give the studio the ability to confidence monitor off-air audio from each site and control each site via a remote control system.



The Starlink "ring" connects the transmitter sites in Jamaica.

OBSTACLES

Logistically there were many obstacles: tower location, availability of power, transmitter building facilities with controlled environments, distribution of audio, remote control of all facilities, and the ability to monitor and control these systems from the United States.

Working with the engineering team at Moseley, we first explored the idea of using multiple Moseley Starlink STLs with two independent loops around the country, one clockwise and the other counter clockwise. AES switches would select the appropriate loop at each site if there were failures.

As we progressed with our investigation, a different idea was developed. Moseley suggested a bidirectional redundant IP radio network based on the Starlink radios that would feed all sites simultaneously, giving each transmitter the identical audio feed. We needed a device to create two main audio streams to feed the sites and one return audio stream. The Moseley Rincon Digital Audio Transporter multicodec was a perfect fit for our needs.

The Rincon was capable of providing two high-quality uncompressed audio streams to feed all sites (the second was the backup audio stream) and the Rincon would easily provide a low bitrate stream back to the studios so that actual off-air signal monitoring was possible. Rincon streams could be individually configured for the appropriate protocols to keep bandwidth limitations from being exceeded. A big bonus was the available bandwidth for remote control systems and webcams for all sites.

Starlink NXE1 bidirectional radios were configured in a self-protecting ring network around the island connecting the transmitter sites. The Starlinks were equipped for bidirectional IP transport. The IP network was configured with two paths that were controlled by Cisco switches that used the Spanning Tree Protocol to direct packets appropriately. If one site went down, the system would automatically reconfigure itself and keep all remaining sites functional.

Rincons are the audio engines. Main and backup AES digital audio is sent from a Rincon at the studio onto the wireless IP network and delivered to all sites nearly simultaneously via the Starlink network. Each site also has its own Rincon which feeds audio from the Starlink to the transmitter at that site. Using the compression algorithms available in the Rincon, 64 kbps audio for confidence monitoring was sent back in

(continued on page 23)


The Moseley Starlink NXE1 installed at the Orcabessa transmitter site.

TECHUPDATE

COMREX BRIC-LINK STL IP CODEC INTEGRATES OPUS

Comrex Corp. said it will soon release firmware V3.0 for the BRIC-Link STL IP codec. This version integrates the Opus coding algorithm, which provides greater interoperability with other codec manufacturers. This adds to BRIC-Link's flexibility for STL connections.

Large STL deployments of BRIC-Links have been sold to SiriusXM Satellite Radio, the NBA, FEMA and Entravision Communications as well as hundreds of broadcasters. The company highlights BRIC-Link's ease of setup, audio quality and reliability, saying it is suitable for mission-critical point-to-point audio applications.

The Comrex BRIC-Link is a low-cost audio over IP solution for full-duplex audio transmission via IP links. Configurable with a standard browser, BRIC-Link can be used on a variety of data networks including T1/E1, WANs, LANs, ISM band IP radios and satellite.

BRIC-Link offers mono and stereo linear modes on circuits with substantial bandwidth. For reduced bandwidth applications, BRIC-Link offers AAC and HE-AAC modes as well as FLAC lossless compression. Based on BRIC technology, BRIC-Link's stability and reliability features are similar to those found in the Access line of remote audio codecs, but the company says they've been enhanced to for mission-critical applications.

BRIC-Link is a true codec, offering a full-duplex stereo encoder and decoder in each box. Where two-way transmission is not required, the reverse channel may be disabled. The BRIC technology incorporated includes a jitter buffer manager that automatically balances delay and stability, dynamically increasing delay based on network performance.

For information, contact Comrex in Massachusetts at (978) 784-1776 or visit www.comrex.com.

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GATESAIR

STUDIO 'A'

OASIS NETWORKED ON-AIR CONSOLE

The Intraplex® IP Link family of IP audio codecs provides high-end features at an affordable price.

Offering an array of audio coding options, the IP Link codecs are suitable for use in Studio to Transmitter Links (STLs) as well as audio contribution and distribution networks. Support for IP multicast and multiple unicast streams enables one encoder to feed multiple decoders.

STUDIO 'B'

OASIS NETWORKED PRODUCTION CONSOLE

Flexiva Oasis™ is a high-value standalone audio console for on-air and radio production applications.

Designed with next-generation studio demands in mind, Flexiva Oasis allows facilities to cost-effectively and easily migrate from analog to digital whenever they're ready. In addition, Flexiva Oasis provides both analog and digital outputs that enable facilities to connect to modern STLs and studio infrastructures.

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Lily Massari	Doug Tharp	Bernie O'Brien	Pam Leffler	Andy Cole	Jim Peck	Bob Mayben	Ric Goldstein	Art Reed / Bob Eburg

Tieline Codecs Put on a Show in Louisiana

Bridge-ITs feed Genie Distribution at Festival International de Louisiane

USERREPORT

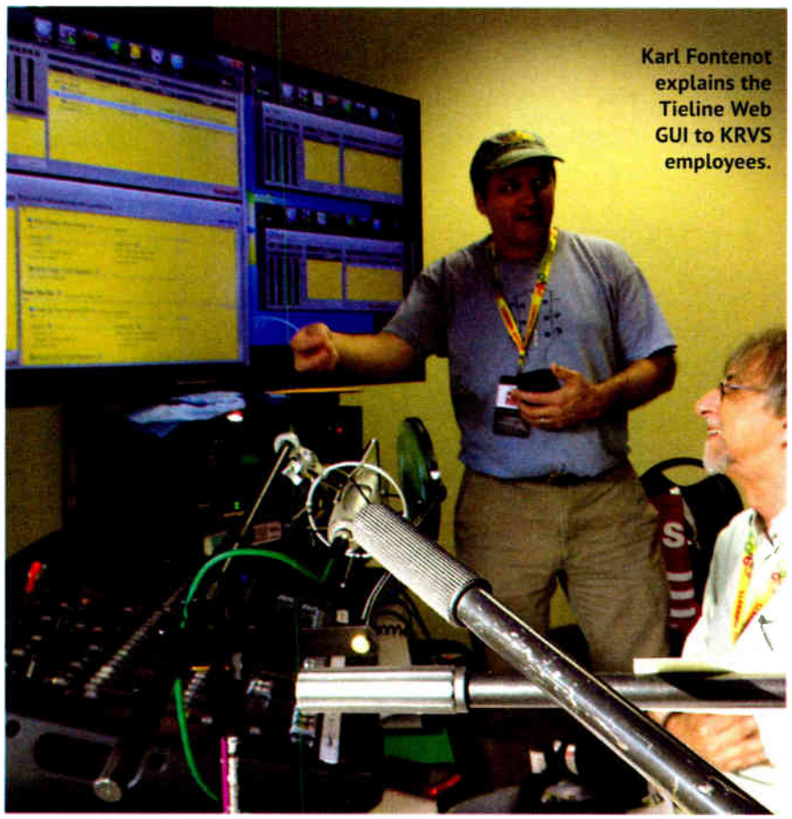
BY KARL FONTENOT
Chief Engineer
KRVS(FM)

LAFAYETTE, La. — We all know the past technologies of remote broadcast units. From RPU to telco devices and now IP devices, I've always wished for a single device to consolidate audio feeds from various sources.

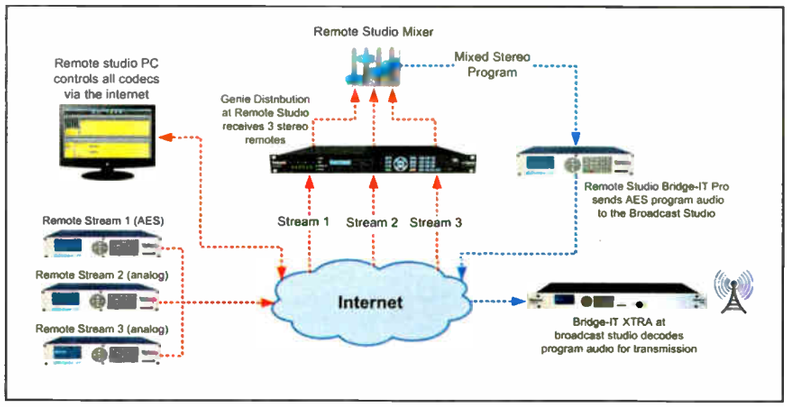
For the past 18 years, KRVS(FM) has presented a live broadcast of Festival International de Louisiane. It is a five-day, free Francophone world music festival throughout the downtown area of Lafayette, La. I am the chief engineer of KRVS and have been producing the broadcast that entire time. I've now expanded the broadcast to three of the five largest stages. The event this year had an attendance of nearly 400,000 visitors.

This year, my vision included setting up a remote broadcast studio at the Lafayette Science Museum in order to have a visible on-site presence as well as being accessible to artists for live interviews and performances. The remote studio needed to receive three IP streams and send out one IP stream back to the main broadcast studio.

Since Lafayette has an entire fiber ring that is provided by Lafayette Utilities System (LUS), I was able to get several optical network terminal (ONT) interfaces installed in temporary locations. From the largest, main stage I setup an RV camper with a Digidesign Profile Venue console with a full audio split from the stage. So we did our own mix that fed AES audio at 44.1 kHz to a Tieline Bridge-IT IP audio codec. Then at the other two stages I used a matrix analog output from the front of house audio console into Tieline Bridge-IT audio codecs.



Karl Fontenot explains the Tieline Web GUI to KRVS employees.



Signal flowchart at KRVS' remote at Festival International de Louisiane

I tested the bandwidth at each location and my average download speed was 84 Mbps and average upload speed was 87 Mbps. This was more than enough headroom to send fully uncompressed audio. From the remote studio I connected the IP from the fiber ONT to a Ubiquiti Edge gigabit router then I sent one Cat-5e cable to a TP-Link gigabit switch at the audio control point.

The Genie Distribution acted as a receiver of three stereo streams. Using the web GUI interface was by far the most useful of tools. It was simple to set up and I only needed one call to Tieline for confirmation, which took all of one minute. I ran the system for four days, for 32 hours of audio with zero dropouts and zero packet loss. Of course, being completely on fiber and the same subnet made life easier for this broadcast.

I cannot express enough of how satisfied I was with the performance and reliability of the Tieline gear. It made the setup and implementation quick and easy.

At the end of each night of broadcasting I would leave the remote studio (Genie Distribution and Bridge-IT Pro) powered up. Each local stage would power down each evening and upon power up the next day the Bridge-IT codecs would automatically reconnect. It was so convenient to verify and monitor connectivity and levels from one location that it made my job feel too easy.

For information, contact John Lackness at Tieline USA in Indiana at (317) 845-8000 or visit www.tieline.com.

TECHUPDATE

JK AUTOHYBRID IP2 IS MORE THAN A HYBRID

JK Audio introduced AutoHybrid IP2, a compact desktop/half rack VoIP/AoIP codec model for applications requiring a simple IP audio interface.

The company says AutoHybrid IP2 fills two needs. It functions as an audio over IP codec, offering mono or stereo, narrow to wideband audio. Initial codec choices include the latest Opus algorithm running at sampling rates up to 48 kHz stereo. In AoIP mode, the XLR jacks provide stereo send and receive analog audio.

It also serves as a two-line VoIP hybrid, providing one-button access to the common features of a phone line hybrid including call control, auto-answer and conference. Advanced call control features and VoIP line setup are provided through the internal Web server. In VoIP mode, line-level XLR jacks provide mono send and receive audio for Line 1 and Line 2. Supports SIP and RTP for call management and includes G.711 and G.722 (HD) voice codecs as well as additional standards.

The systems promises low power consumption with Power over Ethernet (PoE) capability. PoE allows AutoHybrid IP2 to receive power from the Ethernet cable that provides the IP connection. Several units can be powered by a PoE-capable data switch, easing UPS and space requirements. An external power supply is included for LAN connections without PoE capability.

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

TECHUPDATE

2WCOM MM01 AIMS AT STL LINKS

2wcom's MM01 is a new compact multi-role solution for audio over IP contribution and distribution.

It is targeted primarily at studio-transmitter link applications; but 2wcom says the MM01 is designed for versatility, providing advanced redundancy capability and monitoring functions, with the ability to integrate into diverse infrastructures. Audio synchronization with micro-second accuracy makes it suitable for applications where precise timing is essential, such as SFN FM networks, the company says.

The MM01 offers network-wide economies by combining encoder and decoder functionality within the device. With its redundancy and monitoring capabilities, it can replace multiple equipment components to simplify infrastructure and reduce cap-ex and op-ex. The MM01's flexible and automatic redundancy support is designed to accommodate a range of possible sources, from economical DSL lines to satellite.

The MM01 supports widely-used audio codecs including AAC and Enhanced aptX; it also supports dual streaming and Pro MPEG FEC — standardized mechanisms for overcoming IP limitations when they occur.

Helping to further reduce a network's operational costs, the MM01 includes remote monitoring capabilities through its asymmetric audio return channel and system audio data log functionality. For remote maintenance, upgrades and control, detailed logs and status information from the MM01 can be analyzed by 2wcom's centralized management system, or by third-party network management systems. Daily or event-based tasks such as firmware and configuration changes, redundancy switching and content exchange can be automated. The MM01's hardware and software schemes offer adaptability to future needs through its support for features like https, SNMPv3, detailed syslog capabilities, SNMP and Web GUI.

For information, contact 2wcom in Germany at +49-461-662830-15 or visit www.2wcom.com.

MOSELEY

(continued from page 20)

the direction of the studio.

The Rincons were configured with the appropriate error correction to address the harsh radio environment and frequent spurious emissions in Jamaica. Because the STL system was set up as an IP network, Moseley was always able to remotely troubleshoot or configure any Rincon in the network from their California facility when help was needed during construction and would still be able to provide aid. Since we run dual UPS systems at each site, the redundant power supplies in the Rincons were each hooked to a different UPS system.

At this time FYAHI05 is the only radio network facility in Jamaica with digitally-delivered identical AES audio feeding all transmitter sites and the ability to monitor and remote control all nine radio facilities. The majority of all engineering is done from the U.S. because the Moseley IP network allows us to "see" all transmitters, STL links, Rincons and other site equipment. It's an amazing system and the reliability has been excellent.

For information, contact Bill Gould at Moseley in California at (805) 968-9621 or visit www.moseleysb.com.

APT Horizon NextGen Delivers Mike

They're 200 miles apart; an IP codec brings them together seamlessly

USERREPORT

BY DAVE SUPPLEE
Regional Engineering Coordinator
Northeastern U.S.
Cumulus Media

HARRISBURG, PA. — WICC(AM) in Bridgeport, Conn., has been a fixture in the southern part of that state for generations. Recently long-time news director and morning show co-host Mike Bellamy relocated to central Pennsylvania due to family commitments. We needed an engineering solution that would enable him to continue his role on the station and stay on the show.

We wanted to ensure that while working out of the Cumulus studio in Harrisburg, Mike was able to interact seamlessly with fellow host Tony Reno back in Bridgeport. Low latency and a high degree of reliability would be critical in order for the audience not to notice that the hosts were actually more than 200 miles apart.

OPTIONS

In the past, the only viable solutions to achieve this would have been an ISDN line or dedicated telco T1 link, both expensive options. We discovered an alternative in APT's Horizon NextGen IP audio codec with SureStream technology.

For us, this delivers a more economical alternative, as the APT codec simply utilizes the existing house Internet links so we didn't need to install or pay for any new lines. On the Harrisburg side we have both a 20 Mbps Internet connection from Frontier and a Comcast cable modem. We have a similar arrangement in Bridgeport using our dedicated business Internet service and a second, less expensive connection, primarily used for backup purposes.

Having looked at a few other codecs from various manufacturers, we felt that the APT box offered the best combination of low latency and robustness and at an affordable price. It also helped that we have had positive results at other Cumulus markets with APT codecs. One example is for network origination from our Nashville studios to the Westwood One Networks satellite distribution facility in New York.

In order to get the full benefit of APT's SureStream data signal redundancy technology, we connect the APT codecs at each studio to both the primary dedicated Internet and secondary Internet links, which protects the content against any dropouts and outages.

When we installed the units in the fall of 2013, all went well but we did notice some occasional dropouts on the line. A quick investigation uncovered that one of the codecs was only connected to a single link and so we weren't actually using SureStream to its potential. Since we fixed this issue, the system has worked flawlessly without a dropout in the last six months.

To achieve the low-latency connection that we need, we use the Enhanced aptX algorithm on the APT codec, which keeps delay to a minimum and the audio quality at a high level. With SureStream, we can also keep the latency consistent throughout the broadcast so that the hosts do not have to deal with any drift, which could cause them unnecessary distraction.

Some of the AoIP codecs that I reviewed offer methods to deal with the constantly changing behaviour and latency of the Internet, but many involved scaling back the audio quality and/or altering the latency in order to keep the link alive. For a live, interactive broadcast, this doesn't work for us, so consistently low latency was a critical factor.

The APT codecs and SureStream have enabled us to continue to deliver "Tony & Mike in the Morning" on WICC without the audience noticing that anything has changed. Perhaps the greatest testament to just how well it works is the fact that members of the public often drop by the Bridgeport studio to see the hosts. We just tell them that Mike is in the bathroom!

For information, contact Tony Peterle at APT/WorldCast Systems in Florida at (305) 249-3110 or visit www.aptcodecs.com.

TECHUPDATES

MDOUK STL-IP PLUS ADDS SUREFLOW/5

AudioTX says its new STL-IP Plus incorporates MDOUK's SureFlow/5 technology, which sends up to five independent, redundant streams — each of which may use different audio coding algorithms and bitrates — over the same, or up to five different network connections for near-100 percent reliability.

Mo Dutta of MDOUK said, "Up to five different versions of the audio can be sent on up to flow different networks. Each may use completely different settings for audio coding algorithm, bitrate etc. So you could combine a low bitrate mobile/cellular data or satellite connection with a medium bitrate DSL connection, and maybe a high bitrate dedicated non-internet connection from a telco or even a point to point wireless RF link.

"At the receiving unit all audio streams are received and fully decoded and the best quality audio available is selected and played for every individual audio sample."

He said the system has generated interest among broadcasters interested in lower-cost Internet connections for STLs and remotes.

Available codecs schemes include uncompressed linear PCM audio at up to 24-bit/96kHz, MPEG4 AAC, AAC LD and HE-AAC, Enhanced APTx, Opus and FLAC (lossless) implementations, professional grade MPEG Layer II and Layer III compression, near-linear J.41 and DAT12 and G.722.

For information, contact MDOUK Broadcast in England at 011-44-1886-883900 or visit www.stl-ip.com.

ORBAN RELEASES STL HELP FOR OPTIMOD-FMS

Orban says its Opticodec 7700E MPX encoder and Opticodec 7700D MPX decoder system transparently transmits the Optimod-FM composite baseband signal between studio and transmitter over Ethernet, using UDP or TCP/IP.

To ensure reliability, each Opticodec 7700 has two 100 Mbps Ethernet interfaces — one for the control LAN and one for the IP composite signal transmission packets. This allows the audio to run on a dedicated LAN, maximizing throughput capacity.

The Opticodec 7700E carries the Optimod-FM encoded stereo signal, the stereo pilot tone and subcarriers like RDS that may have been applied to the studio-based Optimod-FM's subcarrier inputs.

For convenience, the Opticodec 7700D has the same composite mixing functionality as the Optimod-FM. There are two composite baseband outputs and two SCA inputs, allowing additional subcarrier generators to be located at the transmitter. Both Opticodec 7700E and Opticodec 7700D have a reference input (10 MHz) that can be used to lock the MPX encoder and MPX decoder to a high-precision external reference like a GPS-based frequency standard. This facilitates using the system in single-frequency network (SFN) and near single-frequency network (N-SFN) applications.

Both units can be controlled via a Web interface. SNMP support is integrated.

For information, contact Orban in Arizona at (480) 403-8300 or visit www.orban.com.

KVCM Streams With Barix

Instreamer supports distribution for Los Angeles Valley College

USERREPORT

BY JASON BEATON
Assistant Professor of Media Arts and Broadcasting
KVCM
Los Angeles Valley College

LOS ANGELES — KVCM is called both "The Radio Station of Los Angeles Valley College" and "Monarchs Radio." The latter refers to the university's athletics department.

Sports, however, is just one focus of the station's broadcast day, alongside music programming and other talk-based entertainment.

KVCM is an online-only station, with live and on-demand programming available at *www.lavc.edu/kvcm*. Given that online radio represents our entire listening audience, we have taken steps to ensure a reliable streaming architecture that retains exceptional audio quality through the air chain.

SIMPLICITY

The Barix Instreamer plays an integral role in the signal encoding and transport process, ensuring our live streams continue uninterrupted with consistent high quality.

KVCM was an over-the-air AM station before I came to Los Angeles Valley College, but the building that housed the station was dismantled in advance of my arrival. With most wiring and equipment removed, KVCM was reborn as an online entity. Given recent advances in IP technology, this seemed to be the most cost-effective method since we had to start from scratch.

Our earliest evaluations of technology options put Barix out front, as it delivered equal measures of reliability, cost-effectiveness and great-sounding audio. To the latter point, we are streaming 320 kbps MP3 audio with a 44.1 kHz sample rate — exceptional quality while using minimal network resources. We have been amazed by its stability; our Instreamer has only gone down once, due to a power failure. The device picked up right where it left off upon the power returning.

While our main Instreamer supports the studio-to-Internet stream, we have since added several units for remote broadcast applications across the campus. The majority of these are used for live broadcasts from sports venues, delivering commentary and other Monarchs game action to the studio. Like the general broadcast stream, the remote Instreamers bring reliability and quality to capturing broadcast audio in the field. Live streams of football and soccer games from Monarch Stadium have proved popular with students and the greater community. Elsewhere, the remote Instreamers capture audio from graduation ceremonies and other significant events, ensuring that rarely a week goes by without being used at least once.

Setting up the Instreamer is simple; once basic settings are adjusted for network requirements, the devices are plug-and-play. Tweaks are only necessary should we want to adjust bitrates or format. At this point, we are likely taking advantage of perhaps 20 percent of its capabilities. Moving forward, we expect to explore its various relay and contact closures for automatic program switching or ad insertions.

Perhaps the greatest benefit to using Barix is ongoing costs. The upfront costs were affordable, with each unit costing less than $400. However, by choosing Barix as opposed to other deliver methods we evaluated, we are saving between $5,000 and $10,000 a year. This is exceptional for a campus radio station, where revenue streams are a challenge.

Beyond online broadcasting, as an assistant professor I am honored to teach one of, if not the only, college course with an IP audio emphasis in the United States. The class, "News, Sports and Live Remote Broadcasting," focuses on how to build remote setups for radio and television. The Barix Instreamer is used in a hands-on way, allowing students to configure streams from every corner of the campus to provide live remote broadcast. Students basically can carry it from room to room and building to building, and plug the device into an Ethernet port to establish a connection to our studio. To date, we have had about 500 students come through the program.

With IP technology essentially the future of broadcasting, Barix is playing a key role in educating our students before they head out into the professional broadcasting world.

For information, contact Barix at (866) 815-0866 or visit www.barix.com.

TECHUPDATE

ZEPHYR IPORT PLUS JOINS TELOS TEAM

Telos Systems has expanded the features and capabilities of its Zephyr iPort and renamed it the Zephyr iPort Plus.

It provides multiple bidirectional, stereo codecs inside a 2 RU chassis. The company says Zephyr iPort Plus is designed for high-density network transmission duties using IP network links. It can transport multiple channels of stereo audio across private WANs, IP radio links and the public Internet. Zephyr iPort comes with AAC, AAC-LD, HE-AAC plus v2, MP2, MP3 and linear coding. Enhanced aptX coding is optional. Bitrates supported range from 24 to 320 kbps for MPEG codecs, plus standard fixed rates for aptX and linear to over 2 Mbps.

Zephyr iPort can be configured as eight stereo bidirectional MPEG (or optional Enhanced aptX) codecs, plus eight more linear or compressed codecs. It can also serve as an encoder/decoder for up to 16 unidirectional stereo streams. Livewire I/O lets the Zephyr iPort Plus connect to Axia networks, or to Axia xNode audio nodes for analog and digital audio breakout.

New features include the ability to assign eight IP stream destinations per encoder, support for UDP, TCP and multicast stream types (independently configurable per WAN stream), and 20 bidirectional GPIO closures plus three bidirectional data streams per codec channel. There's optional NTP-synchronized time zone delay with SSD-based storage, configurable per codec to enable delayed playout (with synchronized GPO and data) of received audio channels for up to six hours.

For information, contact Telos Systems in Ohio at (216) 41-7225 or visit www.telos-systems.com.

GatesAir Serves Univision in Austin

Intraplex IP Link codecs provide reliable backup STL feeds

USERREPORT

BY MARK STENNETT
Vice President and Chief Engineer
KLQB(FM) and KLJA(FM)
Univision Radio

AUSTIN, TEXAS — The transition to digital solutions in the broadcast industry inevitably leaves long-reliable technologies in danger of obsolescence. In radio, ISDN appears to be one technology heading toward its sunset. There are clear indications that major carriers will no longer offer or support ISDN transport by 2019.

Univision Radio in Austin has long relied on ISDN to back up our main T1 STL circuits for FM stations KLQB(FM) and KLJA(FM). The rural locations of the two transmitter sites have long made T1 and ISDN transport the most reliable and effective connections for signal transport.

RELIABILITY

In addition to its fading status, one long-term concern of ours has been that the ISDN circuit shares a path with the T1 feed along the last mile to the tower sites. Recently, a construction team snapped a cable while breaking ground on a new project. This clearly exposed the danger of having a common point of failure for main and backup STL feeds.

We decided it was time to investigate IP transport for our backup STL feeds. We researched several options on the market and decided that GatesAir (formerly Harris) offered the most ideal solution through its range of Intraplex IP Link codecs. Our current architecture includes an IP Link 200 codec at the studio, which feeds independent audio streams to IP Link 100 units at each tower.

GatesAir won for several reasons that range from pricing to feature set, as well as the reliability of the company's Intraplex solutions. We have used Intraplex T1 STL solutions as our main transport links for KLQB and KLJA for more than a decade. However, the IP Link offered several features and applications that set it apart from competitive solutions.

As we began to investigate IP transport, we knew we needed another way to get connectivity to the tower sites besides wired telco. We had a conversation with one of our wireless service tenants, which led to an agreement to provide bandwidth and TCP/IP connectivity to each tower site via wireless technology. The IP Link offers a bandwidth-efficient connection that allows us to transport high-quality HE-AAC format program audio at varying bitrates. We have experimented with bitrates between 48 kbps and 128 kbps, eventually settling on 64 kbps — a rate that produces excellent sound quality over the IP Link. This rate also stays within our uplink bandwidth on our studio DSL circuit, with room to spare.

Above all, the IP Link includes an advanced self-healing feature that enhances reliability for network-based signal transport. This was important considering what we went through to establish a temporary link when our T1 and ISDN feeds went down at the same time. Essentially, we wanted a robust and reliable IP transport link that would run without interruption. To date, there have been no hiccups.

Though the Intraplex T1 STL units have been rock-solid, their stability is irrelevant when there is a problem on the telco side. And as has been typical over the years, the T1 service has gone down due to telco-related reasons. Since deploying the IP Links in January, by the time I get the page alerting me to a T1 issue, the transport stream has seamlessly switched to the IP Link, which picks up the stream without missing a beat. The switch is barely detectable from the listener's point of view, and the stability of the IP Link connection gives me plenty of time to troubleshoot issues with the main STL feed.

Setup was easy, with access to a Web browser to configure the IP connection, as well as standard audio and format settings. Upon creation of the audio profile, it was a matter of click, save and go. Since putting the codecs online, we've had little reason to monitor the units, though the IP Link 200 provides front-panel confidence monitoring that is useful. The device construction is solid, with a superb build quality.

The IP Link has proven to be an exceptional choice, providing an outstanding feature set and high reliability for IP transport at a price well within our budget.

For information, contact Keyur Parikh at GatesAir in Ohio at (513) 459-3519, or visit www.gatesair.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@nbmedia.com.

TECHUPDATE

DIGIGRAM IQOYA *SERV/LINK MAKES IP AUDIO TRANSPORT EASY

The Iqoya *Serv/Link is an audio over IP distribution codec that combines Digigram's FluidIP streaming engine — which the company says is known for its stability — with established IQOYA solutions in a 1 RU design that provides I/O flexibility and high channel density. It supports up to 64 MADI channels of radio programs, intercom and commentary channels for radio and television broadcast operations.

The multipurpose solution enables users to maintain audio quality while reducing the cost and space required for critical audio transport applications, Digigram says.

The Iqoya *Serv/Link facilitates transport of multiple audio programs (mono, stereo, multichannel) over IP networks from studio to studio (SSL), to transmitter links (STL), to DVB operators via MPEG-TS/IP support, and to Web radio streaming servers through Shoutcast/Icecast support. The scalable solution allows audio programs to be transmitted to several destinations simultaneously through various transport protocols and encapsulation methods.

In the context of MFN networks, the Iqoya *Serv/Link also allows a smart audio synchronization of Iqoya decoders based on widely available NTP servers.

The Iqoya codec has redundant dual streaming with time diversity, forward error correction, smart synchronization on the incoming stream and other mechanisms to assure reliable audio and data transport, as well as a redundant power supply. A Web-based GUI simplifies system configuration and monitoring, and users can access and manage control, monitoring and alarm functions via SNMP.

For information, contact Digigram/Point Source Audio in California at (415) 226-1122 or visit www.digigram.com.

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

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The Blast Ministries, a 501© (3) non-profit organization that operates Christian Rock/Alternative/Metal station "TheBlast.FM" (aka "The Blast") and Christian Hot CHR station "The Blast Blender" is looking for a donation of powered studio speakers, consoles, mixers, studio microphones and mic accessories; a JK Audio Telephone interface, and an AudioScience streaming sound card, you determine the value, we will pay shipping and we will issue you a letter proving the donation was made, email: ColinCruz@TheBlast.FM.

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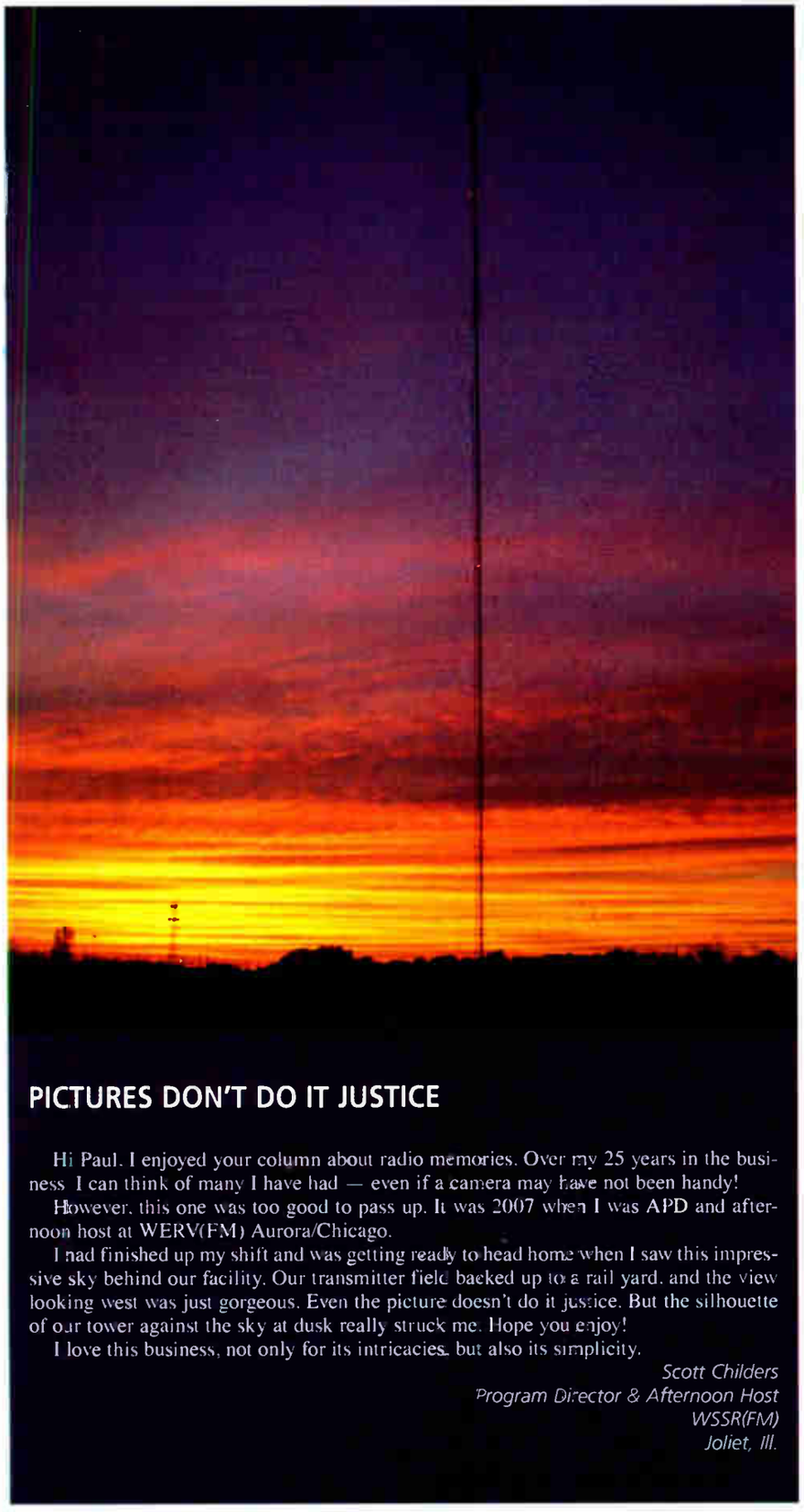
Engineers Experience Everyday Magic

Readers recall their own special moments in broadcasting

A few issues ago, I invited readers to share photos and stories illustrating special memories of working around radio. Here are some of your replies. — Paul McLane



PICTURES DON'T DO IT JUSTICE

Hi Paul. I enjoyed your column about radio memories. Over my 25 years in the business I can think of many I have had — even if a camera may have not been handy!

However, this one was too good to pass up. It was 2007 when I was APD and afternoon host at WERV(FM) Aurora/Chicago.

I had finished up my shift and was getting ready to head home when I saw this impressive sky behind our facility. Our transmitter field backed up to a rail yard, and the view looking west was just gorgeous. Even the picture doesn't do it justice. But the silhouette of our tower against the sky at dusk really struck me. Hope you enjoy!

I love this business, not only for its intricacies, but also its simplicity.

Scott Childers
Program Director & Afternoon Host
WSSR(FM)
Joliet, Ill.

TOWER LIGHTS OPERATING NORMALLY

Always thought working in radio was special.

Lots of energy in the building. Combo DJs did a million things at once: cuing records and ETs (carts after about 1960), answering the phones, ripping and reading the news (in the small stations where I started) — all of that made us DJs a special breed. I don't work in radio anymore, but I do own some stations.

When I go to the stations these days, I stare into mostly empty studios. The VU meters are moving, but there are no humans. (O.K., I tend to show up after morning drive when shows are live.)

My point: While voice tracking can sound live — it's all about the talent — and you can utilize your company's best jocks on stations that otherwise would have mediocre air personnel, automation has resulted in a loss of the specialness of working in radio, in my view.

Your photo reminded me of my first job in radio at a daytimer. I shut down the Gates transmitter at sundown, opened the back door and stared up at the tower in the twilight. Entry in the transmitter log: "Tower lights observed operating normally." As I drove out of the parking lot, I thought I was working in a pretty special business.

I spent 15 years (1966–81) at WPGC in Washington during the top 40 days, started as general sales manager, ended as GM. Now *that* experience was truly special!

Bill Prettyman
President
Prettyman Broadcasting Co.
Salisbury, Md.

SHARE THE MAGIC

I am holding a CP for WDXD(LP) 101.9 in Tallahassee, Fla. The 33-watt LPFM, licensed to Delta Star Radio of Florida Inc., is under construction.

Shown in the photo is my 10-year-old grandson, Benjamin Best, also of Tallahassee, learning how to operate the soon-to-be on-air studio before it goes live. Benjamin will host a Sunday afternoon Christian music show. The studio is being equipped with turntables, a cassette deck, several CD and an MP3 player, as well as computer equipment.

WDXD will air a primary country (1950s to the present) format, with some specialty programming on the weekends.

Radio has always held that magic touch for me, and I hope that can be shared through WDXD.

We still have to build the 180-foot tower and get a transmitter, antenna and EAS before launching the LPFM.

Alan McCall
Delta Star Radio of Florida Inc./WDXD(LP)
Tallahassee, Fla.

More memories on page 30

WORK FOR THE GLOW

Most of the time, you work by yourself.

Tonight you get the call while you are sleeping. You get up, dress and make the trip to the transmitter building alone. Rarely do you work on a project with a partner. Trips to remote sites give you time to wake and run through the possible causes for this outage. You have a plan of attack ready when you pull up. Fighting the gate lock in the dark is never fun, but maybe that will be the hardest thing you face this night.

If the transmitter is collocated with the studios, the overnight guy will be there; but you won't have the admin staff around, so it is quiet to do your work. No salespeople or station manager or announcers looking over your shoulder.

There was that time during the day you were working on that dead transmitter, and it seemed like the entire station staff had crowed into the transmitter room, all chatting and laughing. Thank goodness the owner came in and noticed. He told the whole gang to take off, that you wouldn't be doing a thing until the room was empty. Then he gave you a wink, turned and closed the door behind him.

But tonight it is a trip to the remote site. Just you and your tool box. And as you open the door, you immediately notice something missing. It's just a cold room. The normal golden glow is gone. The long hallway is dark. With the transmitter off, the building's "night light" from the finals and modulators isn't there. The eerie silence of the absence of the blower motor isn't there, either. There's nothing so sad to an engineer than a rig that isn't alive.

The technical part of the job is always challenging. Troubleshooting and finding the problem, and creating a solution for fixing it — that's the mental reward. It's your job to fix it. Actually, it's your job to get it fixed. That means that it is always all right to reach out for help. That's something you realized when you were a younger engineer. You can't know everything. It was okay to grow past your young pride and call for help or an idea when you are stumped.

Tonight, though, it's an easy fix. The thunderstorms that rolled through took out a couple of shotgun fuses. You had hoped that was all it was. Someday – and soon – you need to try one of those cool fuse/breakers things that you can reset remotely that you learned about in Bisset's *Workbench* column. (Either that or be prepared to make a few more trips here during the rainy season.)

After looking for other signs of lightning damage and closing all the doors, you turn on the filaments and watch for the low-voltage systems to come online. Just seeing the meters move makes you feel better. You remember another time when the FM took a lightning hit and blew out some fuses; the entire Bakelite fuse holder was gone. Not even any residue. Just the ends of the wires and a couple of brass fuse ends. It all just vaporized. So this time you start at low power and the blower screams as the tubes glow.

There's something about the glow of the tubes. The new solid-state transmitters are great, but they don't seem to have the same character with just a bunch of LED lights and a lit number pad. After another check, it's time to switch to full power.

Photo by James E. O'Neal

A call to the studios and audio is restored with a station ID and the next song. Now, the room warms up. No need for an air audio monitor when you can hear the coils singing. Time to take readings, make your log entries and pack up your tools.

And if you're really honest with yourself, you will admit that you talk to your rig, and tell it once more, "You're all better, my friend."

The walk down the hall is easier in the glow of the tubes.

Bill Betlej
Mary Baldwin College
Staunton, Va.

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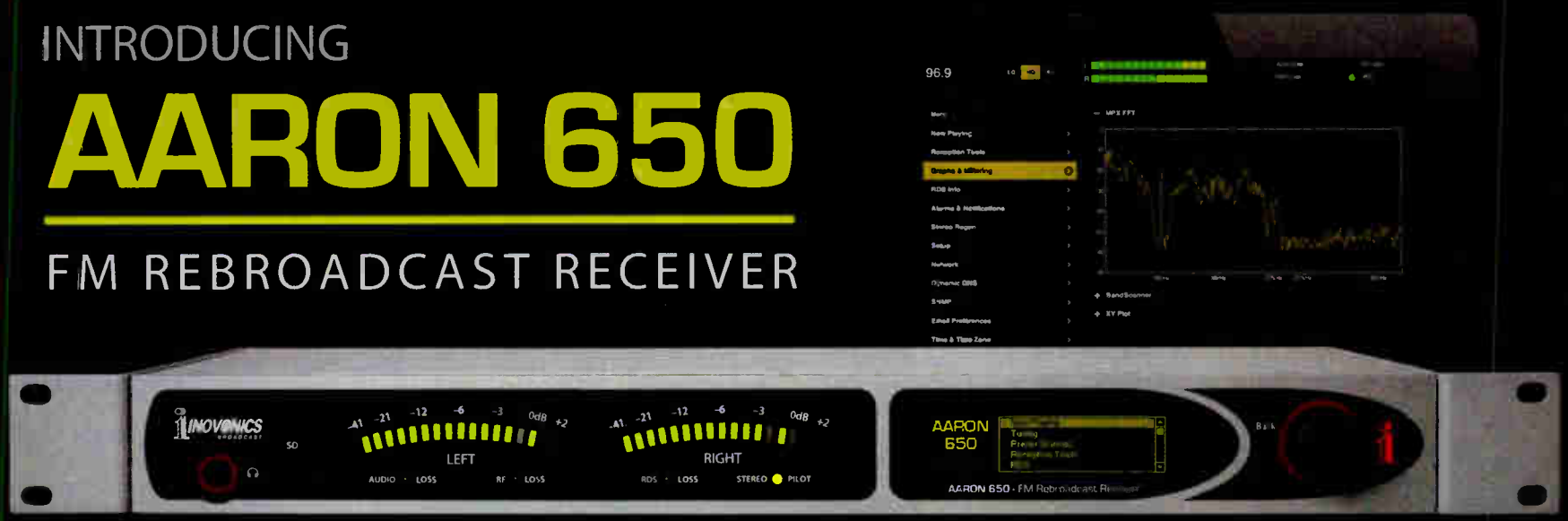

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