

RADIO WORLD

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Radio gives health officials a boost

TIS systems are in demand at drive-through clinics



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Geo-targeting hits headwinds

The NAB and others have come out against the FM booster proposal

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Geo-targeting proposal hits headwinds

NAB, others come out strong against FM booster rule change

Writer
Randy J. Stine



More info

You can see all the publicly filed comments on this issue at www.fcc.gov/ecfs/. Type "20-401" in the "Specify Proceeding" field.

If the FCC decides to allow FM boosters to originate programming, it will do so against the wishes of some of the largest U.S. radio groups.

The National Association of Broadcasters has come out strongly against the idea. Cumulus, Entercom, Beasley and iHeartMedia also questioned the technical soundness of geo-targeting; they urge further field testing.

Even some supporters now are using cautious language and urging more tests.

GeoBroadcast Solutions says it views the current phase of FCC vetting as "the beginning of an active debate on innovation in the radio industry."

Willing ears

FM broadcasters use boosters to help fill gaps in coverage often caused by terrain shielding. The rules require a booster to transmit only the signal of its originating station.

GBS wants to give stations the ability to air very localized ads, news and other content for a few minutes per hour, promising numerous benefits to stations and advertisers.

Its system, called ZoneCasting, has been tested in Milwaukee, Wis., on WIL(FM), and the FCC recently approved a test at KSJO(FM) in San Jose, Calif.

The idea has found some willing ears, with Commissioners Brendan Carr and Geoffrey Starks voicing support. The commission has an open Notice of Proposed Rulemaking; comments in this story were filed in that NPRM.

The comment period drew support from smaller stations, many of which filed nearly identical comments, vs. the more cautionary tone of some large groups who worry the proposal offers no great benefit and could become a detriment.

At the comment deadline, GeoBroadcast Solutions said in a statement: "Some parties oppose new technologies and innovation, and that is a familiar story for those

THIS ISSUE

NEWS

3 Geo-targeting proposal hits headwinds

5 Health officials deploy TIS for vaccinations

FEATURE

12 Workbench: This cable tester can save you time

BUYER'S GUIDE

18 KQAL's move to HD is simplified with Nautel

20 GatesAir springs into action for KTHK

24 El Conquistador deploys SmartFM

26 Mountain snow & dust conquered with R&S

OPINION

30 How do I know the IR emitter is working?



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who have watched broadcast media evolve over the decades. However, a broad range of large and small stations and broadcast groups, the advertising community and minority coalitions, have indicated their desire to embrace innovation and the future by using broadcast airwaves for a more personal and localized experience.”

GBS declined further comment ahead of the reply deadline in early March; we'll report on those filings in a subsequent article.

Emergency benefits

Dockins Broadcast Group, which operates in several small markets in Florida and Missouri, told the FCC the ability to geo-target weather warnings and road closures would be invaluable.

“Zoned coverage would make radio much more attractive to small businesses, who would be able to reach targeted audiences more effectively and efficiently,” it wrote.

Keyhole Broadcasting, licensee of three stations in Wyoming, said: “Keyhole would be able to utilize zoned broadcast coverage to provide targeted emergency alerts, local news and public interest programming and live local events of interest to small portions of the main service area.”

Emmis Communications wrote, “We agree with the MMTC [Multicultural Media, Telecom and Internet Council] that by creating the availability to geo-target

content, the proposed rule could increase the amount of content targeting minority communities, such as second-language programming.”

Opponents have focused on potential interference to primary and adjacent stations but they voice economic concerns, too.

The NAB's opposition is likely to be influential, given that benefits to broadcasters are among the selling points of the concept.

The association says it “strongly opposes” revising the rules. It says geo-targeting poses potentially seismic risks to the FM band: “A close review of the notice suggests that rather than bolster the industry's economic outlook, GBS's proposal would instead undermine the industry's fundamental business model.”

It believes program origination “will almost certainly drive both advertising rates and revenues down as advertisers push to purchase geo-targeted ads.”

And it said interference remains a worry. “Broadcasters are extremely concerned that the interference caused by geo-targeting where the boundary of a primary station meets a booster airing different programming will spur listeners to change to an alternative platform and reflect poorly on the reputation of FM radio service,” NAB asserted.

“The record lacks any real-world testing of GBS's system under certain critical circumstances sufficient to allow

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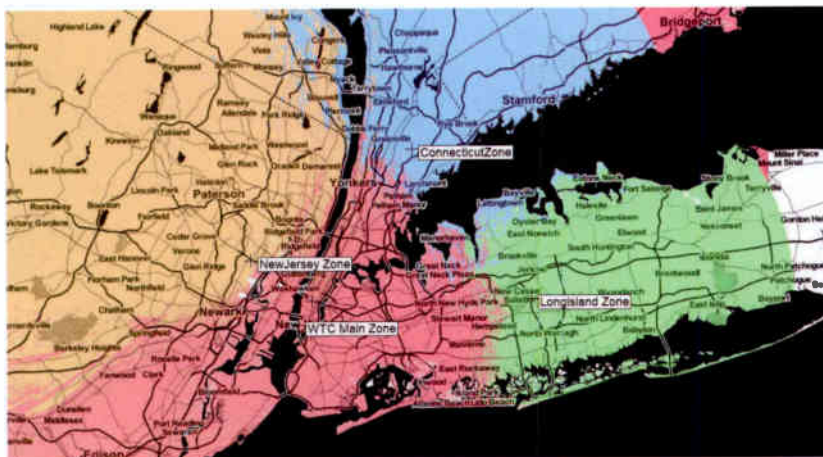


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Above
An image from the GBS website showing how geo-targeted zones might work in the New York City area.

stakeholders to reasonably assess the technical impact of GBS's proposal."

"Transition areas"

The filing by Cumulus, Entercom, Beasley and iHeartMedia went into detail: "While ZoneCasting is being promoted as causing merely 'manageable' co-channel interference (or self-interference), the test results and study placed in the record by GBS fail to substantiate that claim."

They expounded on GeoBroadcast's WII(FM) test report: "Delving into the fine print of the WII/Milwaukee Report, GBS identifies 'Transition Areas' — clearly a euphemism for 'Interference Areas' — along three parallel drive routes (of unspecified vehicle speed) ranging from 12 to 23 seconds, 22 to 24 seconds, and 23 to 30 seconds. This significant degree of conceded interference is hardly the 'negligible amount' of interference promoted by GBS."

Experimental testing of Zonecasting, they said, ignored the impact of booster origination on HD Radio and the Emergency Alert System.

Moreover, the groups raised the possibility of advertisers flocking to "population clusters deemed more valuable" or "Gold Coast neighborhoods" at a slight increase in dollars per capita but leaving areas seen as less desirable unsold.

"Not only would this cherry-picking undermine GBS's promise of higher premiums from ZoneCasting, it would further broaden the fragmentation already seen with advertisers buying a few top radio stations, while completely ignoring other stations, including those owned by minority, woman and small-business broadcasters," the broadcasters wrote.

NAB and others also expressed concern about degradation in the public's perception of FM quality.

Cromwell Group, which owns stations in medium and small markets, said interference between primary stations and boosters is already common.

"If geo-targeting grows, radio listeners may begin to perceive radio as a service that is garbled and unreliable. That perception is unlikely to be limited to only the stations that are using GBS technology and could affect audience

perception of radio generally, negatively impacting the entire industry." It supports further testing.

"Growing concerns"

Support from minority interest groups has been an important part of this story. But Urban One, which initially backed the idea because of its potential to increase business and ownership opportunities for minorities and women, expressed "growing concerns that the proposal might have significant unintended negative consequences to our diversity initiatives."

In particular, it said, "we fear the adoption ... will only result to drive down advertising revenues necessary for stations to thrive and continue to serve their communities."

Urban One continued: "This comes precisely at a time when the radio industry is already under significant pressure from new advertising competitors and the ongoing stresses of the novel coronavirus pandemic." It asked the FCC not to adopt the changes.

The former director of the Federal Emergency Management Agency, Craig Fugate, had been vocal about the value of geo-targeting in times of emergencies. But now he urges a more patient approach, urging that changes not be adopted before the system "is tested and shown to work reliably with the EAS system."

FEMA itself wrote that it found "little assurance in the record that EAS performance in and around such booster zones will not be negatively affected. FEMA's concerns are in two distinct transitional areas — geographic and temporal — along with an EAS operational concern."

But writing in favor of the proposal, manufacturer GatesAir noted that it worked with GeoBroadcast solutions to introduce the MaxxCasting system that forms the basis for ZoneCasting.

It said the interference concerns behind longstanding restrictions on booster origination are no longer an issue.

"(MaxxCasting) uses a network topology and GatesAir's Flexiva transmitters and Intraplex SynchroCast systems to provide targeted, over-the-air radio broadcasting that expands market coverage in a more effective manner than traditional signal booster technologies. MaxxCasting minimizes or eliminates interference with both a station's primary, co-channel, signal and with the signals of boosters associated with other stations operating near the FM booster station."

It continued: "The MaxxCasting system has a proven track record of allowing radio stations to expand their signals without causing interference previously associated with FM boosters, and thereby solving the technical concerns underlying the prohibition on independent programming."

And BIA Advisory Services said its research concluded that geo-targeted ads can increase radio's revenue. The company also cited data from Edison Research showing consumers prefer listening to more localized content, including localized commercials. 



Photo by Cytus McCrimmon for UCHealth

6

Writer
James
Careless



**On the
cover**

Dr. Bridget Graney talks to visitors at the UCHealth vaccination event.

Health officials deploy TIS for vaccinations

Low-power AM systems prove a useful tool

Traffic Information Stations, also known as Highway Advisory Radio systems, have been a fixture on American roads since the FCC authorized the 10 watt AM systems in 1977.

Forty-seven years later, TIS has found a new role as public health officials host drive-through vaccination clinics.

In January, the parking lot of Coors Field, home to the Colorado Rockies baseball team, was turned into a clinic for pre-selected Coloradans age 70 and over.

It was organized and staffed by the UCHealth health care system and the University of Colorado

School of Medicine working with the Rockies, the state of Colorado, the city of Denver, the Denver police and Verizon.

The logistics were daunting. Six lanes of cars had to be marshalled over 1.7 miles, then split to pass through 16 drive-through vaccination tents. The occupants were then directed to holding areas to wait for 15 minutes to detect any adverse reactions before they were allowed to drive away.

Making this happen required traffic cones, flag people and LED signs. But with 10,000 people scheduled over two days, something more was needed to communicate with the vehicles.

Organizers had done a pilot program a few days prior, in which 1,000 patients were vaccinated.

"One of the things we learned ... was that signs were not enough," said Bradford Fixler, UCHealth's VP of marketing. "Then it hit us: What we needed was one of those low-power AM traffic stations that feeds you prerecorded messages as you drive by."

Michigan-based Information Station Specialists provided a rented TIS system. Owner Bill Baker is also a director with the American Association of Information Radio Operators.

ISS provided an EventCAST-PR system that includes a 10 watt AM transmitter, antenna and audio input/

Above
At Coors Field, six lanes of cars entered and split off to the white tents for vaccinations. TIS helped authorities tell the drivers what to do.

“They're using an ACCESS NX with an ethernet connection provided by the arena. Crystal clear - we've come a long way!”

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Stu Rushfield
NPR Technical Director



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management system. It comes in a roll-away equipment case, and can be set up in minutes.

"TIS systems have gone from exclusively transmitting traffic information to being used for all manner of emergency/safety purposes allowed by the Part 90 rules," Baker said.

"This self-contained station is in high demand with departments of public health and emergency management, because AM radio is still popular with and available to the listening public."

FCC rules were clarified in 2013 to underline that a TIS signal can be used in emergency situations, with the content under the control of local emergency managers.

The system in Denver provided



“ Many of the people ... thought that they were listening to a regular radio station, and that someone was paying to sponsor the broadcast. ”

a range of prerecorded looped information to listeners in English and Spanish on 1630 kHz. The frequency was authorized by the FCC on an emergency temporary license and promoted on the clinic's LED signs.

"In our loops, we told them to be sure to drive very slowly, and that they had to have an appointment to get a shot: No exceptions," said Fixler.

"We were allocated exactly 10,000 doses, so if any of those had been given to someone who didn't have an appointment, someone who did would have gone without."

The looped broadcasts told patients to wear masks, stay in their cars, have proof of appointments ready and to

Above
Dinger, the Rockies dinosaur mascot, is masked while directing traffic.



Audio sample

You can hear a sample of the bilingual Denver TIS messages. Go to <https://tinyurl.com/rw-TIS-clip> and scroll to the bottom of the article.

have their sleeves rolled up. "We wanted to avoid wasting time in the vaccination tents ... because these delays could have significantly slowed down the vaccination process," Fixler said.

"We also told them about the observation areas where experts were trained to watch for and respond to any adverse reactions."

The fact that UCHealth opted for prerecorded English and Spanish messages posed a problem. Surely English speakers would turn off their radio when the Spanish loop came on, and vice versa.

Baker suggested that they alternate paragraphs in English and Spanish, said Fixler; this ensured that people of both languages stayed tuned for the entire package.

On Jan. 30-31, the broadcasts went to plan. "The script was very understandable, and the signal coverage on 1630 AM was very clear throughout the Coors Field parking lot. The only thing we don't know is how many people actually tuned in. We plan to survey them about it the next time we hold this kind of drive-through event."

Walk-ins

The EventCAST system is also being used by SCL Health for walk-in vaccination clinics in Denver; the first was held in February at the National Western Complex. Five thousand people from underserved communities were vaccinated. More clinics were scheduled.

"My background is in state/municipal government, with a lot of experience in emergency management and operations, so I know the value of radio for communicating vital information to people," said Gregg Moss, SCL Health's director of public relations and media.

"Radio also helps in constantly reinforcing messages about directions and staying calm: 'We're going to take good care of you.'"

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Above
ISS EventCAST-PR
system in its
travel case.

The system broadcast looped messages in English and Spanish for 10 hours on Feb. 6. The messages had been recorded by voiceover pros Jeff Laurence and Celina Martinez, who assist Information Station Specialists on special projects.

"We had digital sign boards set up about a quarter mile from the exits where people get off to drive to the National Western Complex, telling them to tune to 1630 AM," said Moss. "We then had a second set of signs closer to the venue, repeating the same message."

Because these broadcasts were aimed at patients behind the wheel, "we advised them on which street to turn down and what parking lot to go to," Moss said. "We also let them know what to expect once they arrived at the complex for their shots and reminded them to book their second vaccination appointments while they were here."

Based on patient feedback, SCL Health's TIS station was effective.


"What was funny is that many of the people who tuned in didn't realize that we were behind the station," said Moss. "They thought that they were listening to a regular radio station, and that someone was paying to sponsor the broadcast."

Still relevant

Baker's company offers licensed fixed and portable stations with ranges of 3 to 5 miles, per TIS rules, and license-free AM stations of very low power that reach about a half mile.

He said these are busy days for low-power systems. "We're challenged to keep up with the demand," he said. "But it's been a blessing: We've been able to work diligently through the pandemic."

He said the current interest speaks to the universal nature of radio, and the comfort people feel with it versus text- and web-based systems, especially when they are distracted by illness or worry.

"Radio is tried and true. Everybody knows how to use it, and radio remains a great way for the people who are responsible for mitigating tragedies to speak directly to the people that are affected by them. That's why AM radio and TIS are still relevant today." 

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World Radio History



John Bisset

Is in his 31st year writing the Workbench column. He handles western U.S. radio sales for the Telos Alliance and holds CPBE certification with the Society of Broadcast Engineers.

This cable tester can save you time

Also, Marc Mann gets a scare from a Phone Phreaking Box

We recently mentioned do-it-yourself cable testers. Greg Muir of Wolfram Engineering says that if you need a cable tester with a variety of connector interfaces but don't have "DIY time," the Pyle PCT-40 12-Plug Pro Audio Cable Tester might be a possibility. See www.pyleaudio.com, search "PCT-40."

While the Pyle website gives a sticker shock price of \$96, the tester is commonly available in the \$40 price range from many sources online. The upside is that it accommodates a plethora of connectors for those who may encounter a variety of cables in the field, such as a contract engineer.

Greg has found the tester handy when providing services for venues both in and outside of the radio business.

Operation is simple; just plug both ends of your cable into the mating connectors on the box and rotate the switch through the ranges. Normal cables will illuminate both correlating LEDs on the panel for each switch position. In the case of cables where a "twist" may be encountered, such as LAN cables, then whichever indicator lights will indicate the twist connections.

Phreak out

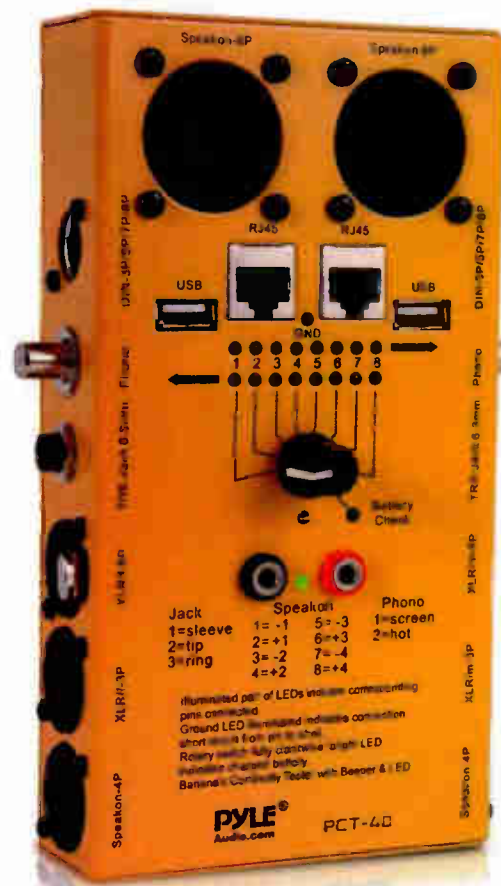
Our recent references to Radio Shack prompted some nostalgia for San Diego engineer Marc Mann.

His first job while in high school in the 1970s was at Radio Shack. He has great memories, learning about new ICs while restocking the pegboards with the latest offerings.

One quiet evening Marc was the only person in the store when some teenagers came in for parts. While paying for them, one of the teens asked if Marc could guess what they would be using the components for. Of course he had no idea.

So the customer reached in his pocket and pulled out a small Bakelite box with several pushbuttons. He said, "Want to see something cool?" and he asked for the telephone on the counter.

He took the handset and held the little box to the microphone and began pushing buttons that produced



Comment
Like Marc Mann, you probably can remember a time when someone asked you, "Want to see something cool?" Mail tips and stories to johnpbisset@gmail.com.



various tones; then he handed the handset to Marc and said "Listen."

A few moments later, Marc found himself listening to a man with an Australian accent giving the weather report for Sydney, Australia! Marc started to panic, fearing a huge phone bill would ensue and that he would be fired.

The customer assured Marc there would be no charges; he was using what was known as a Phone Phreaking Box, built with Radio Shack parts.

Marc has still kept his Radio Shack Wall Clock, Fig. 2, which he won in a sales contest. The clock still sports the

Above right
Fig. 1: Pyle PCT-40 12-Plug Pro Audio Cable Tester.

Right
Fig. 2: A reminder of times past.

Social Distancing

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Below
Fig. 3: How many
"free" tubes did
you claim?

little metal badge that promises to replace any tubes that were to fail. How many readers remember and took advantage of that guarantee?

Right
Fig. 4: An
important piece
of test equipment
in the 1950s and
'60s, displayed
at the California
Historical Radio
Society.

But where's the pinball lever?

Speaking of tubes, check out the tube tester in Fig. 4. It is on display at the California Historical Radio Society (CHRS) in Alameda. There are some great memories housed in their 115-year-old former telephone building. It's a unique West Coast museum, devoted to all things radio. Visit <https://californiahistoricalradio.com/about/>.

An AE IOU

As an alternative to The Shack, Marc has been buying parts from Ali Express for about three years. He initially found its service to be very good, with shipments arriving in 30 to 45 days or less. But in this past year of COVID, it has been

more miss than hit, with four out of five orders not showing up.

Basic tracking shows packages leaving U.S. Customs but then they disappear into the ether. Marc writes that, should you continue to order from Ali Express, be aware that if an order doesn't arrive in 90 days you can easily lodge a "not received" dispute. AE will do an investigation. Marc has always been reimbursed quickly for any charges incurred. So at this point



you should be able to order with confidence. You just have to be patient.

No Fry's with that

Marc wraps up his buying experiences by suggesting a moment of silence for the demise of Fry's Electronics.

If you had a Fry's close by, you know it was a Nerd's Paradise. Where else could you find just about anything electronic, and on display so you could turn the knobs of oscilloscopes and meters before buying them?

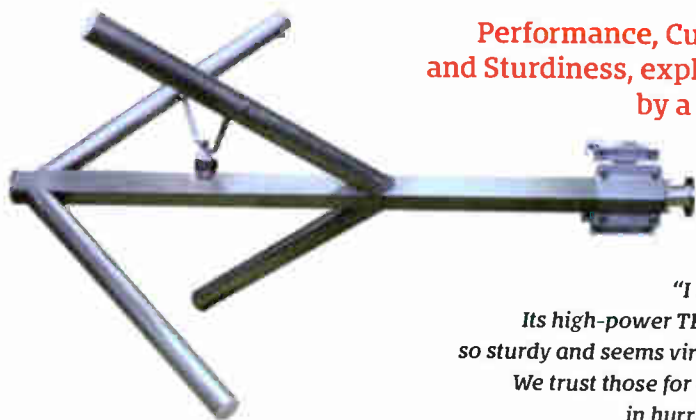
Ironically, six of the massive Fry's stores originally were purchased from Incredible Universe, another electronics giant that closed in 1996. And who owned Incredible Universe? Tandy Corp. — which at the time was the parent company of Radio Shack.

Oops!

By the way, our previous column included a sentence that started, "A couple of hours later, he wired the ATX supply wires to the Model plug..."

Perhaps auto-correct was having a bad day. As most readers probably realized, the word "Model" should have read "Molex," as we stated correctly in a caption. 🙄

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BUYERSGUIDE

Transmitters

About Buyer's Guide

We publish User Report testimonials for various equipment categories throughout the year to help potential buyers understand why colleagues chose the equipment they did. Do you have a story to tell? Write to brett.moss@futurenet.com.

KQAL's move to HD is simplified with Nautel

Upgrade went live in October with a VS2.5HD transmitter

Writer
Mike
Martin

Operations
Manager,
KQAL(FM)



More info

For information, contact Nautel in Nova Scotia at 1-902-823-5131 or visit www.nautel.com.

WINONA, Minn. — The campus radio station at Winona State University has always led the way in technology among broadcasters in Winona, Minn.

KQAL(FM) was the first radio station in the area with a website; it was the first to do online streaming; the first with a mobile app, and the first to broadcast RDS song/artist metadata. So being the first to broadcast in HD Radio was a logical step for KQAL.

Our upgrade to HD Radio operation went on air in October 2020 with a new Nautel VS2.5 HD transmitter and the new HD Multicast+ Importer/Exporter.

We have been using Nautel for a long time. KQAL's first venture with Nautel was a M50/V1 exciter/transmitter combo, we then moved up to the VS1, and when we decided to go HD it was a no brainer to stay with Nautel. The customer support, reliability and AUI are unparalleled. And our rep, Jeff Welton, guided us along every step of the way.

The HD MultiCast+ made our transition to HD easy and installation was a breeze. It is basically the standards-based version of Xperi's HD Radio software implemented on a device that uses an embedded Windows site server. This is a proven, well-supported industrial-quality OS that is used for high-availability applications ranging from bank machines to audio processors.

To put it simply, AES digital audio goes into the onboard sound card and HD Radio comes out, ready to be fed into the Nautel HD exciter. The installation manual is comprehensive yet easy to follow. The only tech support I needed y was to resolve a question about what port to use for song/artist metadata.

Before Nautel can ship any equipment, stations must have a license agreement with Xperi. Being a state university station, KQAL had to receive contract approval from the system office in St. Paul, Minn., and that process delayed us for several weeks.



But when that was resolved, things moved fast. Xperi notified Nautel of the consummated deal on a Thursday, Nautel shipped Friday and it was on-site Monday.

KQAL is an Axia Livewire plant; all sources are digital with no analog conversions at any point, including a digital STL. The 2 RU HD MultiCast+ has everything we needed for managing our signal. It works flawlessly with Livewire; it encodes our digital channel along with data services, and it supports the Artist Experience information that we hope to use soon. The exporter brings together the digital version of the main audio stream plus the HD content and feeds it all to the VS2.5.

Our General Manager Doug Westerman teaches a "Fundamentals of Radio" course at WSU. It's a great entry to try broadcasting, putting students into the KQAL environment to learn the basics of radio at an actual station. Adding the HD capability to KQAL ensures that our students are staying on the cutting edge of radio technologies, programming and operation. It's just another "first" for a university that has been leading the way since 1858. 📻



More Buyer's Guide

You can find recent User Reports in categories like streaming, remote equipment and broadcast antennas at www.radioworld.com/tech-and-gear/buyers-guide.

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* The Gateway-4 codec supports 4 channels only and is not upgradable to support more channels.

Writer
Brad
Roybal

IT and
Engineering
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Riverbend
Communications



More info

For information,
contact Keith
Adams at
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3447 or visit
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GatesAir springs into action for KTHK

Quick turnaround and clearer signal please Idaho broadcaster

IDAHO FALLS, Idaho — KTHK is a commercial, 100 kW station owned by Riverbend Communications broadcasting KTHK(FM)/105 The Hawk throughout the southeast Idaho region including Blackfoot, Idaho Falls, Pocatello, and Rexburg.

The main 105.5 MHz FM signal, which has an ERP of 100 kW, propagates from a butte near Idaho Falls, and is supplemented with a translator on 105.9 MHz FM to service the tricky Pocatello geography. It's an overall challenging market to cover that was further complicated as our main tube transmitter, with a manufacturing badge dated 1978, had been increasingly hindered by component failures.

Parts became more expensive and harder to source with each passing year. The transmitter finally suffered an untimely critical failure, and an immediate replacement was ordered while the station ran on an auxiliary backup.

Fortunately, plans were in motion to replace this transmitter, and comparisons and evaluation had already been made that led to the decision of a GatesAir Flexiva FAX20 air-cooled transmitter.

The theory of operation seemed very sensible. Individual, hot-swappable power supplies for each power amplifier module will make future replacements quick and easy. Redundancy is improved since the IPA and power amplifier modules for each power block are the same and interchangeable. General maintenance is swift and simple with occasional filter cleaning, with internal building temperature monitored by remote control.

Time was of the essence since the project changed from a planned transition to an immediate replacement. We had two major concerns: factory lead times due to COVID-19's impact on supply chains, and the weather condition's

effect on site accessibility. Nick VanHaaster, our GatesAir sales representative, as well as their manufacturing and shipping divisions, were helpful in sourcing a new transmitter quickly.

It is almost unavoidable with Murphy's Law applying to emergency engineering, and we still ran into a major two-week delay with the freight carrier. Thankfully, the quality of the packaging materials and assembly alleviated most concerns. The two inches of snow expected at the tower site on the projected arrival date had turned into two feet of snow when the transmitter reached us.

After initial inspection, it was determined that the transmitter could be safely transported in the original crating covered in tarps for temporary waterproofing. With the transmitter arriving in two crates, the weight could be distributed on a flatbed trailer and towed by a 4x4 truck with tire chains.

Compared to the amount of work that went into removing the old tube transmitter, installation was very quick. After running new rigid transmission line to the combiner and three-phase delta power via top access, the transmitter was on and running into a dummy load within hours.

We have seen noticeable improvements in performance and efficiency. The difference in broadcast clarity was immediate, while reduced power consumption has had an immediate impact in utility cost savings.

The operation has been perfectly stable, with no issues since the transmitter came to air. In addition, the ground footprint is significantly less than the old tube transmitter, leaving room for another rack and future infrastructure.

This transmitter utilizes the GatesAir Flexiva FAX50 exciter, which is as easy to configure. The exciter is fed audio via composite from an Omnia processor, and the transmitter is output via Myat 3 1/8-inch rigid transmission line to an ERI combiner installed two years ago. From there, it is combined with another solid-state transmitter and run to a directionally polarized Jampro antenna bay.

Overall, this transmitter has exceeded high expectations. When it comes to installation, functionality, operation, broadcast clarity and efficiency, the affordability borders on unique. Even after the warranty expires, our expectations are that parts, labor and most importantly main transmitter downtime will be drastically diminished. We look forward to adding more of the Flexiva line of solid-state transmitters to our fleet, and the additional savings in operating costs we will see in the future. 🗣️



“The difference in broadcast clarity was immediate, while reduced power consumption has had an immediate impact in utility cost savings.”

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Tech Update

Bext Offers XD Series FM Transmitters

The latest from Bext is its XD Series FM transmitters.

The XD Series transmitters are customizable at the time of order. Buyers can choose from a menu of features or options, paying only for the ones they need at the moment. Software-defined configurations allow remote activation of additional features or options, should the user need more later.

Features or options include digital direct-to-carrier modulation; customizable audio processor and stereo generator; web-accessible GUI; user-programmable email alerts; multiformat audio storage (via USD cards up to 64 GB/FAT/FAT32 partition); RDS encoder; onboard user manual file (USB accessible even with unit disconnected or

inoperable); phase locking to GPS/GLONASS reference; FM receiver; satellite receiver, which can decode transport streams with PID identifier, also supports audio up to a 192 kHz sample rate, suitable for composite audio.

Bext says XD transmitters offer the widest flexibility for audio, accepting AES67, AES192, AES-EBU, web audio streaming including Icecast and Shoutcast2, and MPX over IP.

Formats and sample rates include MP3 up to 320 kbps/48 kHz; AAC-LC up to 96 kHz; AAC-HE; MPEG1 Layer 2 up to 384 kbps/48 kHz; WMA up to 128 kbps; FLAC up to 320 kbps/44.1 kHz; and Ogg Vorbis with variable bitrate.

Power levels include 150, 300 and 600 Watts and 1, 2, 3, 5, 10, 15 and 20 kW.

Units up to 5 kW are very compact: 2, 3 or 4 RU. Units up to 1 kW can operate also on 120 VAC.

Bext says its tech support is U.S.-based with live personnel 24/7.

For information, contact Bext at 1-888-239-8462 or visit www.bext.com.



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El Conquistador deploys SmartFM

Reduces energy consumption and improves audio quality



SANTIAGO, Chile — El Conquistador FM, one of the most important radio groups in Chile, began with one station in Santiago more than five decades ago and today is nationally established with 50 stations in the country.

Alejandro Noemi Hauck, a well-known radio engineer at El Conquistador FM, operates three Ecreso FM 1000W transmitters, broadcasting in three cities, each deployed with SmartFM technology and a five-band audio processor.

While staying on air with the highest quality audio is vital, as for all broadcasters, Hauck also said cost savings and limiting energy consumption are increasingly important.

Multiple factors play into this such as system efficiency, reliability and cost of maintenance. Hauck said their legacy transmitters were not optimal in terms of total cost of ownership, so he looked for a solution that would better fit

their needs while lowering operating costs and improving the quality of the signal.

Hauck said he had good experience over four years with the Ecreso FM 1000W, for its efficiency and reliability, so he jumped on the opportunity to use the newly released SmartFM technology.


Manufacturer WorldCast Systems says SmartFM is a sophisticated innovation for FM radio that enables broadcasters to reduce energy costs by up to 40%. The software, in Hauck's words, "is incredible to see operate automatically according to the program content."

After testing on-air programs at the edge of the coverage zone, he said he was surprised by the results and that SmartFM does not affect the listening experience. For El Conquistador, this represents a step forward for radio at a time when energy is expensive and businesses need to limit their consumption.

"SmartFM is a breakthrough innovation every FM broadcaster should deploy," he told the manufacturer, saying that the improvement, activated through a software upgrade, is significant.

In line with its objective to deliver great sound, the broadcaster also uses the built-in five-band sound processor. According to Hauck, he replaced processors he was using from a familiar brand with WorldCast Systems' solution. No additional hardware is required, and the result is amazing sound that can be personalized for a station.

In addition to reliability and great audio, Hauck said, the group saw power consumption drop noticeably. While Ecreso FM 1000W provided efficiency of up to 72%, with SmartFM they reaped the benefits of even higher efficiency and savings.

"I would recommend Ecreso for the audio quality, the very good transmitter performance and especially SmartFM, which is an impressive innovation," Hauck said. 

“While Ecreso FM 1000W provided efficiency of up to 72%, with SmartFM they reaped the benefits of even higher efficiency and savings.”

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Mountain snow and dust conquered with R&S

THR9 liquid-cooled FM transmitters prove the solution for EMF

PUEBLO, Colo. — Have you ever dealt with one of those “nightmare” sites? You know the type ... Constant problems due to poor environmental conditions, no heating or cooling, and questionable power.

These sorts of hostile environments are the worst possible place for modern broadcast equipment. Top it off with the fact that the site is inaccessible for nine months out of the year without a dedicated snow vehicle and you have a perfect recipe for extended downtime.

That was precisely the description of KLCX(FM) and KWRV(FM), two combined FM stations in Southern Colorado mountain country.

These sorts of conditions may have been perfectly acceptable for tube rigs to keep chugging away (for the most part) but modern air-cooled solid-state rigs are far more reliable with better controlled environmental conditions.

In some cases, however, it may not be possible to improve environmental conditions at the site. Furthermore, when you can't access the site, it's hard to keep up with air filter maintenance in such a dusty environment.

If you are not able to air condition the room, it makes a lot of sense to move heat outside in other ways and eliminate fans in the transmitter cabinet.

I had seen the Rohde & Schwarz liquid-cooled FM transmitters at a trade show but had never encountered one in the field. Their liquid-cooled television transmitters, however, seemed to be popping up everywhere during the television repack. The TV engineers I talked to absolutely loved them. There was some hesitation over using liquid cooling due to lack of familiarity, but for a site like this it was worth trying something completely different. Clearly the status quo wasn't working.

We undertook a massive project to replace both transmitters (30 kW for KLCX and 10 kW for KWRV) as well as the entire RF system all the way to the antenna. The price was competitive with air-cooled options.

Once the installation of the Rohde & Schwarz rigs started, I realized it really wasn't all that much different than installing any other transmitter. Yes, installing the liquid-cooling loop and heat exchangers required learning a few “different” skills but it is not nearly as difficult as one would imagine.

The transmitters are very well engineered (as one would expect). My only complaint was that the documentation, while complete, was very utilitarian. I found it a little difficult to navigate at times.

Another thing I encountered is that setting power on these rigs is slightly different than you might expect. It



is set as a percentage of the full output capability. The percentage is not calibrated against your TPO. Output power is displayed in kilowatts. An actual TPO percentage will need to be calibrated in your remote control. I made the mistake of activating the “Power Sensor Calibration” function without truly understanding how this worked. Thankfully, the touchscreen control panel made adjustments easy to access on site. The mobile-friendly HTML 5 GUI mirrored the front panel and was equally easy to use.

The transmitters have been in operation since about October of 2020 and have weathered the winter well, including multiple power bumps. We have seen a couple of minor issues (one almost undetectable leak at the pump stand, and an erroneous power supply fault indication on one of the modules). Neither of these minor issues has kept the rigs from operating at full power. The factory will be addressing both issues under warranty once the snow clears.

Between getting the heat from the transmitters outside of the building and eliminating any fans in the transmitter cabinet itself (aside from a small fan in the controller) it has made for a much more reliable environment. It never ceases to amaze me that even at a dusty site like this, the inside of the transmitter cabinet is still as clean as the day it was installed. The fact that redundant power supplies are integrated into the RF amplifier modules and liquid-cooled as well makes for a very robust system.

While I don't plan to move away from air-cooled transmitters entirely anytime soon, there are certainly situations where liquid-cooling would be a good option. It's nice to have yet another tool available to work around these sorts of challenging site issues. 🍷



Ahead in Buyer's Guide

April
Audio
Processing

May
Visual Radio

June
Apps for
Radio Tech

Tech Update

Broadcast Electronics' Latest Is the STXe-3

Broadcast Electronics has expanded its STX line of solid-state FM transmitters with the new STXe-3 3kW FM transmitter.

The STX3-e is based on STX RF module design, which it says is clean and reliable. The STXe-3 provides cost-effective FM and HD Radio performance and reliability, the company says.

The STXe-3 includes an integrated digital exciter, four 800 watt LDMOS power amplifiers, and two RF power supply modules that are front-accessible and hot-pluggable, providing easy service in the event of a power issue.

Other features include digital exciter with integral RDS, MPX over AES, SFN delay, FSK ID, SNMP Level 3 control and security, HD Radio compatibility, and a GUI that provides operation via PC, laptop, tablet or smartphone, with no Flash or Java (shown).

Output power ranges from 750 watts to 3 kW with up to 75% efficiency. The STXe-3 is manufactured and supported 24 x 7 x 365 by BE in Quincy, Ill.



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Distorted and one-sided



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Send a Letter

Submit a comment on any story in Radio World by emailing radioworld@futurenet.com with "Letter to the Editor" in the subject field.



Page 5 in the Feb. 3, 2021 edition contains the first crossing of the line from fact to fiction in Radio World. The WTOP account of the events at the U.S. Capitol on Jan. 6, 2021 were distorted and one-sided.

I get that the reporter was freaked out by the events, but we engineers deal with some very real situations at our transmitter sites and do not send you articles about how it was really scary that the high-voltage supply tried to get me.

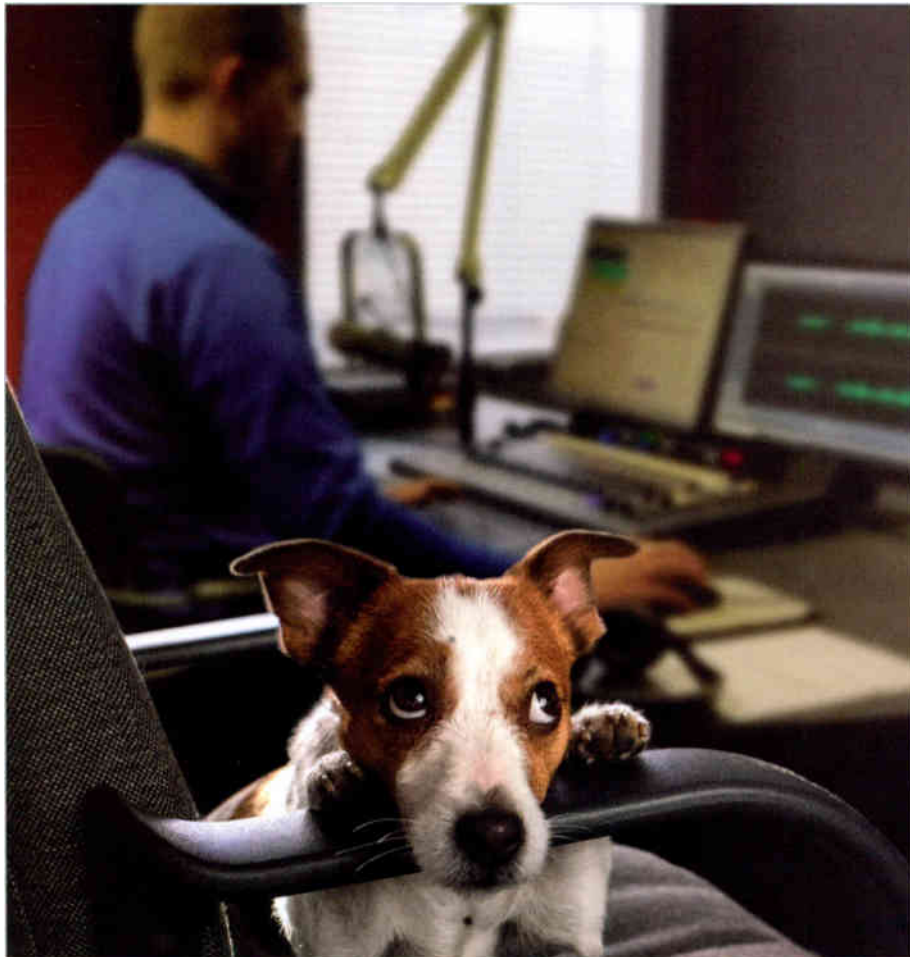
The crossing into fiction was compounded when the story writer lied. President Trump never said, "Move forward, patriots, we are taking the Capitol."

You owe your readers an apology. If WTOP is what broadcasting is to become, then we are morphing into a chatroom post of fearmongering and innuendo with a cellphone.

*Richard Wood
Resonant Results Ltd.
Cottage Grove, Wis.*



Editor in Chief Paul McLane replies: Radio World stands by the reporting in the story. However the placement of the quote that Mr. Wood cites should have been clearer. Like the statements that followed it, the quote "Move forward, patriots, we're taking the Capitol" was heard by a WTOP reporter from among the crowd on the West Lawn. Our story did not intend to attribute that to President Trump.



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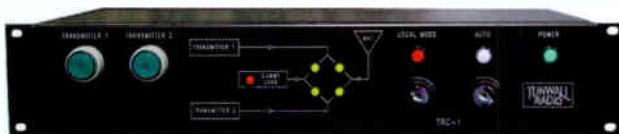
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How do I know the IR emitter is working?

A question about our earlier story "Night Vision Issue Comes to Light"

Reader Bob Meister wrote to Radio World:

A sidebar to the Vertical Bridge story in the Feb. 3 issue concerned red LED obstruction lights and the need for IR emissions to allow night-vision visibility.

I have to wonder how a tower owner or VB is going to detect whether the IR emitter is operating.

With incandescent or visible LED lights, one can look up at the tower lights and determine they're working, but not so with IR emitters, which put out light energy outside our visible range. You'd need the same night-vision goggles or some sensor to "see" the IR emission.

Most stations have some kind of automated system to detect tower light outages, but there could still be some smaller facilities that have a human do that inspection half an hour after local sunset. It's hard enough to ensure such an inspection actually gets done every day; how are you going to get him/her to wear NVG to "see" the IR?

Tower light systems usually monitor the current being sent to each beacon and obstruction light, and sensors are adjusted to detect the average current expected on functioning illuminators. Since LEDs draw so little power, and IR emitters would only contribute a small fraction of the total power for each light, I'm not sure how one would actually monitor this IR activity at each point on a tower.

It's great for the FAA to require IR emissions on tower lights but nearly impossible to detect outages that would require FAA notification and a subsequent NOTAM.

Radio World submitted Bob Meister's query to Richard Hickey, director, regulatory compliance at Vertical Bridge. Hickey replied:

Interesting questions with answers that may not be easily integrated by all tower owners.

First, FAA red lighting consists of L-864 medium intensity beacons and L-810 low intensity ("marker lights"). Red LED is the only technology without an IR signature.



Richard Hickey

The major manufacturers of red LED lighting started incorporating IR devices into their products soon after seeing the first safety bulletins from the CAF and FAA, including making the lighting controllers capable of sensing the additional current in the IR device circuit when combined with the LED string or quadrant. Vertical Bridge stipulated the requirement for IR signature in red LED lighting from all supply sources as soon as it was made available.

As Bernard Borghei of Vertical Bridge stated, the best way to determine if your red LED lighting system is NVG-friendly is to contact the manufacturer with the serial number, invoice number or even the product manual that came with the lighting.

Vertical Bridge has every lighting system in our total portfolio monitored through one of two NOC facilities, both manned 24/7/365, and both have been evaluated and approved by the FCC for QLI Waiver status.


In this scenario, the IR devices are monitored (current detection) and NOTAMS opened upon failure within the FAA guidelines. If a red LED in any position on a tower fails and we cannot verify the presence

of IR in the other tower lights, we replace the failed lighting at that level and top lighting along with the lighting controller, if necessary, to ensure a compliant system within the current FAA/FCC guidelines.

Mr. Meister touches on a scenario commonly found at many tower sites, particularly broadcast, where site engineers are routinely checking on the tower(s) daily and many actually work at the site.

Visual monitoring is still accepted by the FAA and FCC (see FAA AC 70/7460-1M Chapter 4.4.7). The owner of a tower can have someone physically look at the lighting system once every 24 hours in each operational mode and log the results, maintaining a log covering the last two years, and opening any required NOTAMS immediately if the duration of the failure is (or potentially was) 30 minutes. Visual monitoring of IR devices may be possible using night vision goggles, binoculars or a night vision camera, but one would need to access all sides of the tower in order to see if all the lighting IR nodes were functioning properly.

A replacement controller with the proper monitoring abilities may be less expensive and would almost certainly facilitate the monitoring process.

This statement, also from AC 70/7460-1M, would seemingly apply to IR devices as well: "In the event a structure is not readily accessible for visual observation, a properly maintained automatic monitor should be used. This monitor should be designed to register the malfunction of any light on the obstruction regardless of its position or color. When using remote monitoring devices, the system's communication and operational status should be confirmed at least once every 24 hours." 

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