

RADIOWORLD

Your guide to radio technology

radioworld.com | May 11 2022 | \$5.00

A successful reboot

The NAB Show in pictures.



Workbench

The T1 Tomahawk is the tape measure to rule all tape measures.

Franken Tech

The engineering side of an unconventional technical marriage.

Visual Radio

Buyer's Guide takes a look at nine solutions for your video needs.

FUTURE

CameraOne from Broadcast Bionics is available exclusively in the US from



Broadcasters General Store
352-622-7700 www.BGS.cc

0000004473

119-1SD1

P0002

LA QUINIA CA 92253-5647

DAVID GLEASON
CONSULTANT & MUSIC SPECIALIST
UNIVISION RADIO
80960 BELLEVUE



#BXMTQT *****AVU0003-DIGIT 922
#0009751 9# RDMA 0009751 R2113

CameraOne

Visualization software

anyone can use and everyone can afford

From \$995
buy out

World Radio History

Works with Blackmagic ATEM Mini series*



Bionics



IP...NOW is the time



DMX The Wheatstone IP bargain!
YES – With an Engine full of Studio I/O & EQ/Dynamics too!

AES67INSIDE

audioarts.com/dmx-rw20B

FOLLOW US

www.twitter.com/radioworld_news

www.facebook.com/RadioWorldMagazine

CONTENT

Managing Director, Content & Editor in Chief Paul J. McLane,
paul.mclane@futurenet.com, 845-414-6105

Content Producer & SmartBrief Editor Elle Kehres,
elle.kehres@futurenet.com

Technical Advisors Thomas R. McGinley, Doug Irwin

Technical Editor, RW Engineering Extra W.C. "Cris" Alexander

Contributors: Susan Ashworth, David Bialik, John Bisset, Edwin Bukont, James Careless, Ken Deutsch, Mark Durenberger, Charles Fitch, Donna Halper, Alan Jurison, Paul Kaminski, John Kean, Gary Kline, Larry Langford, Mark Lapidus, Michael LeClair, Frank McCoy, Jim Peck, Mark Persons, Stephen M. Poole, James O'Neal, John Schneider, Dan Slentz, Dennis Sloatman, Randy Stine, Tom Vernon, Jennifer Waits, Steve Walker, Chris Wygal

Production Manager Nicole Schilling

Managing Design Director Nicole Cobban

Senior Design Directors Lisa McIntosh and Will Shum

ADVERTISING SALES

Senior Business Director & Publisher, Radio World

John Casey, john.casey@futurenet.com, 845-678-3839

Publisher, Radio World International

Raffaella Calabrese, raffaella.calabrese@futurenet.com, +39-320-891-1938

SUBSCRIBER CUSTOMER SERVICE

To subscribe, change your address, or check on your current account status, go to www.radioworld.com and click on Subscribe, email futureplc@computerfulfillment.com, call 888-266-5828, or write P.O. Box 1051, Lowell, MA 01853.

Licensing/Reprints/Permissions

Radio World is available for licensing. Contact the

Licensing team to discuss partnership opportunities.

Head of Print Licensing Rachel Shaw Licensing@futurenet.com

MANAGEMENT

Senior Vice President, B2B Rick Stamberger

Vice President, Sales & Publishing, B2B Aaron Kern

Vice President, B2B Tech Group Carmel King

Vice President, Sales, B2B Tech Group Adam Goldstein

Head of Production US & UK Mark Constance

Head of Design Rodney Dive



FUTURE US, INC.

130 West 42nd Street, 7th Floor, New York, NY 10036

All contents ©Future US, Inc. or published under licence. All rights reserved. No part of this magazine may be used, stored, transmitted or reproduced in any way without the prior written permission of the publisher. Future Publishing Limited (company number 02008885) is registered in England and Wales. Registered office: Quay House, The Ambury, Bath BA1 1UA. All information contained in this publication is for information only and is, as far as we are aware, correct at the time of going to press. Future cannot accept any responsibility for errors or inaccuracies in such information. You are advised to contact manufacturers and retailers directly with regard to the price of products/services referred to in this publication. Apps and websites mentioned in this publication are not under our control. We are not responsible for their contents or any other changes or updates to them. This magazine is fully independent and not affiliated in any way with the companies mentioned herein.

If you submit material to us, you warrant that you own the material and/or have the necessary rights/permissions to supply the material and you automatically grant Future and its licensees a licence to publish your submission in whole or in part in any/all issues and/or editions of publications, in any format published worldwide and on associated websites, social media channels and associated products. Any material you submit is sent at your own risk and, although every care is taken, neither Future nor its employees, agents, subcontractors or licensees shall be liable for loss or damage. We assume all unsolicited material is for publication unless otherwise stated, and reserve the right to edit, amend, adapt all submissions.

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by Future US, Inc., 130 West 42nd Street, 7th Floor, New York, NY 10036. Phone: (978) 667-0352. Periodicals postage rates are paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to Radio World, PO Box 1051, Lowell, MA 01853.



Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR)
www.futureplc.com
Chief executive Zillah Byng-Thorne
Non-executive chairman Richard Huntingtonford
Chief financial officer Penny Ladkin-Brand
Tel +44 (0)1225 442 244

Recycle Please recycle. We are committed to only using magazine paper which is derived from responsibly managed, certified forestry and chlorine-free manufacture. The paper in this magazine was sourced and produced from sustainable managed forests, conforming to strict environmental and socioeconomic standards. The manufacturing paper mill and printer hold full FSC and PEFC certification and accreditation.

It ... is ... alive ...

We thought FM6 stations were headed into the sunset, but nope



Paul
McLane
Editor in chief

Radio World didn't coin the term Franken FM, but we were among the first to pick up on its appearance in online engineering chatter in the early aughts, and our use of it helped the term become widespread.

As you know by now, the name refers to U.S. low-power TV station licensees that decided to program their audio channels — just below the FM band and accessible on many devices — essentially as standalone radio stations, and to market them as such.

(Early on, a few readers wondered if the term somehow referred to Al Franken, the comedian and former U.S. senator and radio personality. But it is a nod to Frankenstein's monster, as in "an unholy and unintended patch-up of two different media forms." Some have called them mongrels. A less judgmental term is "FM6 stations.")

At first the Federal Communications Commission didn't seem to pay much attention to this practice, which seemed to me, at least, to be an obvious misuse of a rule loophole. While the commission did eventually wake up and ask for public input, it seemed content to let the pending digital TV transition put the practice to a natural death, because LPTVs in general were obliged to turn off their analog service last July unless they had a waiver.

But surprise — the ATSC 3.0 digital TV migration seems in fact to have brought fresh interest and possibility to this idea.

In this issue of Radio World, James O'Neal continues his series on what we call Franken FM 2.0, focusing in this part on the technical aspects. If you missed Part 1, find it at radioworld.com, search "next-generation franken." Watch for his third and final part in an upcoming issue.

What's your take on whether the commission should allow such services? Email radioworld@futurenet.com and send me a letter to the editor.

THIS ISSUE

NEWS

3 From the Editor

4 Newswatch

5 The tech behind Franken FMs Version 2.0

10 FCC seeks more comment on geo-targeting

FEATURES

12 Workbench: Freshen your mics with Li.LAC

18 NAB Show Photos

BUYER'S GUIDE

22 Onda Madrid turns radio into television with Li.LAC

25 LiveShot provides a sports Guaranty

27 RadioPix deploys behavioral intelligence

OPINION

29 Reader's Forum

30 NAB Show Photos



On the cover

NAB's Curtis LeGeyt and Chris Brown cut the ribbon to open the 2022 NAB Show exhibit floor. (NAB Photo)


LeGeyt: Wrap Up Ownership Review

The FCC should conclude its long-overdue, congressionally mandated quadrennial review of whether its media ownership regulations are necessary and in the public interest, National Association of Broadcasters CEO Curtis LeGeyt told FCC Chairwoman Jessica Rosenworcel in April, according to an FCC filing.

A politically tied FCC is unlikely to approve reregulation of broadcasters, and as of late April there had been no movement on a Senate confirmation vote on Gigi Sohn, the Democratic nominee who would break that tie.

In a meeting with Rosenworcel as well as fellow Democrat Commissioner Geoffrey Starks, LeGeyt and other NAB executives said it was past time to wind up the 2018 review.

They said that some delay was understandable given that the Supreme Court had heard an appeal of the FCC's broadcast reg rollback, but now that that decision was "far back in the rearview mirror," the FCC needed to wrap it up.

NAB recognized that could be problematic without a full commission, so said it was urging Rosenworcel to complete the rulemaking ASAP after a full commission is seated, but that if that does not happen "in the near term," it needs to finish up anyway. 

FCC Proceeding Explores Receiver Performance

The Federal Communications Commission has opened a proceeding to explore options for promoting improvements in radiofrequency receiver performance, "including through use of incentives, industry-led voluntary approaches, commission policy and guidance, or regulatory requirements."

The commission said its spectrum management efforts have tended to focus on transmitter regulations.

"The notice of inquiry adopted today will take a fresh look at the role of receivers and how improved receiver performance can promote more efficient spectrum use and enable valuable new services to be introduced that will benefit the American public," it stated.

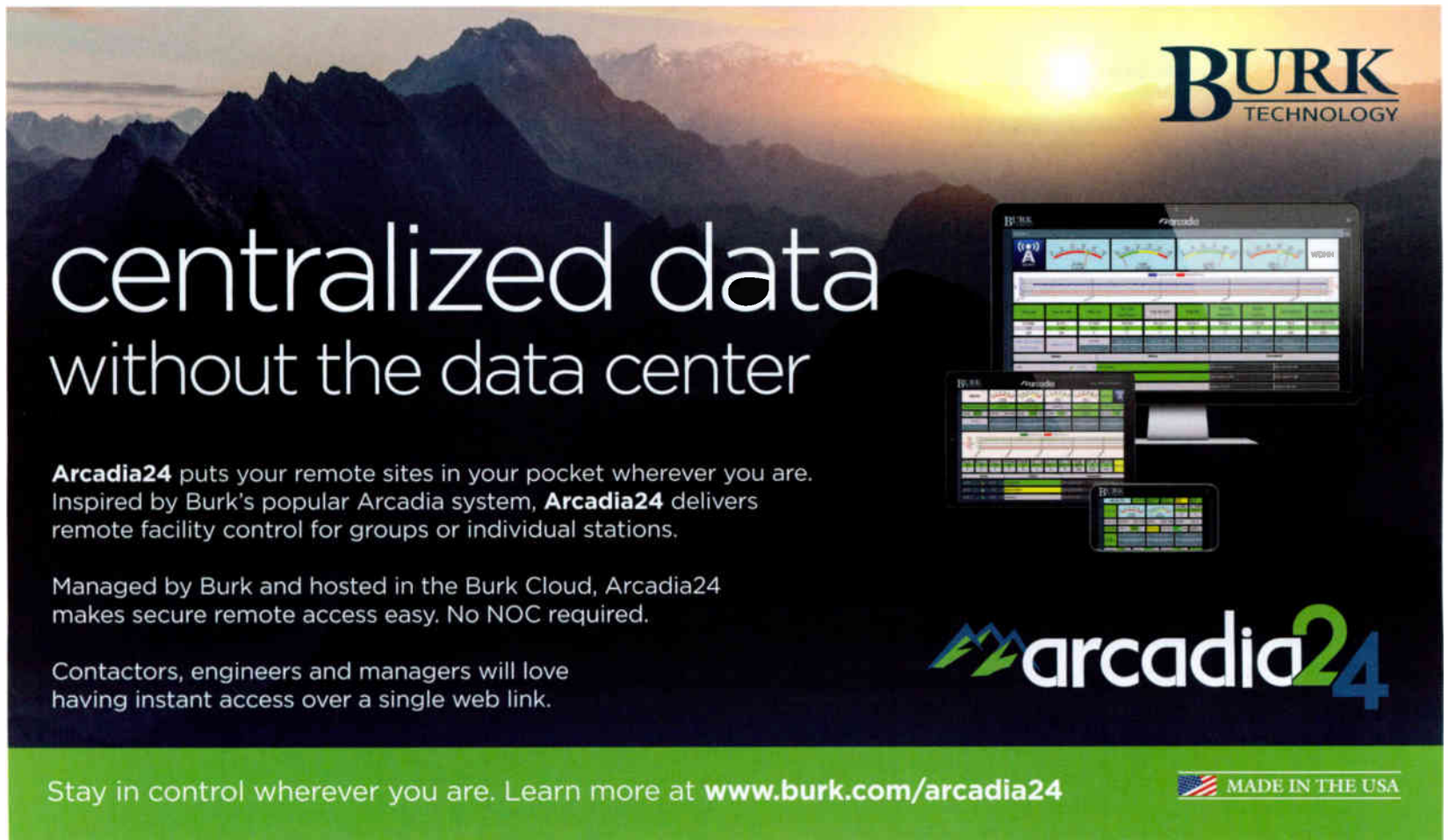
"Wireless communications require RF systems to transmit and receive radio signals, making both transmitters and receivers vital for enabling innovative and efficient spectrum use."

It said the NOI will support its efforts to gather up-to-date information on receiver performance, advances in receiver technologies and "various approaches for promoting development and adoption of more interference-resilient receivers while fostering innovation in the marketplace."

The goal: "To lay the foundation for future actions that could help create a more transparent and predictable radio frequency environment for all spectrum users."

It said that receivers without sufficient interference immunity performance "can diminish opportunities for innovative spectrum uses that drive economic growth, competition, security, and innovation." 

4



BURK
TECHNOLOGY


centralized data without the data center

Arcadia24 puts your remote sites in your pocket wherever you are. Inspired by Burk's popular Arcadia system, **Arcadia24** delivers remote facility control for groups or individual stations.

Managed by Burk and hosted in the Burk Cloud, Arcadia24 makes secure remote access easy. No NOC required.

Contactors, engineers and managers will love having instant access over a single web link.

arcadia24

Stay in control wherever you are. Learn more at www.burk.com/arcadia24  MADE IN THE USA

Writer



James E. O'Neal
 Longtime Radio World contributor and former technology editor of TV Tech.

The tech behind Franken FMs Version 2.0

We continue our look at this new breed of mixed-mode creatures

In the March 30 issue of Radio World we described the recent development of a "new breed" of Channel 6 "Franken FM" TV/radio operations. Several members of the ATSC 3.0 television standards group voiced their opinions as to the validity and usefulness of these hybrid facilities that began popping up last year.

This time, we look at the engineering side of this "May/December" broadcasting marriage, one that weds an ATSC 3.0 digital television signal with an analog FM audio transmission.

The first station to try out the technology was Venture Technologies' San Jose, Calif. Station, KBKF-LD, which began airing "second-gen" Franken signals last spring via an FCC Special Temporary Authority (STA) arrangement.

This initial hybrid configuration was the creation of two RF technology companies, SYES (System Engineering

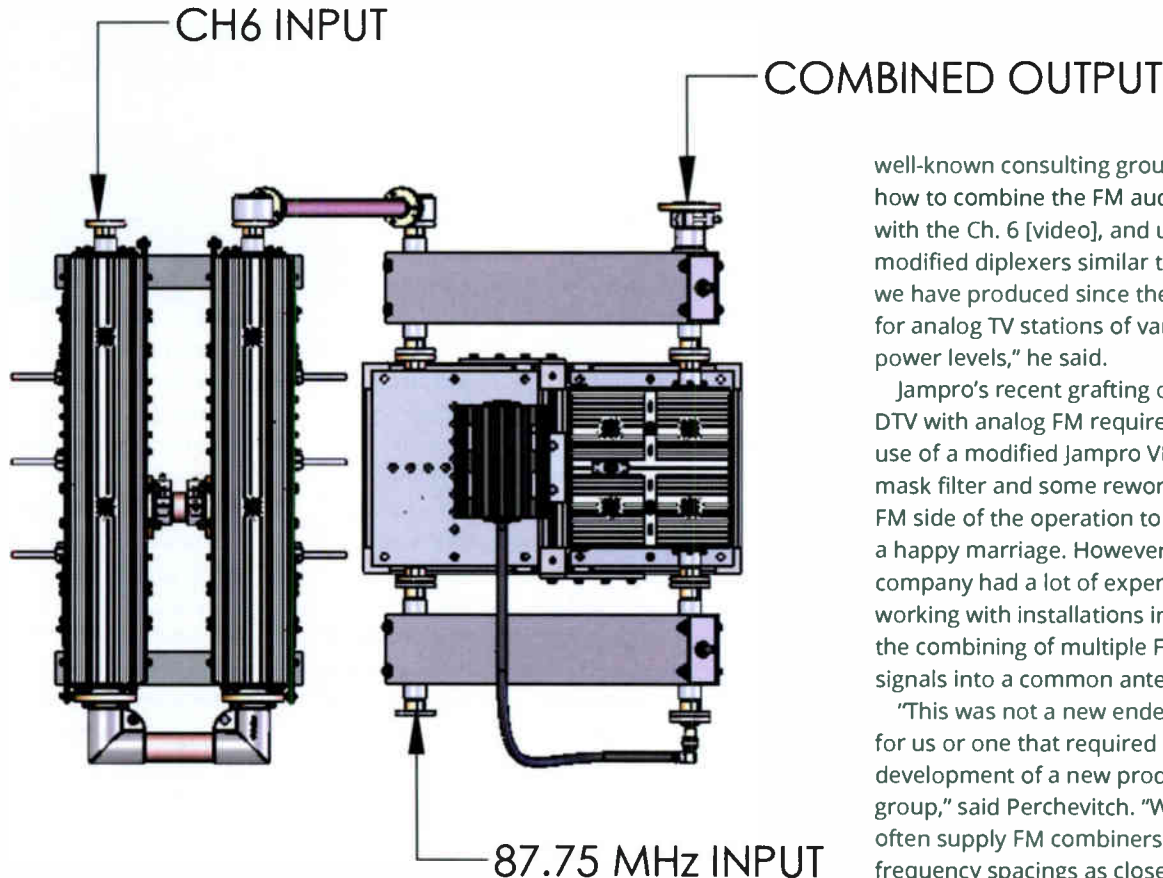
Solutions) and Com-Tech.

"We worked together on this low VHF TV/FM combiner, beginning back in the late spring of 2020," said SYES Vice President of Sales for the Americas Alessandro Annoni. "We designed a low-V transmitter working with a specific modulation/bandwidth and distortion, and a hybrid filter to avoid any type of interference or intermodulation. The amazing tech team of Venture Technologies, Daniel Bisset and Will Brownlie, helped us to get this new system working in San Jose, back in February 2021."

Jampro Antennas has also been working with LPTV Ch. 6 licensees to move to this new digital/analog broadcasting platform. President Alex Perchevitch said that while some amount of engineering effort was necessary to get the technology to the point where it could serve as a "proof of concept," his company already had assisted analog Ch. 6 stations in delivering "standalone" FM radio services on 87.75 MHz.

"We were approached by a

5



well-known consulting group on how to combine the FM audio with the Ch. 6 [video], and used modified diplexers similar to those we have produced since the 1960s for analog TV stations of various power levels," he said.

Jampro's recent grafting of 3.0 DTV with analog FM required the use of a modified Jampro VHF mask filter and some reworking the FM side of the operation to achieve a happy marriage. However, his company had a lot of experience working with installations involving the combining of multiple FM signals into a common antenna.

"This was not a new endeavor for us or one that required development of a new product group," said Perchevitch. "We often supply FM combiners for frequency spacings as close as 400

Above
 Keeping signals close in frequency from interfering with each other is essential in creating a hybrid ATSC 3.0/analog FM signal. It's relatively easy to accomplish with today's filters, combiners and computer modeling. Courtesy Jampro Antennas

kHz and this experience and product group provided the [expertise] and product to use for this hybrid TV/FM application.”

Even so, the initial assembly of a hybrid 3.0 DTV/analog FM Ch. 6 station did not exactly follow a “plug and play” script.

“We spent several months re-developing the filter technology to meet the requirements,” said Perchevitch. “Certainly, anytime you are trying to combine frequencies which are so closely spaced and achieve high

isolation with low insertion loss, it is a challenge.”

Franken FMs and ATSC 1.0?

Inasmuch as the technology for combining closely spaced dissimilar RF signals has been available for some time now, one might naturally ask why such hybrid DTV/analog FM operations were not attempted by Ch. 6 licensees much sooner — perhaps coincident with the start of ATSC 1.0 broadcasting.

Actually, at least one full-power Ch. 6 station

On the air in New York

The latest of the new wave of hybrid DTV/analog FM radio stations, WNYZ(LD), took to the air in March as a fully-licensed “NextGen TV” station in the New York City borough of Queens.

In doing so, it bested the full-power TV operations for the title of being the first in the Big Apple to air ATSC 3.0 television broadcasts.

The 3 kW ERP TV Ch. 6 (82–88 MHz) station is licensed to Sound of Long Island Inc. (SOL) and transmits Korean-language TV and radio broadcasts to the metropolitan New York City area and eastward towards Long Island, using a directional antenna to avoid interference with a full-power Channel 6 operation in Philadelphia, southwest of WNYZ’s transmitter location.

According to Clarence Beverage of Communications Technologies Inc., the consulting engineer who set up the station, it’s one of a dozen or so second-generation hybrid TV Ch. 6 DTV/FM stations that had previously operated as analog “Frankens” for a number of years before the FCC sunset all remaining analog LPTV broadcasts last July.

Beverage said that Young Kwon, SOL’s president, knew about the Venture Technologies team in California and their groundbreaking work employing the new NextGen TV broadcast TV transmission standard, developed by the Advanced Television Systems Committee, which enables broadcaster to deliver an array of new services and enhanced content features to consumers.

Beverage said he gives a lot of credit to Venture, as they looked at FCC rules and realized that the implementation plan for ATSC 3.0 was not to just allow for television, but for other signals such as data, narrow-band audio and the like.

He said that Young Kwon had followed the progress of Venture Technologies in licensing their KBKF(LD) former analog Ch. 6 LPTV for ATSC 3.0 and in obtaining an STA in June to allow it to transmit an analog FM signal on their former analog TV 87.75 MHz audio carrier.

“When Mr. Kwon saw KBKF’s success he felt it was time to go forward to order equipment and formalize a lease for the new facilities for the [NYC] Ch. 6 DTV with ancillary audio signal,” said Beverage. “KBKF, in receiving their approvals, gave the SOL team a basis to begin to move things forward and allowed Mr. Kwon to plan to use the facility to provide separate minority-focused program content, 24 hours per day, for both television and radio signals.”

Beverage noted that WNYZ’s transmission setup mirrors that used by Venture Technologies’ KBKF with an equipment package provided by Italian firm SYES.

“There were really a limited number of people talking about manufacturing equipment for this application,” said Beverage. “SYES started early for the operation in California, and we thought they were the best choice. When we were ready to place the order, SYES was the only company with a station on the air with this configuration.”

He added that key to implementation of any NextGen TV operation is the ATSC 3.0 encoding gear, and the current price tag of around \$80K for this technology has



Transmission gear used by WNYZ(LD) for its Ch. 6 ATSC 3.0 television and 87.75 MHz analog FM broadcasting

made it prohibitive for many low-power TV broadcasters.

“SYES worked with an encoder manufacturer to produce an encoder without a lot of bells and whistles,” said Beverage. “This one was \$40,000, but is able to be expanded.” He added that many people probably are not aware of what it takes to put an ATSC 3.0 TV station on the air, and that unlike some of their earlier analog TV Franken precursors, the current stations are designed and operated to fully comply with extremely specific FCC rules and regulations.

“This is a really professional ly-engineered no-interference very, very controlled implementation.”



Go Live Anywhere, Anytime

Wherever you need to broadcast from, the ViA delivers rock-solid live audio anywhere, anytime.

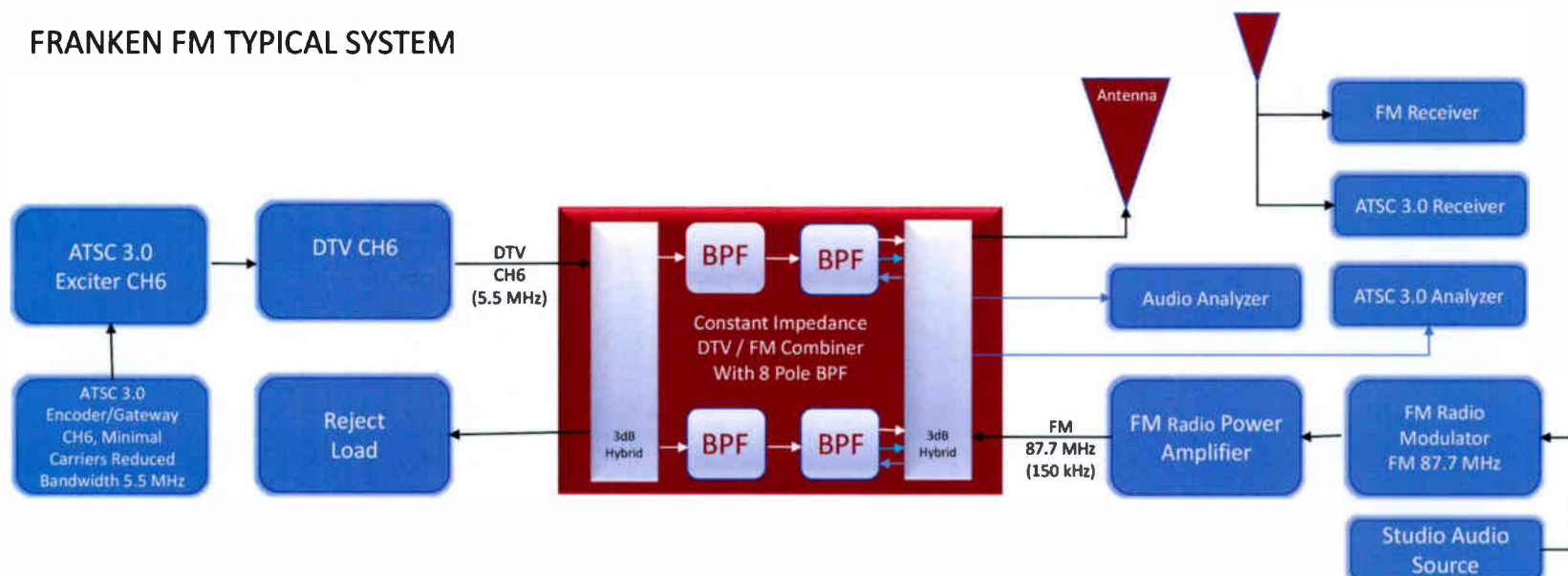
The Tieline ViA can be used to stream live from anywhere, anytime. Call the game live from the stadium, or off-tube from the studio, or even your own home! With up to 7 IP interface options and 3 independent bidirectional audio streams, plus record, playback, AGC, EQ and compression - the ViA has you covered for even the most complex and demanding setups.

ViA

Tieline 
The Codec Company

Americas: +1-317-845-8000 | International: +61-8-9413-2000 | tieline.com/contact/

FRANKEN FM TYPICAL SYSTEM



Above
Block diagram
of an ATSC 3.0/
analog FM
transmission
system. Courtesy
Jampro Antennas

experimented with such a mixed transmission mode, but the results were less than satisfactory, and the FCC refused to sanction it.

As explained by the Sinclair Broadcasting Group's Senior Vice President of Advanced Technology Mark Aitken, the reason for the failure of 1.0/FM pairing is simple.

"ATSC 1.0 really precluded bifurcating spectrum occupancy," he said. "As soon as you tried to shorten the bandwidth of the 1.0 signal, you broke it; 3.0 is a different story."

Beginning of a tsunami?

Could the apparent success of KBKF(LD) and the other "second-gen" Franken now on the air lead to the adoption of this hybrid mode of broadcasting by full power Ch. 6 operations?

Perchevitch was asked if he saw any barriers that

“ Franken FMs are all about addressing radios and the revenue from radio listeners, something [mainstream] TV to date has not been able to capitalize on. ”

would preclude these Ch. 6 stations from airing dual-audience broadcasts.

"It's certainly possible," he said. "And we believe it's very possible that there will be more hybrid Channel 6 stations in the future."

Perchevitch views this new breed of hybrid stations with optimism, as they squeeze additional utility of their 6-MHz chunks of spectrum, and added that he was not at all surprised at their rapid emergence.

"Lower-power broadcasters and the consultants serving that industry have always been very creative in seeking ways to be competitive and generate revenue," he said.

"The use of CPOL (circular polarization) and EPOL (elliptical polarization) by LPTVs is a great example. Long before large numbers of full-power stations broadcast signals with EPOL or CPOL, LPTVs often were operating with elliptical or circular polarization. Franken FMs are all about addressing radios and the revenue from radio listeners, something [mainstream] TV to date has not been able to capitalize on."

Targeting older receivers

Bill Harland, vice president of marketing at Electronics Research Inc. (ERI), was not particularly surprised with the launching of what might be the vanguard of a common broadcasting practice.

"There are a number of Channel 6 LPTV stations in the U.S. that have been operating in major markets as FM stations for many years," said Harland. "These are established facilities with significant listenership and the FCC rules do not specifically prohibit offering these ancillary services."

Keith Pelletier, vice president and general manager of

SR

POWERED BY SIMPLICITY.
ENGINEERED FOR EASY.



 **QUASAR**

Cutting the learning curve means creating more content. You'll broadcast with more flexibility and ease with a streamlined surface design and intuitive, revolutionized workflows. Elegantly engineered to be easy for any user, from seasoned pro to guest operator, Quasar SR delivers exceptional value through cost-efficiencies, reliability and simplicity.

Discover how the Quasar SR delivers broadcast performance that makes our customers' lives easier and audio better.

TelosAlliance.com/QuasarSR

 **Telos
Alliance**

Dielectric, did raise an eyebrow at the sudden arrival of “second-gen” Franken-

“It certainly caught me off guard. The business model seems to be targeted for older vehicle receivers. In the future, as the older receivers get replaced it will be important to have a receiver that will go below 88 MHz, and not just vehicle receivers. Also, it will be an all-digital world at some point I would think, so analog services even in the FM world may go away.”

Nonetheless, Dielectric is ready to supply Ch. 6 TV stations with the technology needed to add analog FM if they desire to do so.

“Our sales team has been approached by multiple license holders,” said Pelletier. “We have manufactured two antennas to date and have discussed multiple more deployments that should happen in 2022.”

He added that while the antenna portion of such a 3.0/FM installation wasn’t especially challenging, the

combiner was a somewhat different story.

“In contrast to the antenna, the combiner needed more simulation work as well as development in the lab,” he said. “This work was done using circuit simulation tools, HFSS (3D electromagnetic simulation software), and finally a prototype was manufactured to prove out the system.”

ERI’s Harland also said such combining of dissimilar signals was not especially challenging.

“ERI manufactures filters and diplexers that could be adapted for this application and we would design and manufacture the components required for a transmitter supplier to build systems for this application.”

At this point, the technology is in place, as are operators and their audiences, so it appears that only time will tell as to whether these Ch. 6 hybrid DTV/FM stations will proliferate, and whether the FCC will sanction their operations beyond STAs by with steps to codify their existence and operating practices. 🌐

FCC Seeks More Comment on Geo-Targeting

The commission wants to know what the industry thinks about recent trials of geo-targeting using FM boosters. The trials were conducted at stations in California and Mississippi.

You’ll recall that in December of 2020 the commission opened a notice of proposed rulemaking on a proposal from GeoBroadcast Solutions to modify the rules to allow geo-targeting in certain limited circumstances, the idea being that stations could then super-serve very specific parts of their coverage areas with particularly relevant advertising and information.

Comments and replies on that were filed by March of last year. So why open another round of comments?

The Media Bureau answers: “Since that time, GeoBroadcast Solutions sought, and the bureau has approved, experimental authority to test the technology in San Jose, Calif., with station KSJO(FM), and in Jackson, Miss., with station WRBJ-FM.”

As part of that authority, GeoBroadcast Solutions was required to file technical reports in the commission’s Electronic Comment Filing System about the testing it conducted for both stations.

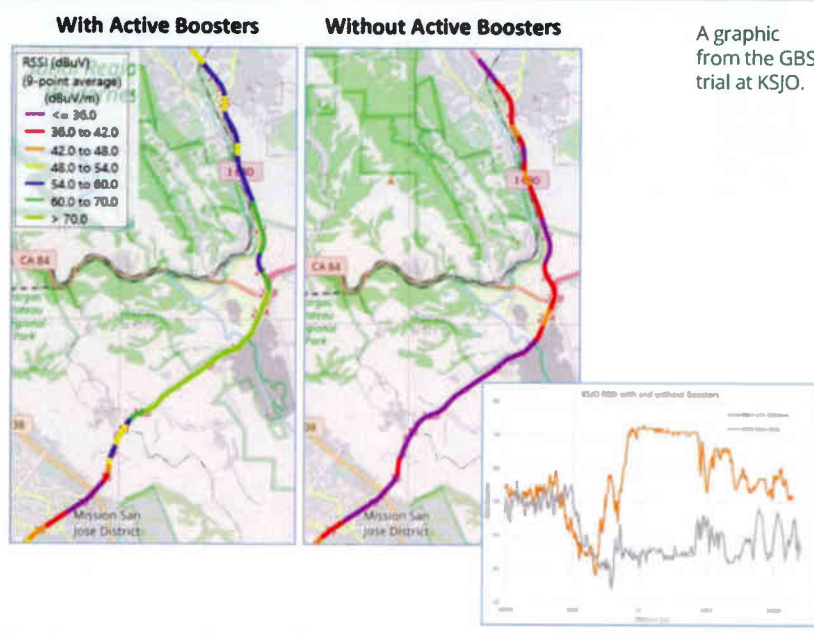
“Those reports contain detailed technical discussions about the operation of GeoBroadcast Solution’s booster technology, its compatibility with the Emergency Alert System and its impact on digital FM broadcasts. This technical information was not available to the public at the time

comments and reply comments were due.”

With that in mind, the FCC now invites public comment on these reports as well as other documents filed in the proceeding since mid-March of last year.

Radio World has posted the reports at <https://tinyurl.com/rw-ksjo> and <https://tinyurl.com/rw-wrbj>.

New comments will be due 30 days after this FCC announcement appears in the Federal Register; dates had not been set at press time. Use the commission’s ECFS to file and reference MB Dockets 20-401 and 17-105. 🌐



A graphic from the GBS trial at KSJO.

VX Series 150 W to 5 kW FM Analog Transmitters



10 NEW Nautel Transmitters

Learn more at nautel.com/new



TRUE INTEGRATION

Zetta

Automation

GSelector

Music Scheduling

Revma

Streaming

Aquira

Traffic

RCSCloud

Peace-of-Mind

RCS2GO

Mobile

Best of
Show
2022

RCS

Sound Software®

Freshen your mics with Li.LAC

Its UV-C chamber disinfects three handheld mics or wireless transmitters



John Bisset

CPBE

With more than 50 years in broadcasting, the author is in his 32nd year writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.

Managers of radio stations, houses of worship, universities and corporate and government meeting rooms all face the question, "How can we effectively disinfect our microphones after an event?"

ISEMcon, which is in the "front of house" business, recently introduced the Li.LAC Microphone Disinfecter. It uses controlled exposure to ultraviolet light (UV-C) to kill over 99% of bacteria and viruses on microphone surfaces, metal grilles and the windscreens underneath.

It's a rugged product, designed by live event touring professionals and mounted in a 19-inch, 3RU rackmount format.

Load up to three microphones or several lavalier or headset microphones, headsets or belt packs, close the drawer, and press "Start." Disinfection takes 12 minutes or less.

The Li.LAC Microphone Disinfecter is available online at www.isemcon.net/shopus. It lists for \$1,599. The company is based in Germany and has an office in Ohio; general info is available at www.isemcon.net/en/.

The company notes that the simple operation of this device speeds a job that's critical in today's environment. We're not completely out of the woods with respect to COVID-19; and even when we get there, microphone hygiene will remain important.

Many arms, light work

In the Feb. 15 Workbench, we discussed a useful circuit called an Octopus. Its purpose is to analyze components while they are in a circuit.

Longtime Workbench friend Paul Sagi first encountered the Octopus years ago in Popular Electronics magazine. At one of his first radio station jobs, he had to repair numerous switched-mode power supplies, as are found in everything from transmitters to audio processors and network gear.

The most common failure components were capacitors followed by MOSFETs, ICs and other semiconductors; Paul found that inductors almost never failed.

Removing components from a printed circuit board was a nuisance, so Paul used signal injection and an Octopus to find faulty capacitors and the rare faulty inductor.

Paul fed a 100 kHz sine wave, 200 mV peak into the components. Those specs avoided having the



semiconductor junctions respond to the test signal. By the angle of the trace on the oscilloscope, Paul could measure the equivalent series resistance of the capacitor; an ESR of less than 0.1 Ohms usually indicates a good electrolytic capacitor, as does an ellipse.

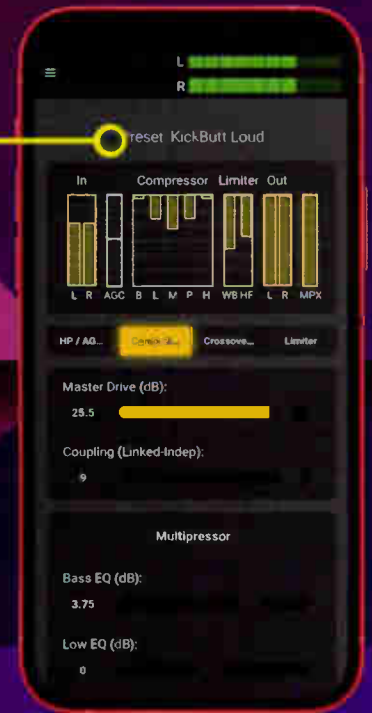
“ Removing components from a printed circuit board was a nuisance, so Paul used signal injection and an Octopus to find faulty capacitors and the rare faulty inductor. ”

Above Right
The Li.LAC Microphone Disinfecter uses UV-C light to disinfect the mics.

FROM SLING TO SMARTPHONE

DAVID IS BACK

Reliable processing.
Accessible anywhere.



NEW

DAVID IV 719N

FM/HD Broadcast Processor

Now with Network Interface

Get up and running quickly with intuitive, menu-driven setup and control via a dynamic network interface from any web enabled device.

- » Streamlined 4th Generation DSP-based audio processor
- » 5 Bands of Dynamic Range Compression & 'Graphic EQ'
- » Precision FM Stereo generator with dual outputs & internal metering of your RDS/RBDS subcarrier
- » Multilingual Front Panel Menu in English, Spanish, & Portuguese
- » IP connectivity for SNMP monitor & control
- » 25 factory & 20 customizable presets
- » HD Delay (optional)

www.inovonicsbroadcast.com | sales@inovonicsbroadcast.com | 831-458-0552

WHY INOVONICS?

- Quality Solutions. Competitive Prices.
- Quick to install. Easy to Program.
- Three-year Factory Warranty.
- Quality after sales service.

INOVONICS
BROADCAST



Fill Our Tip Jar

Workbench submissions are encouraged and qualify for SBE recertification credit. Email johnpbisset@gmail.com.

Take DAT!

Buried away in your storage closet may be a defective Digital Audio Tape machine or two. Before you toss these finicky machines, Paul Sagi also passes along a document from Eddie Ciletti that describes machine repair tips for Sony and Panasonic DAT models. Find it at <https://www.tangible-technology.com/machines.html>.

Bright ideas from Darkwood

Projects engineer Dan Slentz found a neat site that has a variety of Windows freeware, developed by Paul Marshall of Darkwood Designs using Borland Delphi.

Offerings includes individual and multiple volume metering indicators, a dB graphical display of audio frequencies, an audio tone generator and a jpeg image cropper.

At <https://darkwooddesigns.co.uk>, click on "More PC Software."

More free posters

Tektronix has put together a couple of interesting posters showing the fundamentals of oscilloscopes. The posters are in color and free to download. Head over to tektronix.com, and in the search block enter "Anatomy of an oscilloscope" and "Basic features and

functions of an oscilloscope."

The posters provide a good review for seasoned engineers as well as an excellent training tool for the entry-level engineer; and they will liven up your office.

Let's go to the tape

If you work with conduit or rigid transmission line, take a look at the T1 Tomahawk Digital Tape Measure.

This is the tape measure for all measurements! It has a physical tape plus an OLED measurement display; and its ROCK Measuring App allows the T1 to synchronize any measurements with your iOS or Android phone.

The display can be zeroed from any position, regardless of the amount of conventional measuring tape extended. A special bracket will hold a pencil or a Sharpie (or similar brand) marker. There is a side-mounted "E-paper" feature that records an unlimited number of measurements — no more writing the measurements down on a piece of paper! Measurements are recorded electronically on the T1.

The T1 Tomahawk Digital Tape Measure also includes a high-visibility green laser.

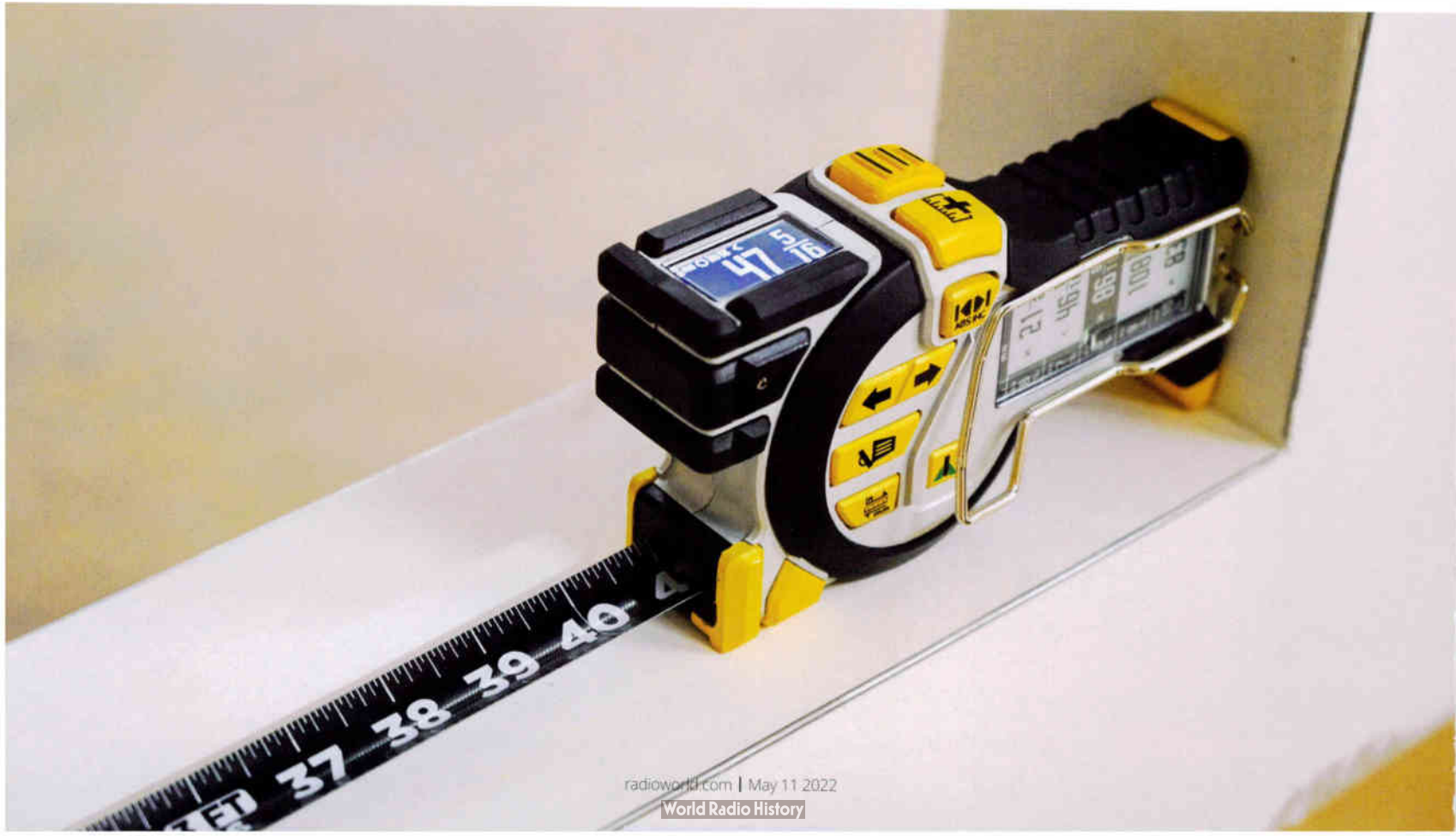
For a good introduction go to YouTube and search "T1 Tomahawk Digital Tape Measure Overview."

This tool is not cheap, listing for around \$250, but judging from the reviews on the Reekon Tools website, the time savings and accuracy may make it a worthwhile investment. Find it at <https://reekon.xyz/t1>.

Below

The Tomahawk Digital Tape Measure

14





We planned ahead, so you don't have to. All of our Consoles, AoIP and Automation are in stock.

With global shortages on IC's and other parts, we made it a priority to prepare ahead so you don't have to. Simply buy the hardware when you need it.

ARC-5

5 Channel - 1 Stereo Output Bus
\$699

ARC-8

8 Channel - 1 Stereo Output Bus
ARC-8: \$949 | ARC-8-Blue: \$1,199

ARC-Talk-Blue

8 Channel - 1 Stereo Output Bus
\$1,199



ARC-10 Series

10 Channel - 2 Stereo Output Buses
ARC-10U: \$1,849
ARC-10UP: \$2,249
ARC-10BP: \$2,799
Add Bluetooth for \$300

ARC-15 Series

15 Channel - 2 Stereo Output Buses
ARC-15BP: \$4,099 | ARC-15BP-Blue: \$4,399

MARC Series

15 Channel - 3 Stereo Output Buses
Modular analog, up to 30 [A/B] inputs.
MARC-15-8: \$5,825 | MARC-15-12: \$6,349
MARC-15-15: \$7,375



DARC Series

4 to 16 Channels
AoIP, Dante enabled.
DARC Virtual: \$1,000 | DARC Surface 8: \$3,600
DARC Surface 12: \$5,100



APEX Automation

Powerful & dynamic radio automation software and hardware.
APEX HD: \$100/mo or \$2,699 | APEX Pro: \$125/mo or \$5,999





LXE: Software Configured



ConsoleBuilder Customize your buttons, knobs & motorized faders

ScreenBuilder Create custom touchscreens

Layers Set up and run multiple layered input sets simultaneously

Automix & Live Presets Enjoy coffee while LXE does the work

wheatstone.com/lxe-rw21a



World Radio History

**BLADE-4
COMPATIBLE**

IT'S ALL IN WHEATNET IP



THE INTELLIGENT NETWORK

GSX: Ready To Go



- Cost Effective** The power of LXE, trimmed down, ready to go
- Turnkey** Preconfigured buttons, knobs & faders
- Options** Add ScreenBuilder, ConsoleBuilder, Layers, Automix, & more

wheatstone.com/gsx-rw21a



**BLADE-4
COMPATIBLE**



Credit: Jim Peck

Participants in the NAB Education Foundation's Technology Apprenticeship Program and their sponsors mug for the camera.

An NAB Show Photo Sampler



Attendees finally got a look at the new West Hall of the Las Vegas Convention Center.

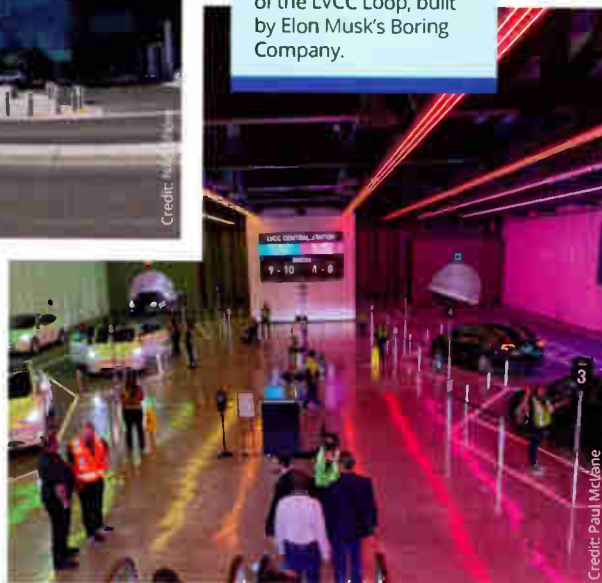
Credit: NAB Show

A walk from West to Central required many steps, so some attendees opted for the underground Teslas of the LVCC Loop, built by Elon Musk's Boring Company.



Credit: Paul McLane

The doors open for the first time in three years. NAB announced a preliminary attendance figure of about 52,500, compared to 91,500 in 2019. There were around 900+ exhibitors, compared to 1,600 in 2019.

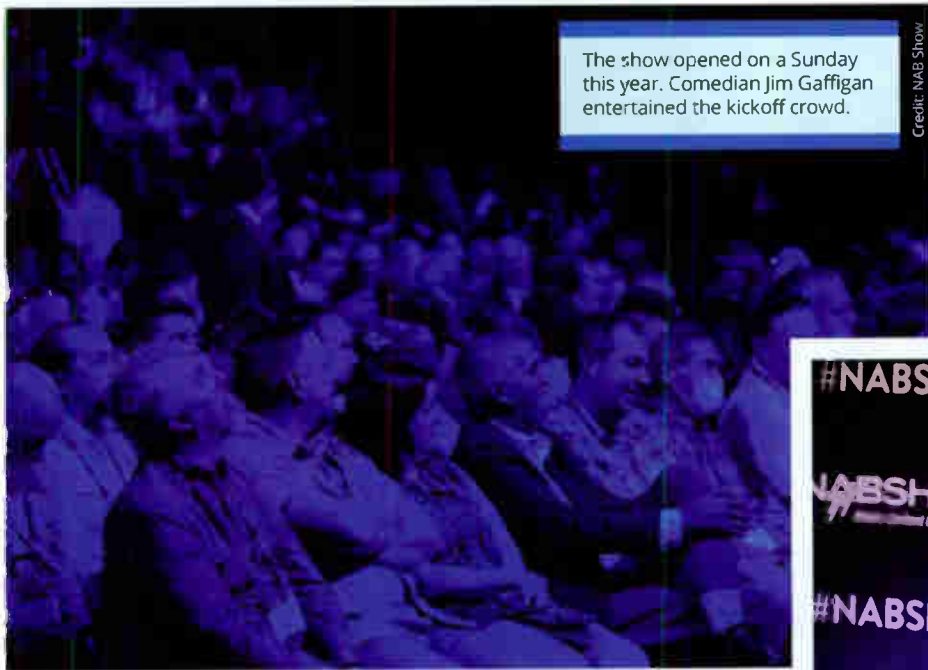


Credit: Paul McLane

We've **NEVER DISCONTINUED SUPPORT** on any of our products

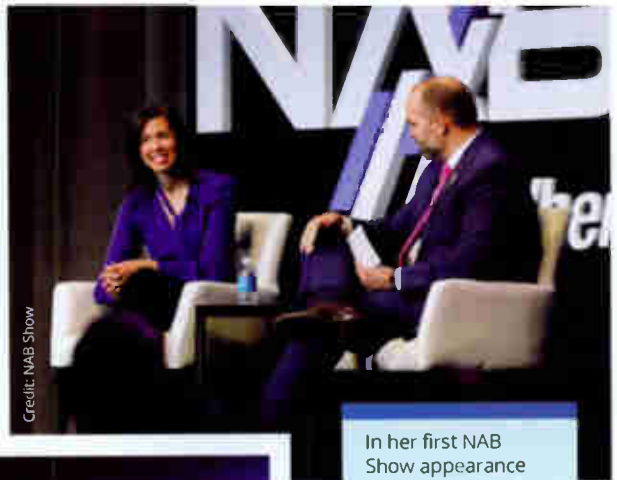


nautel.com **nautel**



The show opened on a Sunday this year. Comedian Jim Gaffigan entertained the kickoff crowd.

Credit: NAB Show



Credit: NAB Show

In her first NAB Show appearance since being formally designated as chairwoman, Jessica Rosenworcel acknowledged that confirmation of a fifth commissioner would break the FCC's 2-to-2 political gridlock, but "We've got to figure out how to work together, or we don't get anything done ... We've turned down the volume and ramped up the activity." She's with NAB President/CEO Curtis LeGeyt.



Credit: NAB Show

Audacy President/CEO David Field discussed the role of radio in the audio renaissance. He said it's time for radio to get its "fair share" of advertising. "We're our own worst enemy. But with the extraordinary products we offer our audiences, we are on the cusp of radio and audio surging forward."



Reaching Over ~~1.5~~ One Billion Ears Every Day

The world's best audio processing – any format, anywhere.



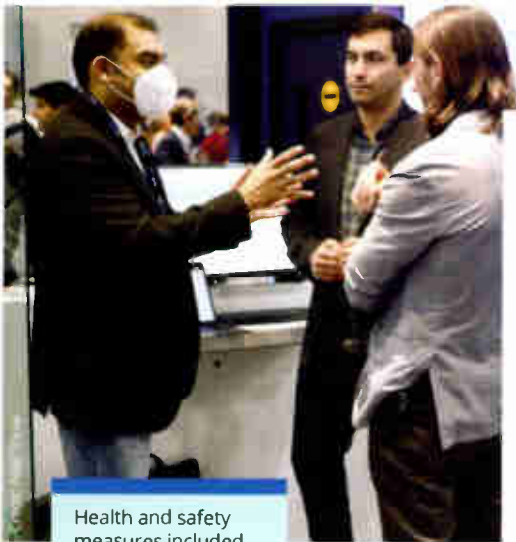
In stock at BSW – call now!

www.bswusa.com
800-426-8434
sales@bswusa.com

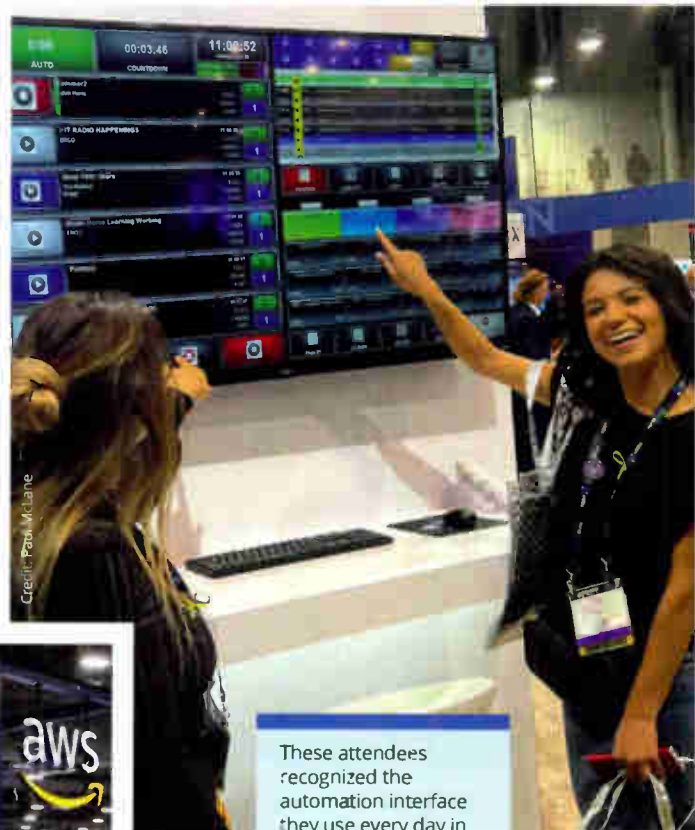


www.orban.com
856-719-9900
sales@orban.com

NAB Show



Health and safety measures included hand sanitizers. Proof of COVID-19 vaccination or a negative test were required for entry. Masks were optional.



These attendees recognized the automation interface they use every day in the ENCO booth.



The booth of Amazon Web Services was prominent — and busy.

Despite the pandemic, the percentage of international attendees was still more than one in five.



Senelia and David Casanova of ReadyTV visit David Hopson of GatesAir. The latter company is to be acquired by Thomson Broadcast.



James Ragsdale became only the second full-time executive director of the Society of Broadcast Engineers early last year, and this was his first in-person NAB Show in that role.



An on-site campaign encouraged support for Ukraine and truthful media. Lanyards in the colors of Ukraine were available.

HD MULTICAST+
HD MULTICAST+
 Combined **Importer/Exporter**
 with optional Orban audio cards
 HD Radio nautel.com/HD nautel

NAB Show



Dez Rowe and Jenna Lovato visit with Jay Tyler of Wheatstone.

The role of the cloud in broadcast infrastructure was an ongoing topic. RCS told attendees about the Disaster Recovery feature of its Zetta automation platform.



Members of the National Radio Systems Committee adopted a set of recommended practices regarding how broadcasters can best implement EAS functionality at their facilities.

Credit Jim Peck

Audio Chameleon C4 Livestream processor



ANGRYAUDIO

AngryAudio.com/AudioChameleon

Social Distancing SINCE 2015

PROFESSIONAL REMOTE MONITORING

FROM ANY LOCATION.
ON ANY DEVICE.

AM | FM | HD | DAB | DAB+

TAP INTO YOUR BROADCASTS WITH AN EASY TO USE WEB INTERFACE
INOVONICS' EXPANSIVE OFFERING OF REMOTE MONITORING EQUIPMENT

INOVONICS
BROADCAST

Everything you need. The iXen bundle

Get the iXen along with first class accessories. For an unbeatable price.



www.yellowtec.com

YELLOWTEC

SR

POWERED BY SIMPLICITY.
ENGINEERED FOR EASY.



TelosAlliance.com/QuasarSR

Telos Alliance

World Radio History



Broadcasters General Store

Family Owned & Operated Since 1979



Your source for broadcast equipment and services.

Contact us for a quote today!

352-622-7700 www.BGS.cc

BUYER'S GUIDE

Visual Radio

About Buyer's Guide

The Buyer's Guide section appears in every other issue, focusing on a particular category of equipment and services. It is intended to help buyers know what's on the market and gain insight into how their peers are using such products.

Onda Madrid turns radio into television with AEQ

Listeners appreciate visuals and extra content provided by the system

Onda Madrid is a public radio station run by the Regional Government of Madrid, Spain. It has been using AEQ equipment and applications since its inception more than 35 years ago.

"AEQ has accompanied us through all the changes in technology," said Technical Director José Luis Granada.

"Very recently, we installed a Visual Radio system in our main studio that is equipped with an AEQ Arena console. The console sends the information with regards to the levels for each microphone channel over the IP network. This allows the video switcher to detect which microphones are active."

Additionally, the station programmed keys on the console to signal the video switcher to execute exceptions, change camera angle, go to curtain, etc.

"We have created camera presets for the main presenter, studio overview or beauty shot, guests to the left and to the right, and so on," he said. "We continue rehearsing and testing out new angles and views. Summarizing, programmed macros make the system automatically follow whomever is speaking, take a wide shot or play a clip."

The AEQ Visual Radio system is based on a Broadcast Pix video switcher that manages the signals and automatically switch and mix,

delivering the final product to be broadcast or streamed. It can also record its own generated signal.

"When a station has both radio and TV channels like us, sometimes the video signals produced in the radio studio turn into content for the TV station itself. Therefore, it is essential that the switcher has a video broadcast quality and processing capacity similar to that of television channels in a box. This switcher also provides a broadcast-grade video output for television in various formats and in parallel with a streaming output."

In the event the production requires a bit more sophisticated signal treatment, the AEQ / Broadcast Pix system allows for the connection of an external mixing control panel and that can be manually operated in the traditional way.

"And to make it enjoyable, in addition to having several cameras as we do and changing camera positions

automatically or by forcing a macro, the system has a professional graphics engine. Additionally, a two-channel video clip server and the possibility to split the image on several displays and even source and play content coming from social networks are all standard features.

"All this makes an excellent product that is aligned with the great service that is part of the AEQ brand name." 



More Info

www.aeq.eu
or email
aeqsales@aeq.es

Below

The main studio of Onda Madrid, with three cameras and monitor with the generated video.



Tech Update

NewTek Highlights TC1 Pro, PTZ3

NewTek describes TriCaster 1 Pro as the most complete production system on the market.

"Complex visual radio production is made easier with teleprompter-based automation through Live Story Creator and macro variables to create dynamic workflows that are simple to control through a customizable LivePanel web interface."

Features include streaming encoders, SDI and NDI outputs, multi-channel recording, and social media publishing. The Live Call Connect

feature supports Zoom, Microsoft Teams, Facetime, WhatsApp and other communication platforms so users can bring in callers to display the faces behind remote hosts, presenters and guest callers.

Neural Voice Isolation removes background noise even for remote participants. TC1 Pro supports native integration for analog, SDI, NDI plus Dante and AES 67 standards.

The company also makes the PTZ3, which it says is the first camera to incorporate automated capabilities with ease in and out created as a pre-set recall.

Users can select NDI | HX 3 as an option for better video with reduced latency and a fraction of the bandwidth.

Features include single-cable connectivity, smooth movement between camera pre-sets, and an improved lens and sensor. "Another feature unique to the NewTek PTZ3 is professional-level audio connectivity, again raising the standard for audio quality achieved in a PTZ camera, making it perfect for use in visual radio."

The PTZ3 can be added into a workflow with only an ethernet cable for HD video up to 1080/60p, audio, PTZ pre-sets and control, tally and PoE. Users can control it from any device via NDI.

Info: www.newtek.com



AES Silence Monitoring Made Easy



AES Audio Sentinel® 4»Web

Web-enabled Four Channel AES/EBU Silence Monitor

Monitor four AES/EBU inputs for digital audio silence, stereo out-of-phase conditions, and AES error. When silence, out-of-phase audio, or AES error is detected the unit can be configured to send email alarm messages, SNMP traps, and trigger open collector alarm outputs. Featuring a HTML5 web interface and support for: SSL/TLS email (Gmail, etc.) and SMS-email notification.

Broadcast Tools is a Veteran Owned Business



Designed, Assembled and Supported
in WA State, USA.

BROADCAST
t o o l s
PROBLEM SOLVED
www.broadcasttools.com

World Radio History





Tech Update

A Visualization Solution From Broadcast Bionics



Camera One enables radio stations to create live video streams and sharable video clips quickly and easily.

"For 10 years Broadcast Bionics has helped broadcasters achieve millions of likes, views and shares," the company stated. "Now Camera One delivers this same functionality

in a way that anyone can use and everyone can afford."

It says the intuitive HTML5 interface makes setup and operation quick and easy.

"Camera One brings automated camera switching, ISO record, graphic generation, recording, streaming and sharing within the reach of every studio. Take control and choose your shots with manual mode when you need to. It's so simple to capture and share your best radio moments! All you need is a Blackmagic ATEM Mini/Mini Pro, cameras and a PC."

Caller One is available in the United States via Broadcasters General Store.

Info: www.bionic.radio

Tech Update

Visuals for OmniPlayer

Netherlands-based M&I Broadcast Services describes OmniPlayer as a stable, robust production and playout solution.

"The latest version of the OmniPlayer system packs an upgraded and new set of sophisticated applications," it stated.

"From functionality using speech-to-text for text-based audio editing to a Hook Editor and a Workflow Engine designed to make the lives of its users a whole lot easier. But most importantly: with OmniPlayer OmniVevo you can create flawless visual radio."

This allows broadcasters to add videos, stills, graphics and live feeds to audio, to create deeper audience engagement and loyalty.

"With OmniVevo, visual radio is as easy as 1-2-3; anyone can install the system without special training. All you need to do within OmniPlayer is attach relevant video files to the audio files you want to broadcast. Metadata, such as titles and artists, is shown automatically, hence making this an easy process."

To broadcast visual radio, hit "play" on an audio track in OmniPlayer; the audio and video will air in sync.

Info: <https://omniplayer.com/> or email sales@omniplayer.com.



GENERAL ENGINEERING CO. THE INTELLIGENT WAY TO WORK

SET UP A HOME STUDIO IN MINUTES

Our software (and hardware) solutions provide intuitive tools to let you work from home seamlessly, with minimal setup.



REMOTE SOLUTIONS

Learn more: wheatstone.com/remote-solutions-rw21a



phone +1.252.638-7000 | wheatstone.com | sales@wheatstone.com



LiveShot provides a sports Guaranty

Comrex system is used to produce daily visual radio content

More Info
Visit www.comrex.com
or email info@comrex.com.

Guaranty Media is a media company located in Baton Rouge, La. They operate five FM radio stations, two of which are simulcast, as well as a podcast network and digital marketing services.

Guaranty has deep roots in the local community, and just celebrated its 100th anniversary as a family-owned Louisiana company.

Much of Guaranty Media's programming is oriented toward sports coverage in Baton Rouge. Between college sports and the NFL, Baton Rouge is a big sports town.

"The market is almost insatiable," said Beau Wegmann, senior engineer for Guaranty Media. "It's like we can't make enough."

In 2018, Beau and his colleagues found that there was high demand for video to accompany their slate of local programming.

"With all these opportunities, why not try to grow revenue and grow market share?" said Beau.

After renting multiple bonded IP video solutions, they decided to invest in a LiveShot system to produce live video of their radio shows. Now they're producing nine hours of visual radio content from their studio each day, as well as two hours of content remotely on weekday evenings.

Guaranty recently won the Louisiana Association of Broadcasters 2022 Prestige Award for Best Live On-Site Remote in the large market category for their coverage of the LSU vs. UCLA Rose Bowl.

Beau became familiar with Comrex through his use of their radio products. "I grew up in radio, and I've been around it my whole life," Beau said. "We use Comrex Access, and our guys have been trained to use the Comrex user interface for years now." Beau appreciated how easy it was for his staff to use LiveShot, as well as how portable it is.

Comrex technical support was another big selling point. "I tell my on-site producers to call Comrex directly, because I know they'll be helpful," said Beau. "And it works great, especially when they're in the field and feeling the pressure."

As Guaranty's visual programming continues to grow, LiveShot is making it easier to create outside the studio. "We've used LiveShot to go live from outside of stadiums, and we're going to do more," said Beau. **R**

Tech Update

Sprite Media Introduces Dashboard Express

Sprite Media notes that broadcast facilities tend to have plenty of televisions stashed on counters, cabinets, walls, and tables.

"But what's on them," it asks. "Local TV? Slide shows? Or are they just sitting there, collecting dust?"

The company now offers Dashboard Express, a custom-configured media player that integrates a combination of station information, logos and sponsorships while being able to update content constantly.



Content may include Twitter feeds, Flickr images, weather from the National Weather Service, and news from your station's news provider, as well as other material. It can welcome guests, announce events and provide accurate clock calendars.

"And the most exciting part? No recurring fees! You buy it, you own it. And your digital sign updates forever without any expense or ads."

The media player comes configured out of the box; hook it up to a local internet connection and plug it into the TV and power.

The Sprite Media Command page can be accessed on site on a computer, tablet or smartphone, to make changes to your guest list and display.

The Sprite Media Sprite Dashboard Express is available through Broadcasters General Store.

Info: www.sprite-media.com or BGS at www.bgs.cc

Tech Update

Multicam AirBridge Is a Remote Guest Manager

Multicam AirBridge allows a station to invite a guest to remote into a show while still controlling everything including that guest's video.

"You can now interview anyone, anywhere, without the confinement of the studio walls," the company says. "All your guest needs is a laptop or smartphone, and they can join the show from anywhere, both audio and video."

Multicam Airbridge can connect up to four remote guests' audio and video; guests just click a link received via email.

Airbridge also offers a video-calling feature, ability to publish the show URL and manage the queue of video calls.

"You can now stay at home but keep it professional with ease. Quickly adjust gamma and contrast with a click of a button. Combine Airbridge with a Multicam system and you have a fully automated remote production."



Audio from guests can be embedded to SDI, NDI or via Dante, Livewire and AES67. Integration with audio consoles via Multicam audio detection activates AI-based solutions like Multicam Radio or CONF technology that help grow your audience and revenue stream.

Info: <http://multicam-systems.com>

Tech Update

WinMedia Releases New Version of winCAM

WinMedia has introduced an improved version of its winCAM visual radio system.

"It is capable of controlling the zoom speed of the PTZ cameras or even the focus, white balance, iris and shutter if the camera allows it," said CEO Stephane Tesoriere.

"And now you can use external sources for visual identity graphics, have live camera preview snapshots for each position memory preset within the PTZ adjust tab, automated opener media can be assigned to each show preset and image icons assigned to each title line preset for easy visual identification."

He said broadcasters like RCJ, Nasional FM, Alpha Blondy FM and Generations are users of winCAM.

"Some still think that you need to be somehow experienced in video broadcast in order to run such a visual radio system, but in fact it takes only an average of 10 to 15 minutes for a complete newbie to understand and use winCAM," he said.



"Using winCAM will make you realize it maybe has never been easier to have a great live video production alongside your radio show streamed simultaneously to up to three different destinations like YouTube, Facebook or Twitch, each one with separate encoding settings and also recording your output or even each camera input for post-production purposes."

Info: <https://winmedia.org/prod-wincam/>



NM-250 MKII - Newsroom Mixer

Features:

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



BROADCAST EQUIPMENT EXCHANGE

TRANSMITTER ENGINEERING

Victory RF, LLC

Veteran industry transmitter technician **Richard Hinkamper** has launched a new contract engineering service. Victory RF specializes in maintenance, upgrading, installation and relocating Harris, Harris Broadcast and GatesAir transmitters such as models Z, ZHD+, ZHDc, ZHDs, ZX, FAX and FLX.

With over **33 years of extensive experience** including hundreds of field trips and thousands of customer troubleshooting calls, **Richard Hinkamper** has a proven track record of successful results.

Want to know more or discuss your transmitter maintenance needs? Call +1 217 242 0889 or visit our website at <https://VictoryRF.com>

TUNWALL RADIO

SWITCH AND TRANSMITTER CONTROLLERS



AM/FM/MULTI-SWITCH AND CUSTOM DESIGNS

330.995.9642

www.tunwallradio.com



**orban legacy
Parts & Service**

**We Sell New Orban
Audio Processors**

480-428-1230 | 866-890-7262

Jay Brentlinger and Robert Leembruggen

8100, 8200, 8300, 8400, 8500

9100, 9200, All Older units.

Plug & Play Detection



Silence Sentinel® RJ

Dual Channel Stereo Silence Sensor

The Silence Sentinel RJ is a two-channel analog stereo silence detector and phase monitor with an integrated 2x1 stereo audio switcher, perfect for automatic back-up switching when silence is detected. It features RJ45 audio I/O and pluggable screw terminal block connectors for alarm relay outputs and remote control inputs.



Broadcast Tools is a Veteran Owned Business
Designed, Assembled and Supported
in WA State, USA.
www.broadcasttools.com



BROADCAST
tools
PROBLEM SOLVED

Without
advertising
a terrible
thing happens...

...nothing.

For more information contact **John Casey** at
1-845-678-3839 or email john.casey@futurenet.com

BROADCAST EQUIPMENT EXCHANGE



**Rebuilt Power Tubes
1/2 the cost of New!**

Se Habla Español

ECONCO

Se Habla Español

Tel: 800-532-6626 Web: www.econco.com
Intl +1-530-662-7553 Fax: +1-530-666-7760



Keeping you on the
air since 1934

ISO 9001 Certified

NEW POWER TUBES

Triodes
Tetrodes
Pentodes

**NEW SOCKETS &
REPLACEMENT PARTS**

Worldwide Availability

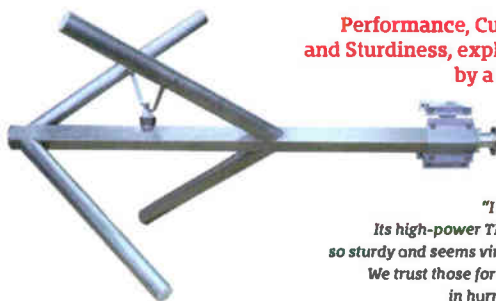
Made in the U.S.A.

Call (800) 414-8823
Int'l (650) 846-2800
Fax (650) 856-0705

Visit our Website at
www.cpii.com/eimac

CPI
Communications
& Power Industries

Why do broadcasters love Bext antennas?



**Performance, Customer Service
and Sturdiness, explained this way
by a Bext customer:**

"I love Bext Antennas.
Its high-power TFC2K* model is built
so sturdy and seems virtually unbreakable.
We trust those for our stations located
in hurricane-prone areas".

DAVID HOXENG, ADX Communications, Pensacola, Florida

* TFC2K arrays can be rated up to 75 kW power handling.

bext.com

888 239 8462

BEXT

AMergency!

We stock low power
components for
temporary & aux
AM applications.

Transmitters (to 10W)
Antennas (to 270W)
Prefab Groundplanes
Accessories
Rentals

Any frequency. Anytime.

 theRADIOsource.com

Wilson Broadcasting Company Inc.

WJJN/WAGF

L.M.A. Opportunity with the option to
buy, 30 years in the Dothan, AL market.
3 FM's, 1 AM, Low Power TV Station.

Send inquirers to:
wjjnwagf@gmail.com

**CORNELL-DUBILIER
MICA CAPACITORS**

FROM STOCK

**VACUUM
CAPACITORS**

FROM STOCK

**HIGH ENERGY CERAMIC
CAPACITORS**

**SURCOM
ASSOCIATES**

5674 El Camino Real, Suite K
Carlsbad, California 92008
(760) 438-4420 Fax: (760) 438-4759
e-mail: link@surcom.com web: www.surcom.com



Above MA3 digital audio coverage in an ICE vehicle.

Why Bother With NextGen TV?

I think Fred Baumgartner's article "NextGen TV Is Tapping Us on the Shoulder" misses a very important point: Why bother?

While he argues that ancient modulation on the MW band and even FM on the VHF band cannot compete with ATSC 3.0 on the UHF band for OTA distribution for most of the global audience, he forgets that wireless transmission in general is passe except for time spent in motion, commuting, etc. Fiber to the home is rapidly replacing copper circuits of all types and is far more reliable than any OTA signal.

Do we need ATSC 3.0 to reach commuters? Nope. Sure, we could use its data formats with 5G OTA, but that's really optional. Once you have an IP connection, any data format will work. ATSC 3.0 TV transmission, even synchronous repeaters, pales in comparison with cellular carriers, who will be providing thousands of cell sites in any one community.

If you look at rural areas, especially those with very hilly or mountainous terrain, OTA remains highly challenged. And that includes 5G cellular service. But many of these same areas are being rewired with fiber.

So, for that magnificent 8K TV screen, fiber will likely rule. Do the kids in the family van really need 8K for the 24-inch screen built into the backrests of the seats in front of them?

In the world of Internet of Things, will traditional TV license holders matter? Nope. These devices require two-way connectivity. Only the wireless carriers are in a position to expand and prosper. And at home, the bits can be uplinked more efficiently with wireless modems connected to the world via fiber than 5G.

Ira Wilner

The author is chief engineer of Monadnock Broadcasting Group and Saga Communications. Opinions are his own.

Failings of Shortwave Today

Regarding "Shortwave Radios Keep Up With Tech" by James Careless (originally published in late 2021 and found at radioworld.com):

If I were to spend money on a radio receiver — and expected more than just Reverend Send More Money and WWW — I wouldn't buy any of the receivers suggested by the author, nor would I expect them to receive anything reliably without a good antenna.

The Laws of Physics are written in stone.

Most commercial Chinese-made products — high-voltage neon transformers, automatic meter readers, plasma televisions, switch mode power supplies — make noise in all parts of the spectrum. This makes it almost impossible to listen to most of the content still available.

The cheapest entry-level option is to use an online remote receiver such as WebSDR (www.websdr.org).

Most new shortwave listeners tire of the lack of content, and the radio becomes a novelty.

Amateur radio may appeal to anyone in broadcasting, since you can both talk and listen, exchanging your opinions and your knowledge with people all over the world. There is no code, the exam is cheap or free (e.g. The Laurel VEC), and it gives you free bandwidth to experiment with radio and antenna designs.

Jerry Bosak, W3DO

Early Encouragement

Thanks for the article "John Warner Dies, Was Respected AM Engineer" (radioworld.com, search John Warner).

From the replies I saw, he was well respected in the radio industry.

I am amazed that as a youngster he received a telephone pole for his birthday to receive radio signals, and that he experimented with curtain array antennas, stuff that international shortwave broadcasters used to target their audiences overseas.

I am a little jealous, as my father didn't encourage my interest of electronics and radio when I was growing up. It shows that the father believed in his son and his possible future, hence his success in AM radio engineering. I got along fine in my career in telecom, but wish I'd gotten that extra attention when I was younger and curious. Good for Mr. Warner. He made it.

Dan Ramos



How to submit

Radio World welcomes comment on all relevant topics. Email radioworld@futurenet.com with "Letter to the Editor" in the subject field.

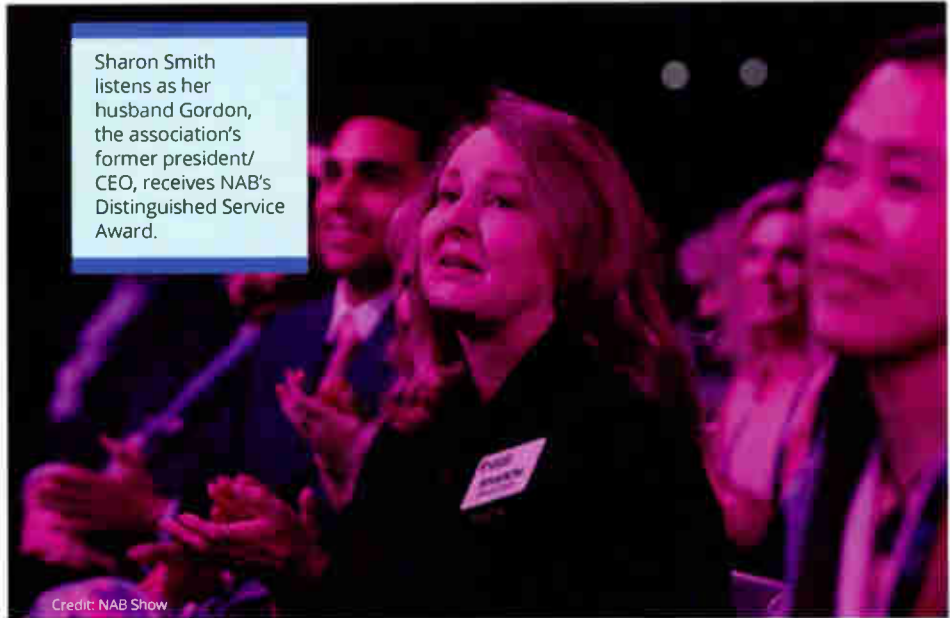
NAB Show



NAB
National Association of Broadcasters
2022 Award Engineering Achievement Award
Presented to
Ashruf S. El-Dinary

Ashruf El-Dinary of Xperi Corp. and his wife Pam celebrate his receipt of NAB's Excellence in Radio Engineering Award.

Credit: NAB Show



Sharon Smith listens as her husband Gordon, the association's former president/CEO, receives NAB's Distinguished Service Award.

Credit: NAB Show



John Schadler of Dielectric, right, was honored with the BEIT Conference Proceedings Best Paper Award for "Changing the Landscape of FM Broadcast Antenna Technology."

Credit: NAB Show



During the Nautel Users Group meeting, Radio World presented plaques to three engineers whose honors were announced during the pandemic. From left: Nautel's Jeff Welton, Bonneville International's Jason Ornellas, Radio World's Paul McLane, Cox Media Group's Roz Clark and Radio World's John Casey. Welton won the 2020 NAB Radio Engineering Achievement Award, while Ornellas and Clark received Radio World's Excellence in Engineering Award.

Credit: Jim Peck

EBOOKS: Tools for Strategic Technology Decision-Making

Radio World's growing library of ebooks can assist you in maximizing your investment in an array of platforms and tools: licensed transmission, online streaming, mobile apps, multicasting, translators, podcasts, RDS, metadata and much more.

The ebooks are a huge hit with readers. They help engineers, GMs, operations managers and other top radio executives — radio's new breed of digital, cross-platform decision-makers — understand this new world and thrive in it.



RADIOWORLD

Visit radioworld.com/ebooks

「 FUTURE 」



Make Your Streams Stand Out

Stream up to eight programs at once, each with four outputs for a total of 32 streams.

Full suite of stream-specific audio processing tools. Optimize performance of audio content.

AAC, MP3 and Opus encoders. Reaching a broad range of end user devices and players.

Metadata agnostic. Lua transformation filters adapt metadata input from any automation system into any required output format.

Cloud-ready for the future, yet compatible with standard CDN and streaming platforms now. Supports HLS, Icecast, RTMP, and RTP streams.

All-inclusive Linux and AoIP appliance. No Windows® drivers, updates or PC needed. Add Streamblade to any audio network via WheatNet-IP, analog, AES3, or AES67 inputs or add Wheatstream to any existing WheatNet-IP or AES67 compatible networks.



STREAMBLADE & WHEATSTREAM STREAMING AUDIO PROCESSORS

wheatstone.com/stream-rw21a