

RADIO WORLD

Technology & news for radio decision makers

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Make the most of your metadata



Here's our experience with RadioDNS and DTS AutoStage at Baltimore Public Media



Laser-focused

Discover how laser-based cutting services can make your engineering life easier.

SDRs are his BFFs

James Careless enthuses about software-defined radios for shortwave listening.

Make connections

Buyer's Guide features codecs and STL products.

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People in the news

Some felicitations are in order



**Paul
McLane**
Editor in Chief

W

hen I leave this job — at an
undetermined future date — I hope
one thing readers may recall about
my tenure is that Radio World covers
the people as well as the products
and technologies of our industry.

Here are a few People News items that we've reported
recently in our daily Radio World SmartBrief email. (If
you don't already receive that, sign up for free at <http://radioworld.com>; click on **Subscribe** at the top of the
home page.)

Congratulations to Manny Centeno, who is familiar
to many Radio World readers who work in emergency
alerting. He has been promoted to director of IPAWS at FEMA, succeeding
Antwane Johnson, who held the post since 2009 and retired last winter.

"His work has integral to propelling the program to new heights," the
organization wrote in the announcement.

"Chief among his accomplishments is his oversight of the National Public
Warning System and the Primary Entry Point system which helped ensure
emergency communications can reach more than 90% of the public under
all conditions. His many successes also include leading the execution of the

first Nationwide Emergency Alert
System Test in 2011, directing the
development of IPAWS' satellite
communications network,
spearheading innovative
solutions to protect critical
systems from Electromagnetic
Pulse, strengthening partnerships
between IPAWS and the mass
media industry, and leading
the establishment of the IPAWS
Laboratory and Technical
Support Service Facility."

Congrats are also in order for
Kris Bobo Specht, who has retired
from her role as managing
director at Comrex.

As our contributor Paul
Kaminski wrote in our online
story, Kris started working for the
late Lynn Distler and John Cheney
as a part-time marketer in the
early 1990s.

She and Technical Director
Tom Hartnett worked on projects
from the Nexus and HotLine



Manny Centeno



Kris Specht

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frequency extenders to the Access, Bric Link and Live Shot products. Hartnett and Specht became co-directors in 2006.

She told us she'll pursue what she described as her "odd hobbies," including glass blowing, wood turning and 3D printing. To read that article go to radioworld.com and type Kris Bobo Specht into the search field.

Burk Technology promoted Matt Leland to vice president of sales.

The company, based in Littleton, Mass., makes transmitter facility control systems for the broadcast industry. It noted Leland's three decades of experience in technical, consultative product sales in RF and monitoring equipment.

Before joining Burk in 2013 he was national sales manager for radio products for the Dielectric brand of SPX Communication Technology. He also has worked at Shively Labs and Microwave Techniques.

President Peter Burk said Matt's contributions to the company's growth and profitability over the past 11 years "have had a significant impact on the organization."



Matt Leland




Christine Zuba, visiting One World Trade Center in 2017.

Speaking of Dielectric, its longtime sales leader Christine Zuba ended an impressive 49-year career.

Since 1994, Zuba has been Dielectric's national sales manager, where she used her advanced technical knowledge of complex RF systems. "We are grateful that a true broadcast lifer such as Christine elected to spend nearly her entire broadcast career with us," said Keith Pelletier, president of Dielectric.

Early on Zuba landed a role with RCA in its antenna division. She briefly left the company to do work in cellular and broadcast consulting before returning. Dielectric then acquired RCA in 1986. Zuba's responsibility in engineering and product management increased before accepting a director of sales and marketing role in 1989.

Dielectric lauded Zuba's ability to climb the technical ladder between expertise and exceptional relationship-building skills. Michael Sharpstene assumed Zuba's role on July 1.

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Beyond RDS: RadioDNS and DTS AutoStage

Here's our experience with them at Baltimore Public Media

Metadata is a hot topic right now. Radio broadcasters are competing for attention on the dashboard against streaming services with flashy visuals and endless budgets. Equipment and financial concerns can make providing a better visual experience for listeners seem out of reach. What can stations do, now, to improve their appearance on vehicle infotainment screens?

Here at Baltimore Public Media, our main stations WTMD(FM), a AAA music station, and WYPR(FM), an NPR-affiliate news/talk station, have older-generation HD equipment. WYPR's simulcast stations WYPF and WYPO are analog FM only.

Upgrading equipment would be nice, and we are looking to upgrade eventually, but the expense is significant and an upgrade is not in the immediate future. For some stations, the expense could be prohibitive. And for analog AM stations, transmitting RDS and other data over the air is not possible at all.

Streaming services are natives of the internet first and broadcasters second. DNS and other everyday internet protocols are basic tools to them. The trick is realizing that radio can use those tools too, to meet the streamers on their own turf. The visual data streamers provide on the screens is being delivered over IP, not over the air — and we can do that, too.

By signing up for services like DTS AutoStage and registering with RadioDNS, Baltimore Public Media is ready to provide a richer visual dashboard experience to hybrid

Above
WTMD's analog FM broadcast on DTS AutoStage showing album art, title and artist. The vehicle is a 2022 Hyundai Tuscon Limited; the infotainment platform is "Standard-class Gen5W Navigation" with DTS AutoStage.

Right
WYPR's analog FM broadcast on DTS AutoStage shows station logo and "now playing" info for the current talk show.





Top
WYPR's HD3 channel on DTS AutoStage. The name and slogan of the channel are displayed as well as the title, artist and album art for the current track.

Above
WYPR's HD3 channel on DTS AutoStage displays the HD3 logo while waiting to get the next title and artist.

radio-enabled cars now, elevate the visibility of our HD side channels to equal status, and also gain direct insights into in-car listening — without buying a single piece of hardware or new subscription.

What are these services?

RadioDNS Hybrid Radio and DTS AutoStage both provide enriched user experiences on connected dashboards.

RadioDNS is a service that uses the transmitted RDS PI code in FM signals to provide hybrid radio devices with a centralized and standardized lookup for information about radio stations, supplied by the stations directly through an xml file hosted somewhere on the web.

DTS AutoStage is a connected radio platform that uses its own lists of radio stations, based on the geographical location of the car's radio, to provide logos, service names, descriptions, now-playing info and other metadata to vehicle infotainment screens. Because it uses its own internal lists, DTS AutoStage will work for analog AM stations and others who don't have RDS.

Baltimore Public Media decided to participate in both these systems. I will give some description of our experience in signing up for them both.

RadioDNS

The DNS in RadioDNS stands for the Domain Name System, a standard part of the TCP/IP protocol suite that runs the internet. Your browser uses DNS to connect your request for "google.com" to a Google server's IP address. In the same way, for hybrid radios, RadioDNS uses DNS to connect the listener's device to a file on a server containing your station logo, website links, stream URLs, on-demand offerings and whatever other information you choose to provide.

Signing up for RadioDNS is free. While advanced features such as program guides and dynamic visuals can require some web development knowledge, the basics are easy to set up and there are free tools that can get you going quickly.

RadioDNS station information is stored in an xml file called the SI (Service Information) file. Stations can make and host their own SI file, or they can use a service provider to create and host one for them. The RadioDNS website has the excellent online SI Management Tool for creating SI files, located at <https://si.radiodns.org/>.

For NPR member stations, NPR offers SI file hosting and RadioDNS registration through PRSS ContentDepot. There are also several other providers. At Baltimore Public Media, we decided to host our own SI file to have maximum flexibility.

The RadioDNS SI Management Tool was easy to use to build the basic SI file for our stations: WYPR, WYPR-HD2, WYPR-HD3, WTMD, WTMD-HD2, WYPO and WYPF. (This is a long list, because to hybrid/connected radios, the HD side channels are presented in the stations list alongside the main channels as equals. The "NAB Digital Dashboard Best Practices Report" goes into detail on this topic and provides good recommendations for branding; find it online by searching for that report name.)

I entered all of the requested information, including long and short descriptions and names, geographical coordinates, PI codes, country codes, stream URLs and links to our stations' websites and social media accounts. I created logo files in the dimensions specified by the SI Management Tool and uploaded them to our domain, noting their URLs for the SI file. I downloaded the generated SI file to use as a starting point.

Then I referred to the standards document "Hybrid Digital Radio (DAB, DRM, RadioDNS); XML Specification for Service and Programme Information" to further build out the xml file to include genre information, keywords and other details. (To find it, go to <https://www.etsi.org/standards> and enter "TS 102 818 v3.5.1" into the search field.)

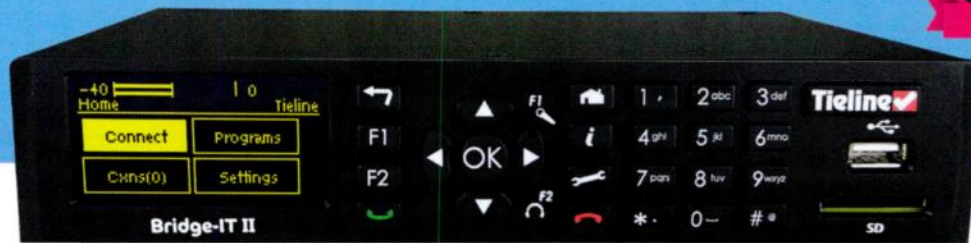
Once the file was ready, I uploaded it to a domain that we own, and created SRV records in our web host's DNS Zone Editor for that domain to advertise our SI file. Instructions for creating the SRV records are available on the RadioDNS website. RadioDNS was also very helpful when I asked them a question about it.

BUYING A RADIO TRANSMITTER?

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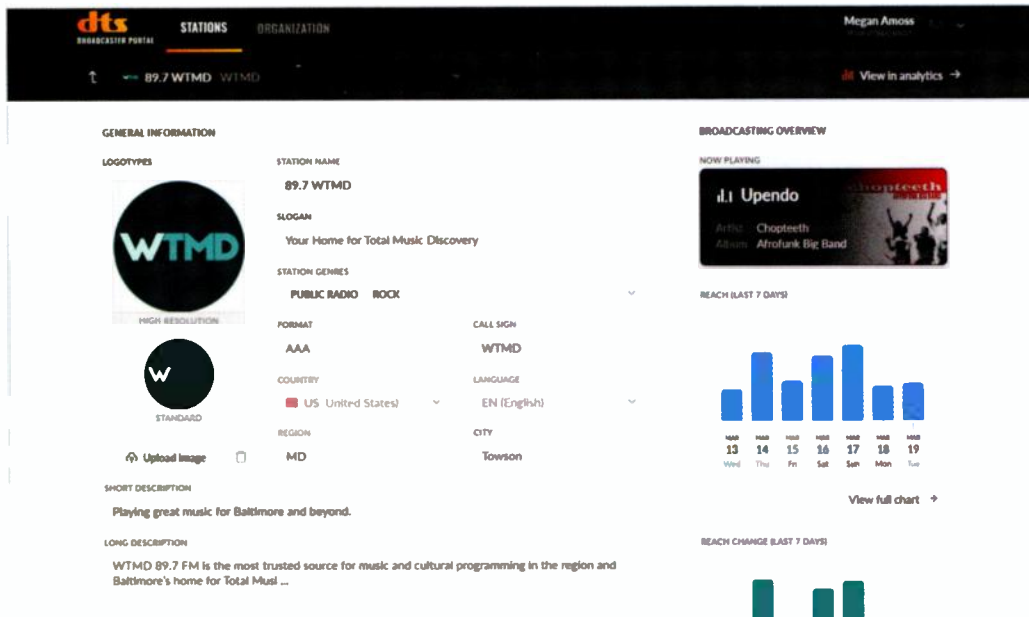
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Above

The DTS AutoStage station overview screen, showing fields that stations can fill out and update, and showing what live metadata DTS AutoStage is receiving from your automation system.

Bottom

A "heat map" showing in-car listening for WTMD's analog FM broadcast. "This is a general aggregation and overview," the author says, "but it is incredibly valuable and eye-opening to see the geographical areas where listening is concentrated. You can change weekdays and date ranges, and you can view each HD and analog broadcast separately."

Finally, I created a DNS zone file containing the CNAME records needed by RadioDNS to direct requests from hybrid radios to our server, and I submitted it to RadioDNS for registration. (See <https://radiodns.org/technical/testing-tools/>.)

RadioDNS doesn't actually store your files or logos. You do (or your chosen hosting service does). RadioDNS just acts as a central lookup service. Hybrid radios only have to know about RadioDNS.org, and the zone records point them to you.

A little detail about how it works:

The listener's hybrid radio tunes into WTMD's FM signal and gets our PI code from our RDS. Over IP, the radio constructs our CNAME record string using our frequency and PI code, connects to RadioDNS, and looks us up. DNS tells the radio to go to our domain. The radio visits our domain and accesses the SI file. The user gets our logos, stream URLs, social media links, and everything else we provide in our SI file.

And because they are connecting directly to our web server, we can get some usage statistics from our web

server logs directly. Listeners in their cars are no longer purely theoretical. If they go outside of our listening area over-the-air, they can use Service Following to continue listening on our stream, which not only keeps them with us longer but gives us even more-detailed analytics.

DTS AutoStage

DTS AutoStage from Xperi is a connected radio platform that uses its own lists of radio stations, based on the geographical location of the car's radio, to provide logos, service names, descriptions, now-playing info, and other metadata to vehicle infotainment screens. Because it uses its own internal lists, DTS AutoStage will work for analog AM stations and

others who don't have RDS, according to the NAB Digital Dashboard Best Practices Report. Like RadioDNS Hybrid Radio, it also allows listeners who leave the over-the-air range to continue listening on the stream.

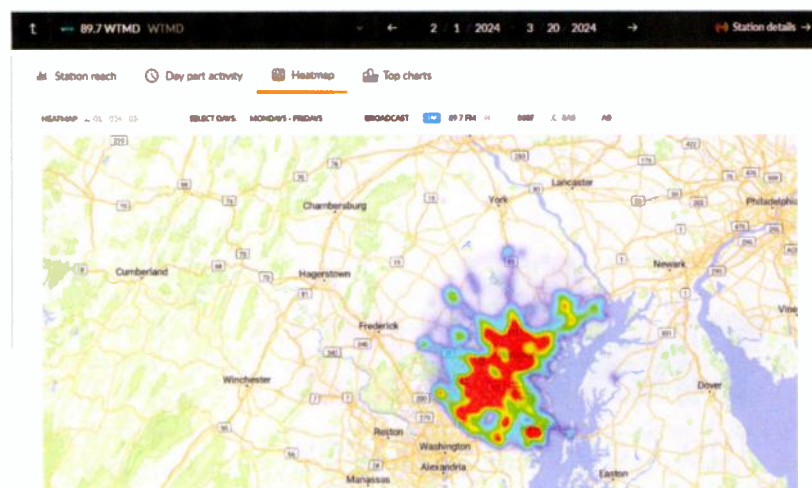
Signing up for DTS Autostage is free for broadcasters. It's important to note that DTS AutoStage, much like TuneIn and other aggregators, already has some data about your station ... data automatically scraped from the internet that is almost guaranteed to be outdated, incorrect or incomplete. By signing up, broadcasters can upload their latest logos, slogans and stream URLs and make sure information is accurate and up to date.

Stations who provide live "Now Playing" metadata to DTS AutoStage are rewarded with some fascinating and valuable reporting in return. DTS Autostage is all in-car listening and will provide eye-opening heat maps of where your stations are being listened to.

Signing up for DTS AutoStage was simple, using their onboarding site, <https://onboarding.connectedrad.io/>.

Getting the now-playing metadata up and running required some emailing and waiting, but the wait was worth it once the heat maps and other analytics became available.

Overall, the experience of signing up for RadioDNS and DTS AutoStage was worth the learning curve. By getting involved now, Baltimore Public Media will already have a rich visual presence on dashboards as the new technology rolls out to more and more listeners. And we were able to do it without buying racks full of new hardware. 🎧



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John Bisset

CPBE

The author is in his 34th year of 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.



Send your tips

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

Should you try to fix that switched-mode supply?

Bill Traue offers some thoughts (and have you tried a blow dryer?)

Bill Traue, CSRE, 8-VSB, AMD is principal of Bill Traue Technical Services. He acknowledges that when it comes to fixing dead switched-mode power supplies, the small wall-wart or line-lump type aren't worth the effort because a replacement will cost less than the time required to inspect and attempt a repair. Also, like most broadcast engineers, Bill keeps a crate full of spare low-power supplies.

However, when an intermediate- or large-size switched-mode supply fails, we may see all those electrolytic capacitors neatly packed inside and suspect that one or more of them is the cause of failure, given that electrolytics can be unreliable in the long term due to their tendency to dry out, drop in value or suffer from increased equivalent series resistance or ESR.

It's hard to resist the urge to replace them all and hope for the best. But you may buy replacement caps and invest a couple of hours in replacing them, only to find that the supply still won't come to life. At this point we have forgotten Gershwin's Law: It ain't necessarily so.

Why? For one thing, our replacement caps may not have certain unique characteristics that were required of the original parts. Also, other components may be damaged — ICs may have their tops blown off or an inductor may have been damaged from overheating. Unfortunately, most of the time you won't have a schematic diagram or service manual, often because the manufacturer refuses to provide one.

Before trying the "shotgun" cap replacement route, try what one of Bill's colleagues did: Apply heat from a hair blow dryer directly to the caps.



Electrolytic caps are chemical devices, and heat speeds up chemical reactions. You may find that the supply will run after the heat styling. Bill recommends that you have the supply powered up and in circuit while trying this, to give the supply the best chance of starting.

Top right
A Siemens switched-mode power supply, as shown on the India Mart website <http://indiamart.com>.

Bottom right
A peek under the hood shows the various capacitors that make up a switched-mode supply. From the website Power Supply Technology, www.ps-t.co.jp/en/.

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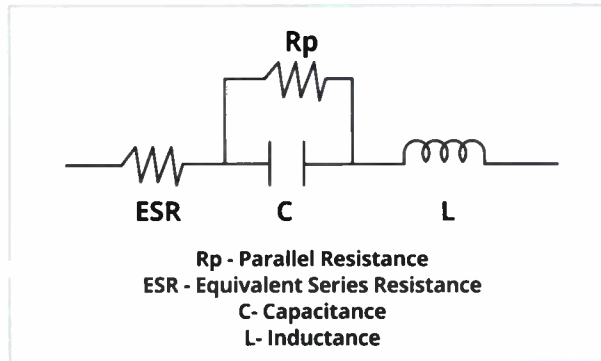
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Right
A schematic of equivalent series resistance (ESR) in a capacitor. This is based on an image on the website my.avnet.com/abacus/.



If your "heat styling" works and the supply starts to run, don't shut it down until you have the replacement supply on hand.

Bill notes that if the blow dryer does start the supply, it's safe to assume that the capacitors are the root of the problem. If other components were faulty, the supply would not start. Be glad you got the supply running, at least for a while, and order the replacement. Replace the electrolytics if you want to, but remember Gershwin's Law.

When Bill orders a bunch of new capacitors from a parts house, he measures each one for capacitance value and equivalent series resistance before installing it. Bill has found failures even among new caps. And once you find one, you will be sure to measure every capacitor. Bill adopted this measurement technique for fuses, too —you can't tell by looking at them.

I asked Bill for some applications and he mentioned the small switching supply used in the BE AM 2.5 kW transmitter. It's the same supply used in their FM30T. Bill says he has revived both types with a hair dryer. This is great if you don't have a spare on hand, but those supplies are available from big parts houses at reasonable prices, so it's silly not to have one sitting on the shelf.

Although engineers are in the business of fixing things — it's in our DNA — one of the skills we need to adopt is to know when to feed a supply to the dumpster.

About ESR

Equivalent series resistance is what a capacitor can apply to alternating current. As capacitors age, ESR increases, a characteristic that can cause a variety of issues.

A high ESR value will degrade performance due to increased noise, a higher voltage drop across the capacitor and I²R power losses. Heat generated by high ESR can not only degrade capacitor life but also create circuit performance issues as the switched-mode power supply voltage can fluctuate. Switched-mode supplies are known for stable output voltages, so if that stable voltage fluctuates, it can have negative effects on the circuit that the supply is powering.

There's a useful discussion of ESR on the website emariete.com/en. Here's a direct link: tinyurl.com/rw-esr-3.

Guard your ceramic capacitors

Benjamin F. Dawson III, PE, of Hatfield & Dawson Consulting Engineers tells us that new ceramic transmitting capacitors for AM directional upgrade projects have been difficult to obtain. In many cases, project managers have had to use refurbished or recycled components due to cost and/or availability. Keep that in mind if you're planning an AM upgrade project; add in extra time for completion.

The Hatfield & Dawson website has a variety of technical articles and downloads that Workbench readers will find useful. Head to the Resources tab at www.hatdaw.com.

EAS timesaver

Larry Fuss is a legend in broadcast circles: owner of multiple stations, engineer and manager.

He writes that if you have a Sage EAS unit, you can now receive an automatic weekly e-mail with all EAS activity for the week, complete with a place for the chief operator to sign, as seen in the images below. Larry made this suggestion to Harold Price, the president of Sage, who liked the idea and has now implemented it.

This eliminates all the hand-written logs each week, and ensures that you're keeping accurate records.

You can enable the feature at the bottom left of the Email-FTP tab in ENDECSSET. You may need to download the latest version of ENDECSSET to make this change.

Once you've made the change you save the file and upload it to your Sage unit.

What a great time-saver for busy engineers.

“It's hard to resist the urge to replace them all and hope for the best.”

Jul 7, 2024 - Jul 13, 2024

DELTACLE Alert Log Conformance Report

Source	EAN	NPT	RMT	RWT	Other	Status
Mon # 1 - WYMX-FM	0	0	0	1	2	OK
Mon # 2 - NWS KHSO	0	0	0	1	0	OK
Mon # 3 - WMAO-FM	0	0	0	1	0	OK
Mon # 4 - FEMA SAT	0	0	0	0	0	Silent
Mon # 5 - Input Not Labeled	0	0	0	0	0	Silent
Mon # 6 - Input Not Labeled	0	0	0	1	0	OK
CAP						
Sent						

Alert Log Detail

System	Event	Time	Event	Location	Status
System	Settings Updated	07/07/24 11:25:30			
System	Startup	07/07/24 11:25:30			
System	Settings Updated	07/07/24 11:25:47			
System	Startup	07/07/24 11:25:30			
System	Ignored	07/07/24 20:32:37			

Required Alerts Sent: 1

Time	Event	Location
07/08/24 04:55:00	RWT	Bolton

Required Alerts Received: 5

Event code followed by (R) indicates

Monitor # 1 WYMX-FM

Time	Event
07/13/24 20:08:31	RWT

Required Alerts Received: 5

Time	Event	Location
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton

Required Alerts Received: 5

Time	Event	Location
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton
07/08/24 04:55:00	RWT	Bolton

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You have your LPFM CP — now what?

Three LPFM veterans
offer their suggestions

A new Radio World ebook provides helpful information for the next generation of low-power FM stations coming on the air. We reached out to experienced managers for input on building a successful station. These are excerpts; read the story in the ebook at <http://radioworld.com/ebooks>.



Asheville FM

WSFM(LP) is "103.3 Asheville FM" in Asheville, N.C., which launched online in 2009 and received an FCC license in 2015.

"Act like a full-power station," Executive Director K.P. Whaley recommends. "Although we were volunteer-powered until 2017, it didn't stop us from

setting up all the key positions that a community station needed: station manager, program director, music director, news director, underwriting director and others."

Whaley also encourages stations to join the National Federation of Community Broadcasters as a helpful resource and network.



Takoma Radio

WOWD(LP) Takoma Radio has operated with 20 watts in Takoma Park, Md., since July 2016, broadcasting at 94.3 MHz and streaming at TakomaRadio.org.

WOWD is a nonprofit with approximately 100 volunteer DJs and 80 unique shows.

Station Manager Olivia Randolph recommends creating a sense of place. "Have live DJs broadcasting from the studio, and if they are pre-recording from home, have them make it sound as if they are in the studio."

"We are successful because our programming comes directly from the community," she continued. "We are for the community, of the community, by the community. We think an LPFM can thrive if listeners can hear their voice on the air and will give their financial support to help it continue."



Free Range Radio

KHEN(LP) "Free Range Radio" on 106.9 in Salida, Colo., was founded in 2003 and serves a county with 20,000 residents. Executive Director Mark Schoenecker suggested that a new LPFM identify a vacant niche in its listening area and fill it.

"Engage with the community you serve in as many ways as possible," Schoenecker said. "Try and identify as many champions of the cause right out of the gate and involve them with as many aspects of running the station as you can. Become acquainted with any community foundation available to you. They will be a critical resource in helping you find the financial resources you need."

As for launching on a limited budget, Schoenecker said, "Communicate with your local government (city and/or county) and see if they can make a property available for housing the station at a deeply discounted rate."





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Writer



James Careless

The longtime Radio World contributor wrote about shortwave station WBCQ in our previous issue.

Above

The author ran SDRConnect software on an Acer laptop using the SDRPlay RSP1B SDR unit and Audeze MM-100 planar magnetic driver headphones.

SDR: The next level of shortwave radio listening

Where have these things been all my life?

There is a new breed of RF receivers known as software-defined radios, and they are revolutionizing the way in which people listen to shortwave (SW) radio, or indeed any form of radio broadcast.

SDRs combine plug-in radio receiver dongles/boxes with personal computers, with the computer serving as the user interface. What makes this interface so useful is that the listener's screen displays a wide swath of the bandwidth being tuned to, with each station's signal shown as a visual vertical line that moves and grows/shrinks with its signal strength.

In other words, the listener can literally see what is happening across the band in real time, rather than having to turn the dial or push the Up/Down scanning buttons on a conventional shortwave radio, checking one station at a time.

SDRs come with a range of software tools for viewing, filtering and recording sound. One (or more) of these devices is an absolute must for anyone who likes to tune

around the bands. And if you own a computer the only device to be bought is the RF receiver dongle/box, which is often less expensive than a standalone SW receiver of similar quality and performance.

How SDRs work

Jon Hudson is co-founder of SDRplay, a maker of wideband SDR receivers. The company sent me two of its box-enclosed SDRs to try out: the model RSP1A (\$117) and the new RSP1B (\$132.25, covering 1 kHz to 2 GHz; antenna to be supplied by the user).

"Whereas a conventional radio uses electronics hardware to do everything from detecting the signals from an antenna through to creating audio output, an SDR splits the task between hardware and software," Hudson said.

"Typically, the hardware will provide wideband filtering, choice of spectrum to be monitored, the analog-to-digital conversion and interface circuitry to do two things — to send the digitized signal to, and to receive control

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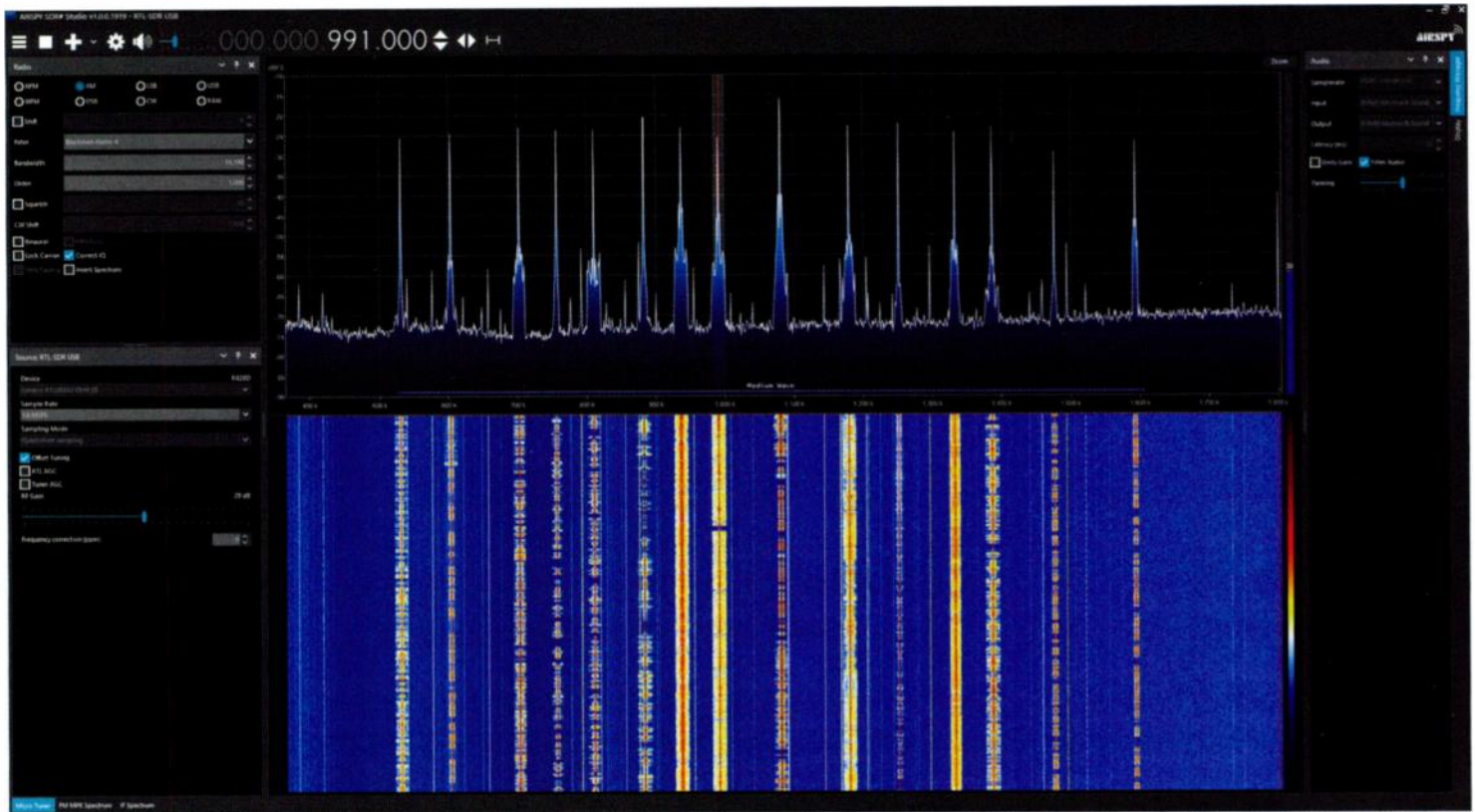


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WRH



Above

The display of the Aircspy SDRSharp SDR program, connected to the RTL-SDR Blog V4 dongle. The spikes and the vertical lines below represent specific stations and their signal characteristics.

information from, the host computer. The computer then performs the user-interface and demodulation functions.”

Carl Laufer is the owner of the RTL-SDR blog.

“We blog about SDRs and SDR projects, and we sell RTL-SDR dongles, which are low-cost SDRs,” Laufer said. He provided me with an RTL-SDR Blog V4 SDR dongle (\$39.95, covering 500 kHz to 1.766 GHz), along with a small TV-style collapsible antenna and stand.

“Instead of doing all the ‘math’ required to demodulate and decode RF signals in analog hardware, an SDR uses an analog-to-digital (ADC) converter to sample and digitize RF signals,” he said.

“Once digitized we can do all the math to demodulate and decode signals using digital signal processing techniques that are implemented in software.”

Dan Robinson is a retired White House, congressional and foreign correspondent for Voice of America. He’s a well-known reviewer of HF receivers and has used a variety of SDRs over the past decade.

“An SDR can also be described as a radio-on-a-chip, meaning that the functions that a normal traditional radio would perform, such as bandwidth filtering and actual reception, are performed via software with digital solutions instead of analog hardware,” he said.

Laufer commented: “Our RTL-SDR Blog V4 works great for general shortwave reception, but it is in the low cost under \$30 range without the antenna included, and we do not class it as a high-performance radio designed for DXing. If you happen to have strong interfering signals

from nearby shortwave or broadcast AM transmitters, or perhaps jammers, this is where higher-end and higher-priced SDRs come into play, like the SDRplay and Aircspy HF+ Discovery. These SDRs offer higher ADC bit depths, and additional filter banks, which improve their reception of weak signals in the presence of strong interfering signals. Without those enhancements weak signals can get buried by very strong signals.”

The setup

As someone new to SDRs, I have not attempted to provide fair and intelligent judgment of them as an expert. But as an avid SW listener of 40+ years who started on a 1950s Nordmende console radio before going onto serious receivers, I can speak to the differences of tuning and listening to SW and other RF bands — because SDRs also cover AM, FM, the amateur bands, weather radio, air traffic, and so many others — using an SDR and a high-end Sangean ATS-909X2 SW digital receiver.

I tested these units in my second-floor Radio Room here in Ottawa, Canada. The high-end SW receiver was connected to a 100-foot longwire antenna in my attic. The SDRs I tested used a relatively new laptop computer and an MLA-30+ 100 kHz–30 MHz loop antenna purchased from Amazon for around \$46. I could have used the SDRs with the longwire or indeed any antenna, but chose the MLA-30+ for its widely recommended low-cost performance and small form factor; it didn’t disappoint and is worth the money.

To identify what stations I might be listening to, I used the WRTH App available at <https://shop.radiodatabase.net/product/wrth-web-app/> produced by the folks who publish the encyclopedic World Radio & TV Handbook tuning guide, plus the free tuning guide at www.short-wave.info/. Because stations sometimes change frequencies, I also searched by frequency and time (Universal Coordinated Time) on my second laptop computer.

The experience

Both the RSP1A and RTL-SDR Blog V4 required software downloads (SDRConnect and Airtyspy SDRSharp) from their respective websites and some setup time to get them running. The RSP1B, which arrived some weeks later, was able to use the same SDRConnect program as the RSP1A.

Being able to see the band being tuned to is an absolute gift. At a glance, you can see which bands have lots of possible targets and which do not. Tuning can be done by using the mouse and scroll wheel. The SDRConnect program also offers buttons that go directly to specific bands (AM, FM, SW, Weather and Amateur among others), which makes tuning easy.

Of the three SDRs, the RSP1B provided the clearest, most listenable signals and least noise, followed by the RSP1A. The RTL-SDR Blog V4 provided similar sensitivity but was prone to be overloaded by harmonic frequencies from nearby AM transmitters and the Canadian SW time station CHU, about a mile from my house.

In comparison, the Sangean ATS-909X2 was similarly sensitive in its signal reception, but had more issues filtering out noise, which is an issue in my suburban neighborhood. As a result, all three of the SDRs were generally easier to listen to, but the Sangean did not suffer the overload problems experienced by the RTL-SDR Blog V4.

One surprise: I initially installed the RSP1A on a 12-year-old laptop. It proved to be underpowered for the job, resulting in choppy audio that I remedied somewhat by reducing SDRConnect's sampling rate. When I installed the RSP1A and then the RSP1B on a five-year-



Above
The home page for SDRplay, a company based in the U.K. that provides wideband SDR receivers.

old laptop with more processing power, the chopiness went away. Worth noting: The RTL-SDR Blog V4 had no chopiness issues.

Now for a second surprise. By coincidence, I had also received a pair of \$399 Audeze MM-100 planar magnetic driver headphones for testing, which I tried out with the RSP1B and laptop combination. The MM-100's full frequency and clarity allowed me to hear from much detail from the audio, compared to the standard computer headsets I had been using. If you can afford it, using superior headphones makes a real difference.

Now for the payoff: Unexpected stations. Being able to check the SW bands visually taught me that my Radio Room is actually a great place to hear African SW stations such as the Voice of America from Selebi-Phikwe, Botswana on 15580 kHz. I also picked up Radio Free Asia on 11830 kHz from Tinian Island (one of the three Northern Mariana Islands) in the Pacific Ocean, and the BBC World Service from Ascension Island (in the middle of the South Atlantic Ocean below the Equator) on 12095 and 15400 kHz. Best yet, finding new stations was a breeze thanks to the visual interfaces used by the SDRs. It made RF exploration fun again in a whole new way!

If you have ever enjoyed searching through the radio bands — any bands — an SDR is something you should try out. The RTL-SDR Blog V4 is a great one to start with. However, the RSP1B is so reasonably priced and easy to use — and you can use a plain old wire as its antenna — that I recommend it to newbies too.

Had I understood just how useful and cool these devices are, I would have got them years ago. 🎧

“ Being able to see the band being tuned to is an absolute gift. At a glance, you can see which bands have lots of possible targets and which do not. ”

WHAT'S MISSING FROM THIS STUDIO?

Without a CE onsite, Lotus Seattle leaned heavily on AoIP intelligent networking by Wheatstone, project management by SCMS, and system integration by RadioDNA to build out new studios in a few months.

AT A GLANCE

Challenges

- Engineering Shortage
- Tight Deadline
- Turnkey Studios for Four Major Market Stations

Benefits

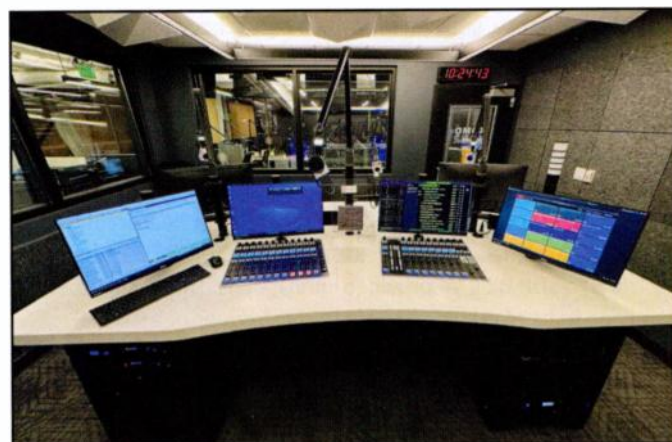
- **Easy Implementation in one AoIP environment:** Four on-air control rooms, two production rooms, a voicetrack studio, and a news desk with three editor positions easily share elements and workflows.
- **Smart Use of Virtualization:** Touchscreens replaced hardware. Combining Blade utility mixers, I/O and WheatNet IP scripting created powerful new workflows.
- **Remote-in Engineering:** The WheatNet IP studios are accessible remotely for regular maintenance and occasional troubleshooting by RadioDNA or other Lotus engineers.

“Every single bit of this is first class. It's the best and most advanced studios we have in the company. —**Jason Houts**, Lotus DOE

Lotus is a privately owned group with 48 radio stations in 10 major U.S. markets, with several using WheatNet IP for audio networking.



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Project Management by SCMS



System Integration by RadioDNA

Photos provided by RadioDNA



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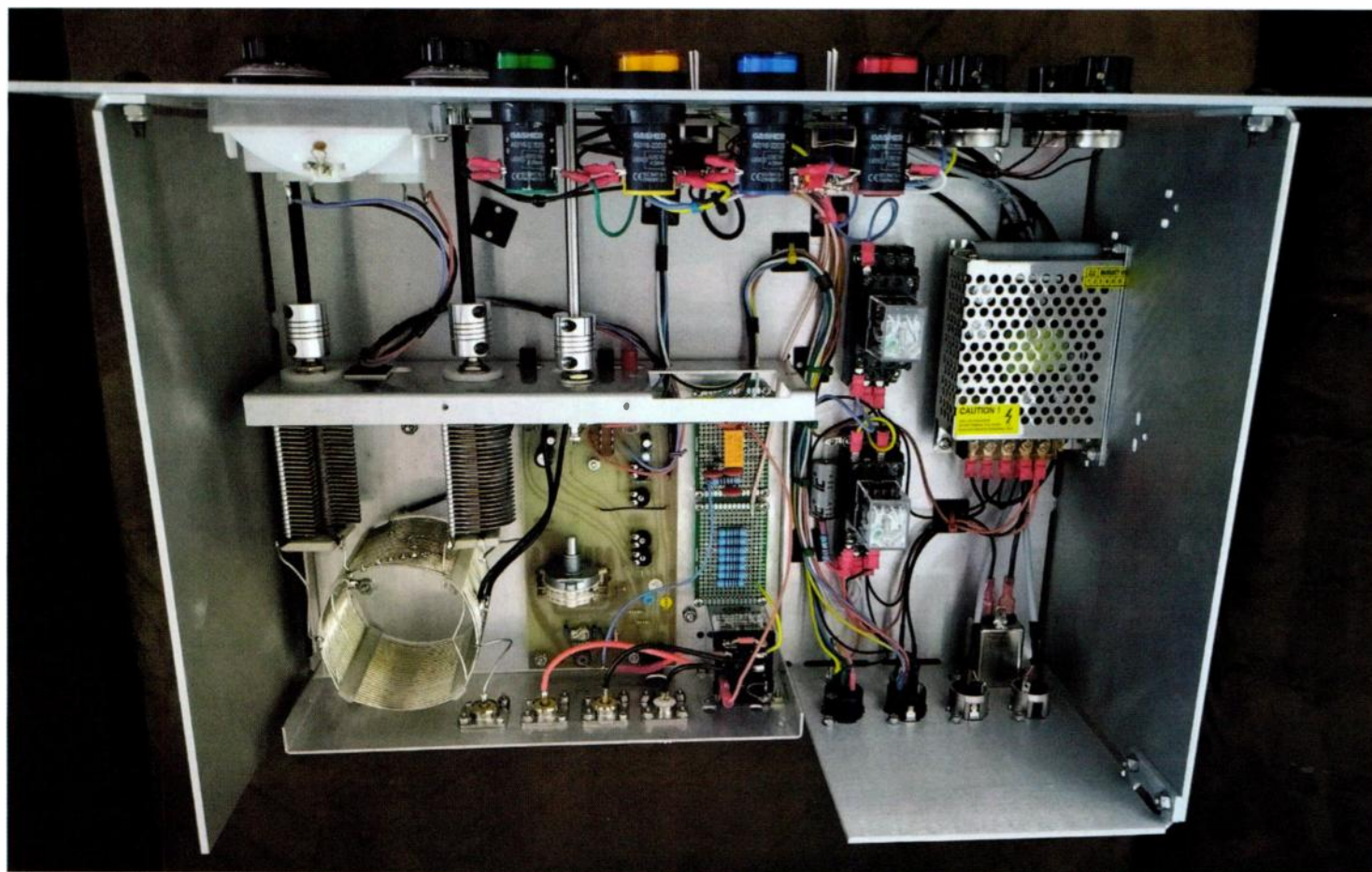
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Writer



Steve
Minshall

Broadcast
Engineer,
Crawford
Broadcasting

Above

My new, custom
control unit.

Laser cutting services can make your job easier

I've used them to mount toggle switches, FM coaxial switches, dummy loads and more

I've been using laser cutting services to make panels for broadcast and hobby projects for 15 years. It's an effective way to produce custom-made panels and metal parts.

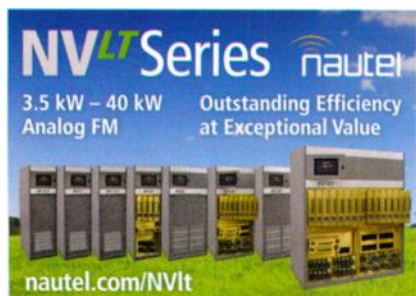
In the case of electronics and broadcasting, common items to have laser cut are panels to mount components or to accommodate switches, potentiometers and other components.

Before I discovered laser cutting, I typically made my own panels using a hand drill, drill press, jigsaws, files etc. Laser cutting provides an alternative that is more accurate and allows me to make openings that are not round.

An example is a toggle switch. Drilling for one often results in a hole that is slightly larger than desired, albeit generally acceptable. Beyond just making an accurate hole for a toggle switch, the laser can produce a little tab inside the hole to locate the notch in the threads of the toggle switch.

For decades I struggled with toggle switches. It is a challenge to keep the body of the switch vertical while tightening the mounting nuts. With a tab to line up the switch, the alignment problem goes away. This seems like a little thing, but having experienced mounting switches with the alignment tab I don't want to go back.

Potentiometers often have a tab for alignment. Fuse holders and indicator lamps often have flat sides on the threads or dimples to align on a panel. With laser cutting



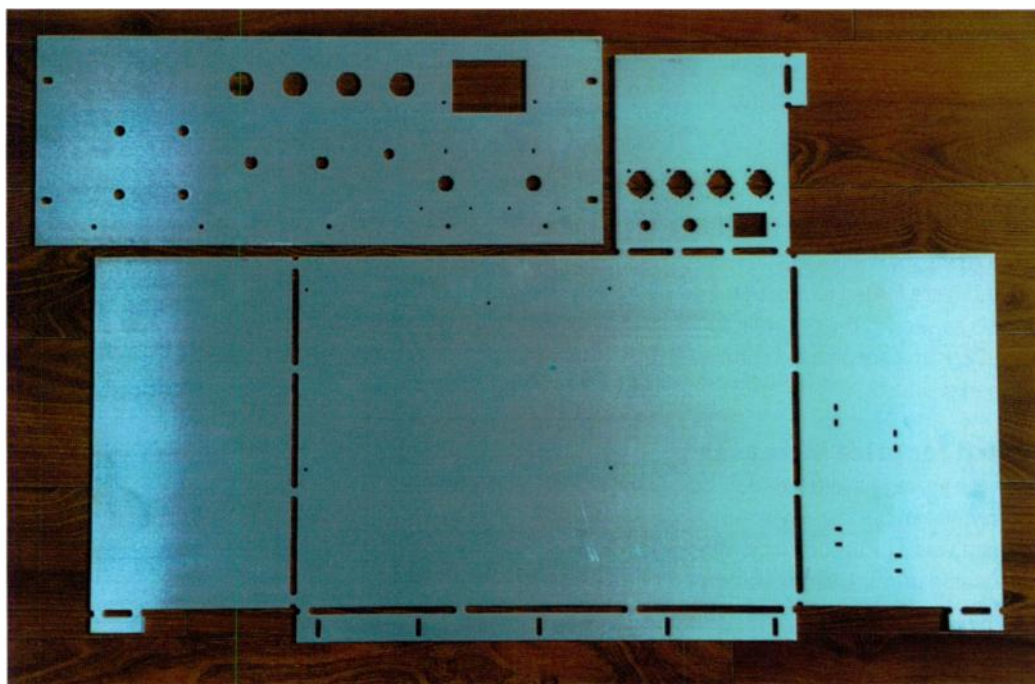
these features can be utilized. Rectangular holes for meters and power jacks are easy to incorporate with laser cutting, a task that otherwise would involve drilling holes using a jigsaw, and a lot of filing.

The accuracy of laser cutting is outstanding. Dimensions are typically within 1/1000 of an inch. This provides accurate layout of the panel and accurate dimensions of each opening.

My ham project

A while back, a friend arranged for me to obtain a McMartin BA-1K AM broadcast transmitter. I've been converting it to ham radio use, which requires moderate electrical and physical modifications.

For inside the transmitter I've made several aluminum panels to support new output network and band switching components. Of these, two were cut and drilled by hand the old-fashioned way because I had the material and the layouts were simple and not critical. But I also had two panels laser cut



Above
The cut panels arrived flat.

because the sizes were larger than materials I had on hand and the layout and other features were more critical.

External to the transmitter I needed to build a control unit that would interface the McMartin to the ham radio

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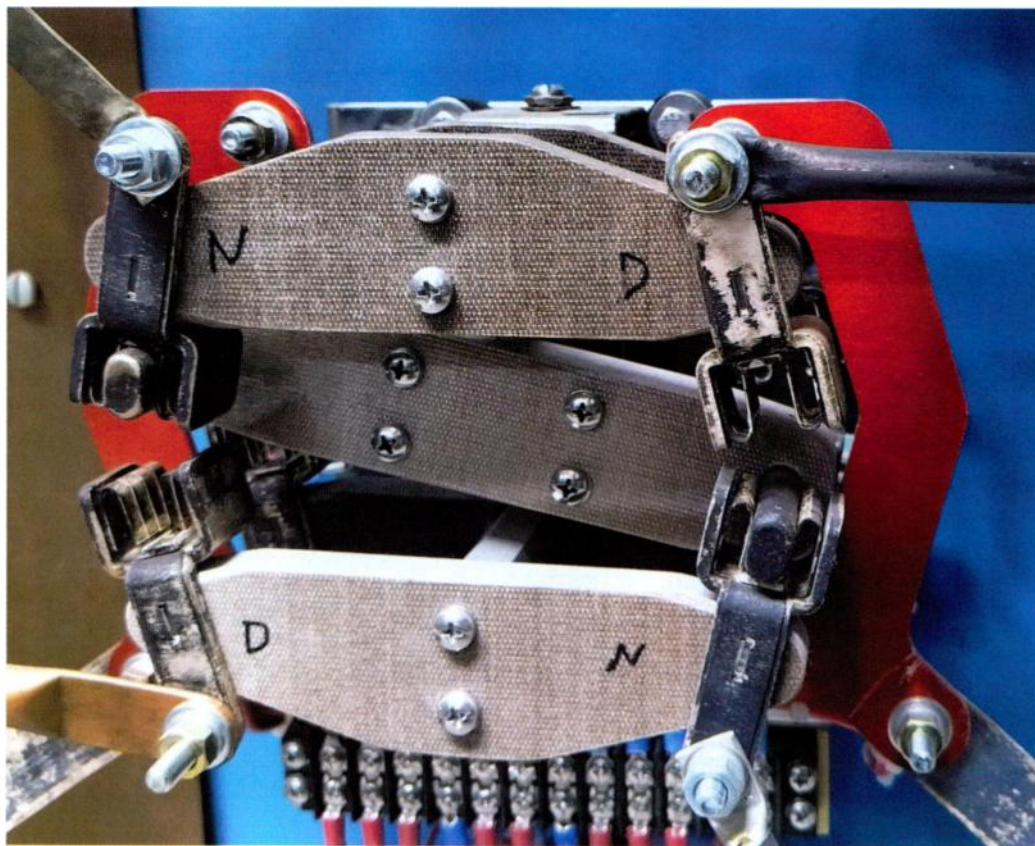
My control unit is custom-built and I decided to cut the front panel and chassis by laser. As can be seen on page 23, my cut panels arrived flat and were folded to create the chassis as seen in the photo atop page 22. I am very pleased with the finished product.

Watch for price increases

Over the years I have used four different laser cutting services. The first was a local company with reasonable prices; but after a time they became more expensive. I found the second one online and it did a good job, but again the prices soon began to increase. The third company I tried was again local, but the same thing happened.

So now I am on my fourth. I am using the online service <http://sendcutsend.com>. As the name implies, you send them a drawing, they cut it, and they send the cut parts to you. So far I am happy with these guys. I send them a CAD file, pick the material, choose the thickness and pay for it. Several days later I get a nice flat package in the mail that contains my parts.

Price is based on the overall square inches that your project requires, the time the laser runs, and the number



Shown
Above, a plate connects sections of an RF connector. Below, a plate holds a pair of vacuum capacitors.

of penetrations that are required. The cost of laser cutting generally seems reasonable to me.

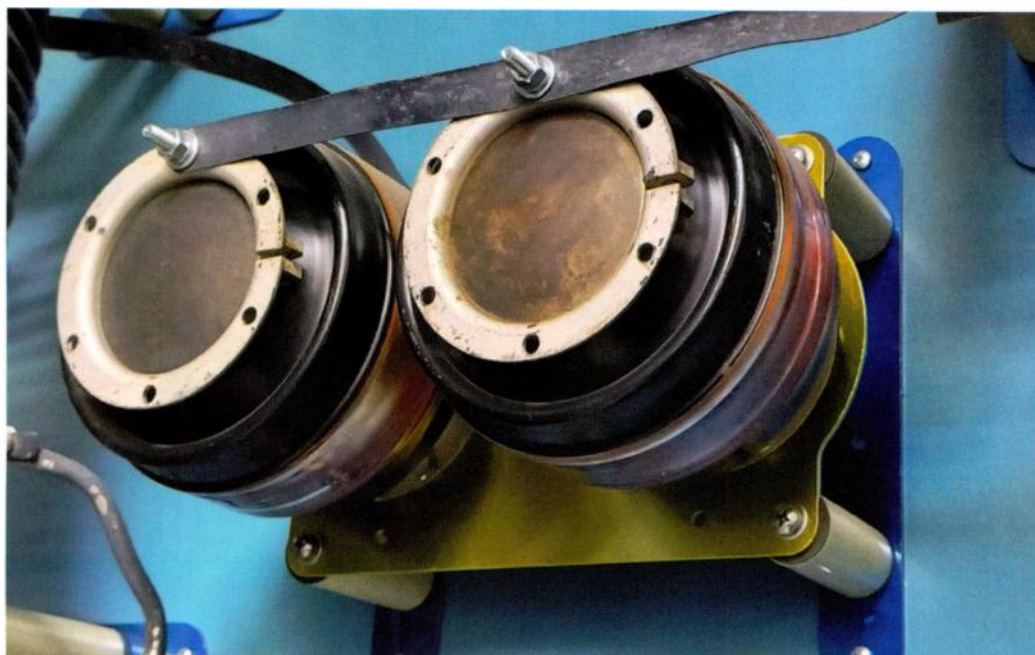
One thing to remember is that materials are part of your final price. They're expensive, especially in small quantities. When you consider what you'd pay just for the metal, the total cost seems reasonable.

Choose your sheets

Most electronics work that I do is with aluminum, and most of the aluminum parts I've had cut are from 1/8-inch sheet.

I did use a 3/16-inch panel for mounting a heavy Variac. For mounting a large RF switch I used 1/4-inch aluminum plate. Other metals are available including steel and stainless steel. The latter is hard to work with and tough on tools, so then it makes even more sense to pay for laser cutting.

I use TurboCAD to draw out my parts. When I'm done with the drawings, I convert them to the Drawing Exchange Format (DXF) before submitting them for a quote. If you're going for precise fits, measure all of the components and hardware



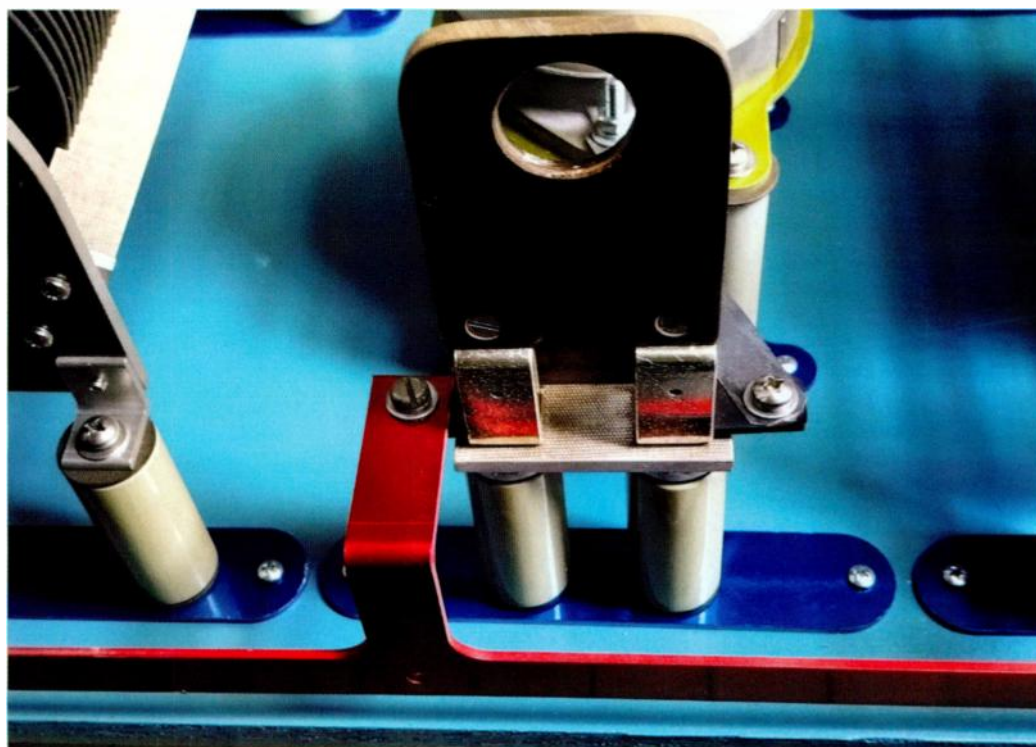


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Above
Part of a busbar in
our night phasor.

that will be mounted on or through the laser-cut parts. I've found unexpected dimensions on switches, potentiometers and other components; it seems the metric system has crept into these parts.

The precision of laser cutting is a blessing but also can be a curse if you're not careful.

For example, a 10/32 screw will measure about .187 inches but you don't want to draw your hole as .187; you need a little bit of clearance. I use .190 inches for a 10/32 screw. Generally speaking, add 2 to 4 thousandths of an inch to the diameter of the part that goes through the hole. You can add a few more thousandths just to be sure. I tend to err on the tight side and sometimes I have to pull out a drill or a jeweler's file.

Get creative

A neat thing about making holes with a laser is that they do not have to be round. You can make a slot as easy as a circle.

Let's say you're mounting a vacuum capacitor flange on a plate. The capacitor flange has six evenly spaced holes, so you know that the holes are 60 degrees apart, you just need to measure the center-to-center dimension of a pair of opposite holes. You could draw the six holes with .190-inch diameters to use No. 10 screws, but if something is off you will end up with a drill in your hands enlarging the holes later. It takes a bit more time with the drawing software but you can make your holes .190 x .250, for instance, and eliminate that problem.

Practical applications

Here are a few examples of laser cut parts that I used in the antenna system for KCBC(AM) in Manteca, Calif.

The first photo on page 25 shows a plate used to connect two sections of an RF contactor together. Traditionally you would bend, flattening ends, and punch holes in a silverplated copper tube. I think the aluminum plate looks good. It does an excellent job and saves time especially when outfitting all of the contactors in a large directional antenna system. A recent check with a thermal imaging camera shows that these plates are running stone cold in the 50 kW system.

The second photo on that page shows a pair of vacuum capacitors mounted on a plate. You can see that it makes for a clean and robust installation. I have painted these parts with an anodized color; it makes them

look better. Of course, they are not painted in spots where electrical conductivity is required.

And the image above shows a portion of a long busbar at the power division point in our night phasor. This turned out to be an elegant way to strap four J-plugs together. Also note the blue adapter plates that provide a nice way to mount the insulators of various components to the cabinetry.

I have used laser cut parts to mount FM coaxial switches, dummy loads and other broadcast equipment. I hope that this discussion will be helpful to someone who has an application for custom-made parts.

This article originally appeared in The Local Oscillator newsletter of Crawford Broadcasting's engineering department.

“Laser cutting provides an alternative that is more accurate and allows for making openings that are not round.”

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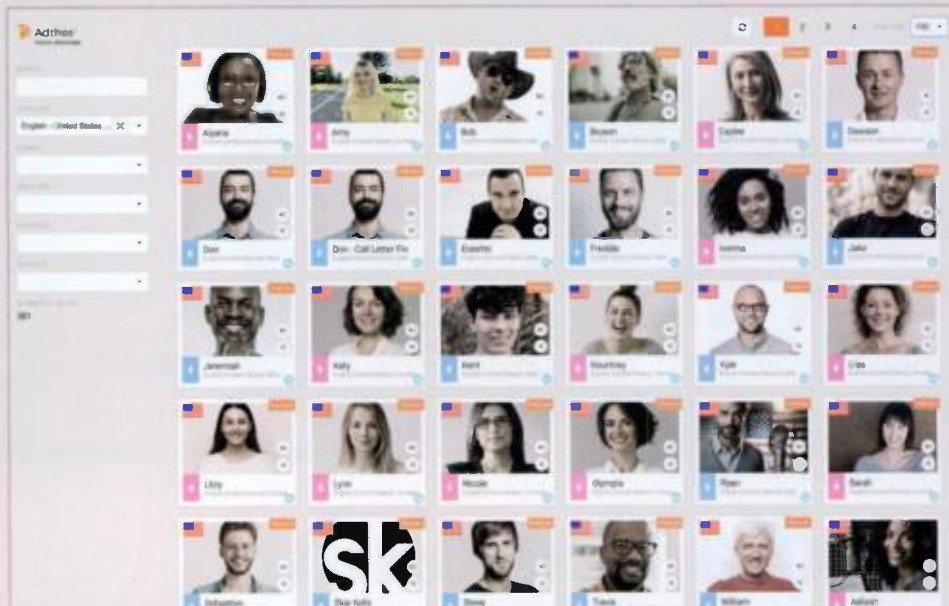


Adthos Adds Voices

Adthos has added many more voices in its AI audio library; it now offers 4,600 options.

"In addition to the existing Microsoft voices, Adthos now supports Google, Amazon, ElevenLabs, PlayHT, WellSaid Labs and Respeecher," it said in a release.

Users who have created their own models with these providers can integrate and use Adthos AI audio features to enhance their audio content. "This interoperability allows for a more streamlined and versatile audio creation process, enabling users to leverage



"These new voices contribute to an already expansive library designed for use in various audio formats, including audio ads."

Voices can be generated and translated into various languages; Adthos said the new platforms add support for 200 more languages and dialects.

the extensive capabilities of the Adthos platform," the company said.

Shown are avatars for AI-based voices on the company's website.

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BUYER'S GUIDE

Audio Transport: Codecs & STL

About Buyer's Guide

This 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.



iHeartMedia Honolulu does good with Access NX

Comrex gear supports a radiothon for Hawaii's only children's hospital

Craig Landis is a regional engineer for iHeartMedia, working with nine of the company's stations in Honolulu. They reach listeners on all of Oahu, on other Hawaiian islands and those streaming its stations throughout the United States.

For the majority of his career, stretching over three decades, Landis has specialized in remote broadcasts to do everything from live worldwide concert broadcasts to major American sports events to Olympics coverage. Today, in addition to other projects, Craig coordinates live broadcasts for iHeartMedia Honolulu, and turns to Comrex for many of the remotes.

KSSK 92.3 is a popular iHeartMedia station that is consistently rated number one in market share nationwide in the adult contemporary format. Every year, KSSK hosts a radiothon to benefit Kapi'olani Medical Center for Women & Children, Hawaii's only children's hospital.

The Kapi'olani Radiothon for Kids features all of KSSK's on-air personalities, including Michael W. Perry, host of "Perry & The Posse," the top-rated morning radio show in

the state. In 2023, the radiothon was a two-day affair that ran from 5 a.m. to 7 p.m., live from the hospital.

To get the event on the air, Landis uses Comrex Access NX.

"We send the hosts out with the Access, and they set up in the same room as the radiothon operators," Landis said. "They also have a mixer and wireless microphones, so they can walk around and interview patients." Because Access NX is portable and can be handheld, the hosts are able to carry it with them as they do their interviews, while connected to the hospital's internet.

This live programming is effective for fundraising. Last year, the Kapi'olani Radiothon for Kids raised more than \$820,000, all of which went to supporting programs at the hospital.

"It's the only hospital in the state that provides this specialized care for pregnant mothers," said Landis. "It's a very worthwhile cause."

He takes comfort from the reliability of the equipment. "It's also reassuring to know we have the support of Comrex's engineering team. You not only get a piece of equipment, you get a solid group of people who care about the end user."

Above

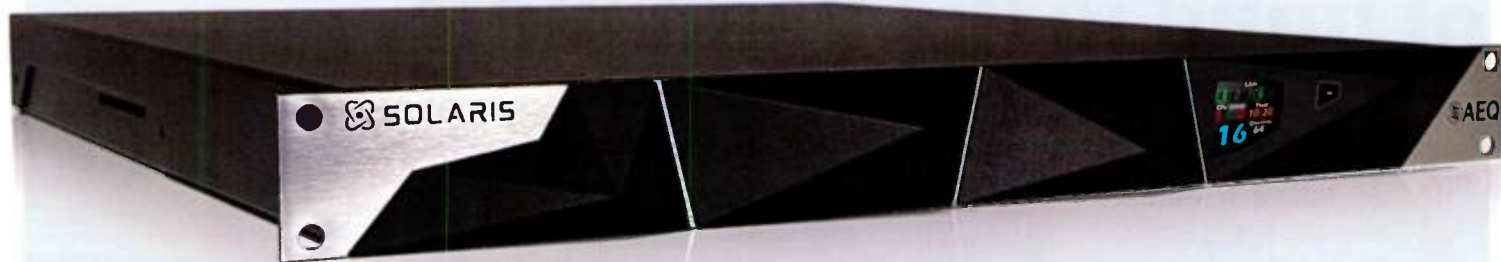
The KSSK Crew, including hosts Michael W. Perry, left, and Sweetie Pacarro, right, raised more than \$820,000 for Kapi'olani Medical Center.



More Info

www.comrex.com/products/access-nx-ip-audio-codec/

Tech Update



AEQ Solaris Offers High Density

Available with eight bidirectional stereo channels, AEQ's new Solaris is a high-density multi-channel audio codec that can be upgraded in groups of eight channels to reach a maximum of 64 channels in a single rack space.

Audio I/O is provided via IP using Dante, AES-67 compatible, with the option to add redundancy using a second Ethernet port if required.

Audio coding algorithms include legacy G.722 and G.711, plus uncompressed PCM audio (16 bit), Opus in various flavors and, optionally under license, several MPEG-4 AAC modes plus aptX.

Communications can be via SIP (server-based or serverless) or RTP.

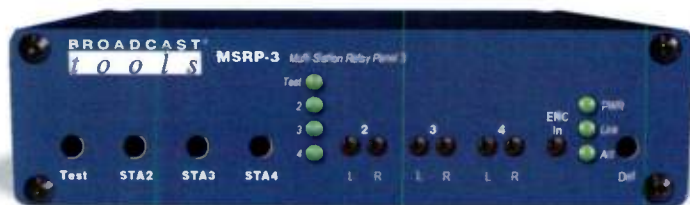
"In addition, station staff can remotely control the unit using a web interface, which allows for complete configuration and operation," AEQ states.

"A set of diagnostics tools is included, such as Syslog, SNMP, CPU load and memory usage, etc. It's possible to integrate Solaris with ControlPhoenix, AEQ's suite for the Phoenix family of audio codecs control and operation."

Calls can be made manually, using the internally stored callbook or from the list of last calls per channel.

Info: www.aeq.eu/products

EAS Insertion Made Easy



MSRP-3

Three Station Analog EAS Relay

The MSRP-3 is a three station analog stereo EAS relay/switcher following in the footsteps of the original Multi-Station Relay Panel (MSRP) designed by Broadcast Tools for the Sage ENDEC in 1996. The MSRP-3 provides additional alert audio distribution and transparent audio interrupt switching for the Sage ENDEC and other EAS encoders. Together with the single balanced stereo switched audio interrupt relay built into the ENDEC, an ENDEC and MSRP-3 will provide interrupt switching for four stereo audio paths. Each alert insertion can occur simultaneously on one or more station outputs, but alerts can not be overlapped.

Standard pinout RJ45 station audio input and output jacks make installation with Cat5 or Cat6 patch cables plug and play. The encoder audio input is a balanced monaural 3.81mm pitch pluggable terminal block, with loop-thru. Control via RS-232 serial port (or optional TCP/UDP Ethernet port), or contact closure inputs. Includes SPST test and station relay outputs.

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Intraplex brings peace of mind to the Panhandle

JVC Broadcasting deploys GatesAir for STL in storm-heavy Florida

JVC Broadcasting owner John Caracciolo joined the rare ranks of "broadcast engineers turned owners" upon launching his Long Island-based multimedia company in 2009. The group has since expanded to 16 radio stations, and Caracciolo has retained his engineering sensibilities along the way.

"I have always believed that engineering is the backbone of the radio station," he said. "You can have the best salespeople and promotion department, but that doesn't matter if you're not on the air. That means investing in your foundation with the right technology."

Along with five Long Island FM stations, JVC Broadcasting owns and operates 11 stations in Florida. That includes a recently purchased cluster of four stations in the Fort Walton Beach area on the panhandle.

"The existing technology purchase was well-maintained but outdated," said Caracciolo. "We replaced the 10-bay master antenna and added GatesAir transmitters for all four stations."

Caracciolo also turned to GatesAir to replace the STL system.

"This is a very weather-critical region with heavy storms and hurricane threats. We wanted something that was robust and had redundancy, which our previous system lacked."

Specifically, Caracciolo wanted to run an IP transport link over his fiber connection in parallel with a fixed 950 MHz




More Info
[www.gatesair.com/
 products/transport](http://www.gatesair.com/products/transport)

link. GatesAir offered both through its Intraplex networking line, with added benefits thanks to recent technology innovations.

"We installed the new Intraplex IPL-100n codecs in the studio for the fiber, with built-in IP Connect software to marry program associated data with the audio," he said.

"We send four composite FM program signals and one HD Radio feed from the studio in full redundancy with an Intraplex HDLink 950 STL system. GatesAir's Dynamic Stream Splicing is activated across both links, and they borrow packets from each other as the signals move in parallel. If one slips, the listener never knows."

Caracciolo is particularly pleased about the receive side, where GatesAir's Intraplex IPL-100e transmitter modules accept the signals from inside his new Flexiva FAX transmitters.

"Those modules slim down the infrastructure at the transmitter site while also reducing the costs of separate codecs," he said. "That includes the monthly costs of four static IP addresses. Meanwhile, the 100n and 100e both build in high-quality audio processing technology and carry our diversity delay application to synchronize FM and HD signals. Between performance, cost and redundancy, we have total peace of mind." 

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Radio Gaspésie deploys Tieline MPX Codecs

Ferguson appreciates the ability to distribute signals to three destinations from one unit

Dave Ferguson is morning show host, musical director and station tech at CJRG Radio Gaspésie in Gaspé in Quebec, Canada. He started working there as a volunteer 17 years ago and climbed the ladder to perform his current roles.

"The best thing about IP for broadcasting is stability, quality and stability again," he said. The station has integrated Tieline Merlin and Bridge-IT codecs as well as Report-IT into its network, along with Wheatstone AoIP gear. "This provides the various technological benefits of IP technologies to all areas of our studios and remote broadcasting applications."

Radio Gaspésie has eight transmission sites due to the topographic nature of the region. Mountainous terrain makes direct transmissions difficult from site to site, so most are set up for point-to-point RF transmission.

Traditionally, coaxial cable was the primary path to the three most distant transmission sites. However, this year the station was informed that the service was to be terminated by the supplier, so it needed to set up alternative transmission paths to these transmission sites quickly.

"We wanted new equipment that would be easy to use and set up, flexible and stable. It also needed to seamlessly handle a signal from our Orban processing equipment along with RDS signals."

The station was familiar with Tieline and found that its MPX codecs and ticked all the boxes. "Equipment cost was a key consideration and the MPX II lets you quickly and efficiently set up multi-unicast connections to several transmission sites," Ferguson said. "The ability to distribute signals to three destinations from a single unit meant that we only needed four Tieline MPX units instead of six, which saved us a significant amount in hardware costs."

The signal chain

Radio Gaspésie has high-speed fiber internet connections to each transmitter site, so they distribute uncompressed MPX signals. At the studio an Orban Optimod processes the signal from the Wheatstone infrastructure and outputs composite MPX, which is sent to two destinations: the MPX II codec distributing signals to transmission sites, and the main antenna transmitter.

"We can also insert RDS signals to all transmission sites now, offering song titles and various information. This wasn't possible prior to installation of the MPX codec at the studio."



Above
Dave Ferguson

A dedicated high-speed internet connection was ordered for each MPX unit to simplify setup and ensure stability of internet connections. Each of these connections is attached to a router, which helps control the MPX units through port forwarding. The MPX units are then plugged into the transmission equipment.

"We use an analog output on the Tieline MPX II, but plan to switch to a digital output on the unit when we upgrade our transmitters at these sites in upcoming years," he said. "The flexibility of the Tieline equipment has helped us delay the purchase of digital transmitters."

They have configured the MPX II to send a single uncompressed MPX signal over three multi-unicast connections to the transmitters.

"The flexibility, stability and ease of setup have ensured that the MPX codec deployment has been a great success. We also had help from Electromarine, who handles part of our transmission infrastructure. Yvan Dupuis was a great help in setting up and testing the equipment before installation."

Ferguson said the MPX codecs have delivered 100% uptime in their first four months. He described the audio as extremely clean, with no buffering issues or audio artifacts. He uses the Toolbox HTML5 Web-GUI as a quick and efficient way to make adjustments if necessary. "The use of port forwarding and VPNs allows us to connect directly to the appropriate codec GUI and make any changes from the comfort of our office." 🎧



More Info
<https://tieline.com/>

Tech Update

Barix Has New AoIP Codec

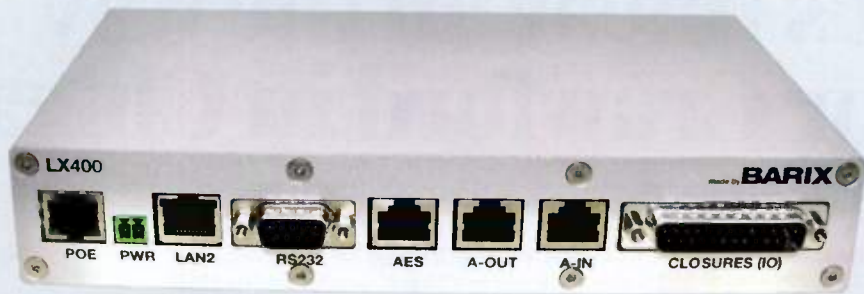
Introduced in the spring, Barix's LX400 codec offers "a secure, low-latency IP audio encoding solution for point-to-point and cloud networking applications," such as STLs and studio-to-studio uses as well as distribution of syndicated programming.

It is successor to the Barix Exstreamer 500 and retains many of its features including multiple contact closures, relays and a USB port for direct-from-device playout.

The LX400 adds new software codec options including Opus and AACplus for compressed transport, and PCM to support uncompressed transmission.

Barix said the inclusion of Opus is notable for its high-efficiency bitrate performance. "Opus essentially delivers lossless quality audio to listeners while using far less bandwidth, reducing audio contribution and distribution costs for broadcasters in the process."

Also new is end-to-end delay control for RTP streaming, adherence to the latest security standards (HTTPS) and stream redundancy modes for uninterrupted broadcasting. The codec also enhances



buffering performance for Icecast streams, ensuring constant and consistent playback.

The box is configurable as an encoder or decoder and is compatible with the Reflector EVO service offered through Barix's partner StreamGuys, for full-duplex audio contribution and distribution in the cloud. For traditional point-to-point applications, the LX400 is configured with Barix STL firmware.

Standard features include eight dry contact inputs, eight output relays and a digital AES3 audio output for StudioHub wiring infrastructure. Local music playout is via the USB port, providing a backup for stations in case of network outages. Power redundancy is provided through the availability of PoE and 24VDC service.

Info: www.barix.com

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It's linear all the way for Crawford in Chicago

WheatNet Blades and Cambium link transfer uncompressed digital audio



More Info
<https://wheatstone.com/blades>

It's linear audio all the way for Crawford Broadcasting in Chicago, which extended its studio WheatNet IP to its transmitter site in Lansing, Ill., using a Cambium 18 GHz link.

Crawford is transferring uncompressed 44.1 kHz digital audio from a WheatNet IP I/O Blade at the studio and across the Cambium link into a Blade at the transmitter site.


"We noticed an immediate improvement in sound just by putting that 44.1 linear audio right there at the processor at the transmitter site," said Rick Sewell, engineering manager for Crawford Chicago.

"The transmitter Blade just shows up in Navigator like it's in the next room, but in reality, it's four miles away."

Cambium is a licensed-frequency Ethernet link that transfers almost 1 Gbps within line of sight.

Linear audio from a studio Blade feeds directly into the Cambium IP radio through RJ-45 connectors. Little more than a RF unit with antenna is needed on each end, with a single WheatNet-IP digital Blade able to run eight stereo channels across and still have enough bandwidth left over for video surveillance, VoIP, remote control and other periphery functions.

"What's coming out of the studio is exactly what's going into the processor at the transmitter site four miles away," said Sewell, who is also using the onboard processor built into the Blade to do minor pre-STL EQing and normalizing before the signal leaves the studio for the on-air processor at the transmitter site.

The 18 GHz link is now used as the main STL for Crawford station WSRB(FM), which broadcasts from a tower site in Lansing. 

“What’s coming out of the studio is exactly what’s going into the processor at the transmitter site four miles away.”



Tech Update

APTmpX Available as Software for Windows

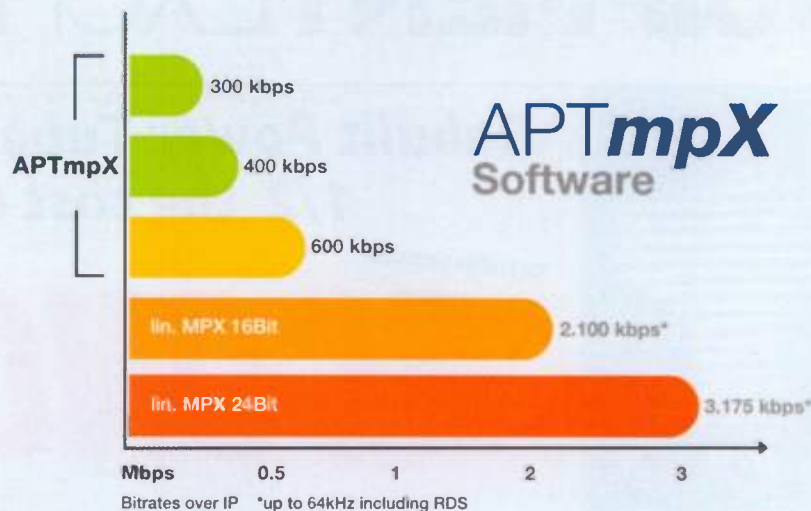
WorldCast Systems has launched APTmpX Software as a cost-effective enhancement to its APT family of codecs.

"Built on the award-winning APTmpX algorithm for MPX/composite transmission, the APTmpX Software is an easy-to-deploy version designed to operate seamlessly with leading third-party software sound processors," it said.

The software is designed for installation on Windows platforms and is intended for broadcasters looking for an MPX solution simple to implement.

"APTmpX Software ingests MPX over AES67 and provides seamless integration into existing studio infrastructures. It delivers superior signal quality with highest transparency at bitrates of 300/400/600 kbps," the company said.

It includes WorldCast's SureStream technology to ensure reliable MPX transmission, packet redundancy and low latency.



APTmpX Software is compatible with APT hardware codecs, APT's virtual codec and Ecreso FM AiO Series transmitters.

WorldCast Systems is offering APTmpX Software free with the purchase of an Ecreso FM AiO Series transmitter equipped with built-in APT IP Decoder.

Info: www.worldcastsystems.com/en/c215p268

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Doug Vernier

President, V-Soft Communications

Would my station be able to go to Class A10?

Many Class A stations may benefit if the FCC approves the petition

The FCC is taking comments until July 22 on whether it should establish an FM station class called A10.

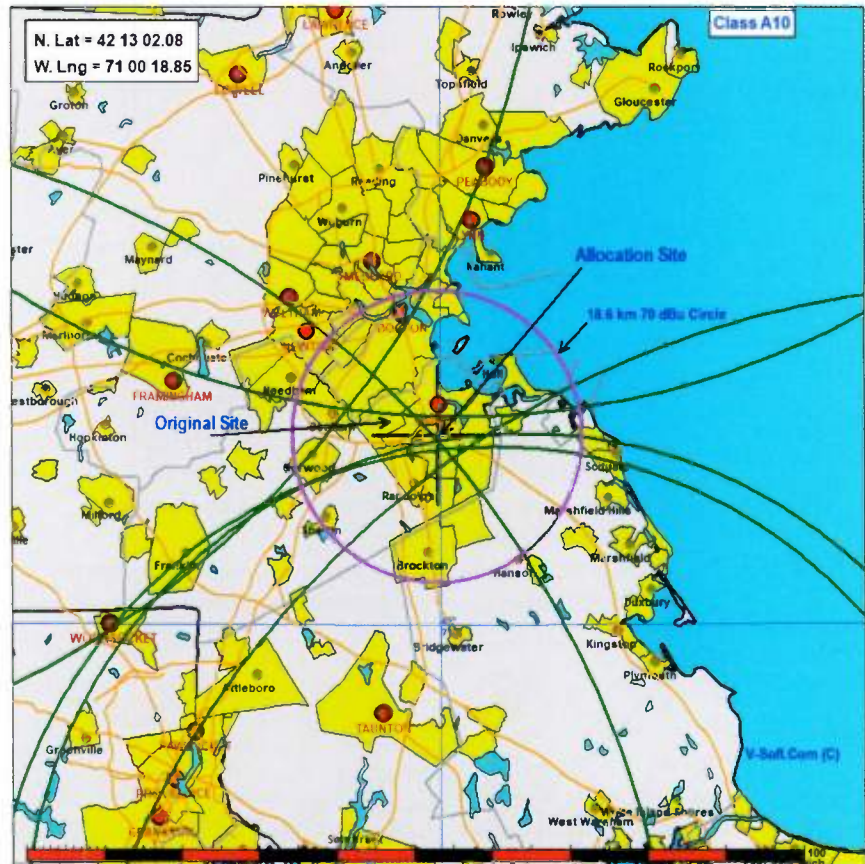
Mississippi broadcaster Carl Haynes believes this would allow hundreds of FM Class A stations to increase power, and that it would be easier than under the previously proposed Class C4. By reducing the required minimum distance separations, the proposal opens the ability for more stations to qualify.

Under the proposal, Class A stations interested in the increase would have to meet the new co-channel and adjacent-channel class A10 distance separations. The transmission tower location would have to be fully allocated by meeting the distance separation rules (see Section 73.207) and by serving the entire principal city with the minimum 70 dBu signal strength.

To facilitate this analysis, V-Soft Communications has added the proposed A10 digital separation tables as shown in the table on page 38 to its FMCommander allocation program. The addition of this computerized table enables a user to minimize the effort to determine if a station could become a Class A10. (Maps shown in this article were made using the V-Soft program.)

Several years ago, if an FM station wanted to change its class, the licensee would have to petition the FCC to amend the city-by-city allocation assignments in the rules to include the new class. This process was always backlogged thanks in part to delaying counterproposals from other stations. The FCC has since dropped the petition requirement, streamlining it with what they call "the one-step," an easier process that nevertheless involves more than one step.

The map above shows an example of a hypothetical "area-to-locate" for proposing a 10 kW, Class A10 assignment. The green circles are the separation distance



circles for the proposed A10 class as drawn from the minimum distance table shown in the table.

The location where the station could place its tower is very small, confined to an area not reached by any of the green minimum separation circles. The pink circle is the 70 dBu allocation area that must include the principal city's boundary within it. The actual allocation site of this example is about 9 kilometers from the currently licensed site for this station.

Real examples are relatively easy to find from the FCC database of Class A stations, and this fact helps to confirm the argument that many FM station owners may benefit from the petition to change the rules to create the new 10 kW class of FM stations.

Assuming an antenna height of 100 meters, the proposed Class A10 would have a maximum power greater than the Class A 6 kW and equal to or less than 10 kW.

At the bottom of page 38 is a comparative coverage map of a maximum power Class A10 and the maximum Class A.

Above
Identifying the
"area-to-locate" for
an A10 proposal

Relation	Co-Channel	200 kHz	400/500 kHz	10.6/10.8 MHz
A to A10	123	78	35	10
A10 to A10	127	81	35	11
A10 to B1	145	93	45	13
A10 to B	170	110	65	12
A10 to C3	145	92	42	13
A10 to C2	170	110	55	16
A10 to C1	204	137	75	23
A10 to C0	219	156	87	26
A10 to C	230	168	95	30

Above
Separations table based on the proposed Class A10 in the petition now at the FCC.

Below
Coverage map comparing the A10 class with the Class A showing the 70 dBu city-grade and the 60 dBu service contours.

Steps

If a station wanted to upgrade to the proposed Class A10, here's what it would have to do:

1. Have a suitable spot on the FM dial — The station would have to identify that its frequency allows it to meet all the new A10 distance separations for co-channel and adjacent-channel interference. (While it is possible for a station to change its frequency, this is not allowed when proposing the "one-step" procedure.)
2. Existing tower location — If the station were able satisfy all A10 separation requirements from its current tower

location, the process would be straightforward and not require identifying a separate tower location; however, based on the crowded FM spectrum that would be highly unlikely.


3. New tower location — If the existing tower site failed to meet the A10 separations, the station might be able to qualify for a "one-step" site where the all the distance separations were met, and the principal city were properly served by the city-grade contour. Unless the station really wanted to move its transmitter location to this allocation site, it might make an application to the FCC to keep its currently licensed tower site under 73.215 short-space rules. This strategy would save the costs of establishing a new tower site. If a fully allocated A10 transmission site could not be found that meets all the requirements, the station would have to stay as Class A.

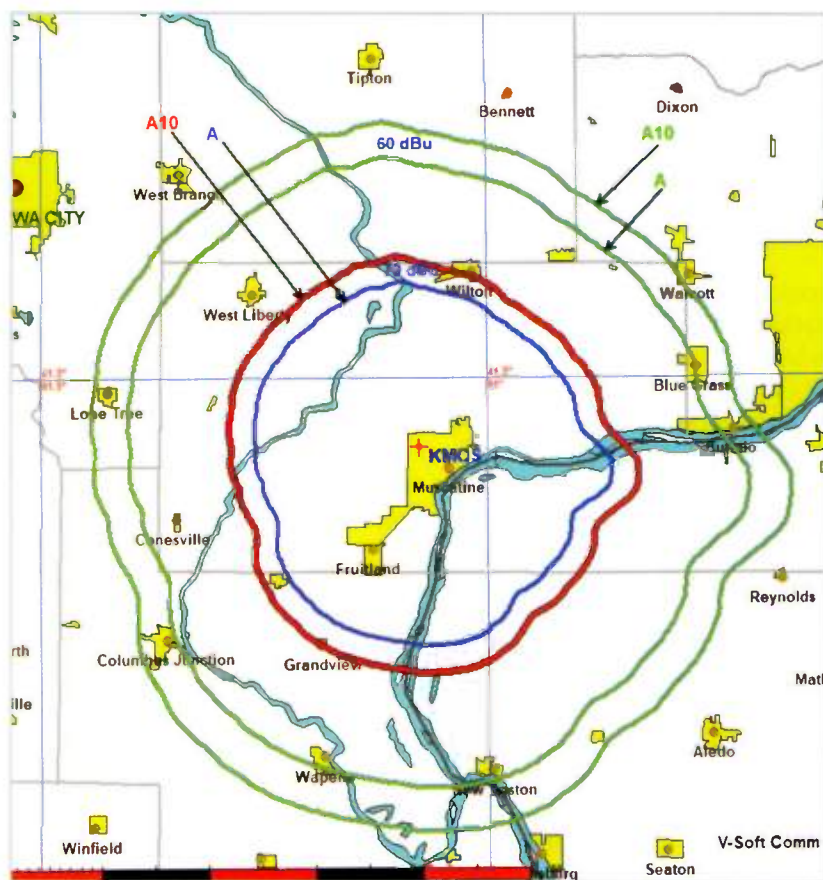
Key points

Assuming the FCC were to adopt the new class, here are the key points for an applicant developing an A10 FCC application while using the one-step process:

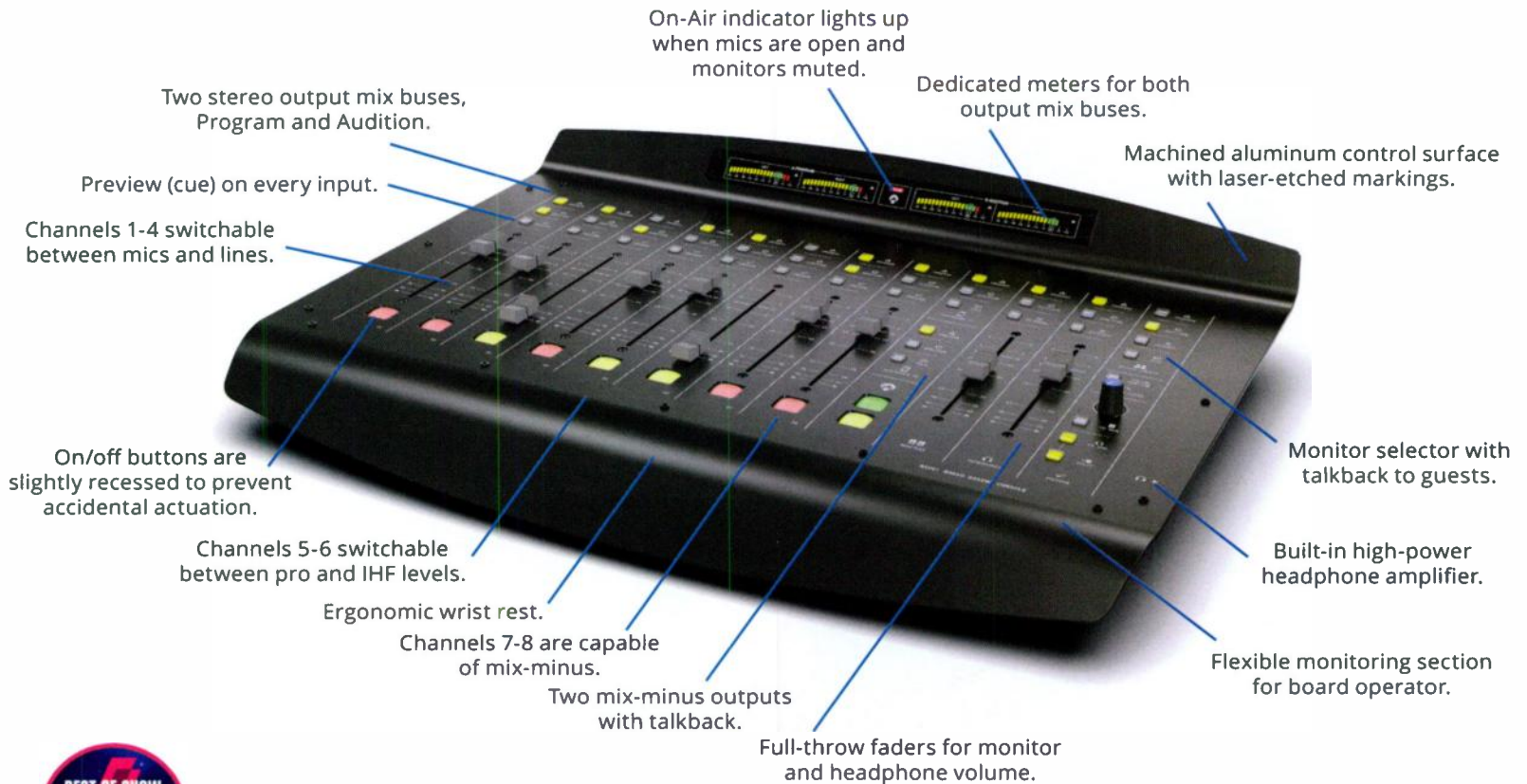
- A10 separation requirements: The station would have to identify a fully allocated Class A10 site. The tower site could be at a different location than the licensed site, however the location would have to meet all the co-channel and adjacent-channel distance separations.
- Principal city service: The station would have to maintain the minimum signal strength required under the rules to serve the principal city at the identified A10 site.
- Directional antennas and power reduction: If the station proves it has identified a tower site that meets the A10 minimum distance separations and properly serves the principal city but is somewhere other than the currently licensed site, and if it desires to keep its existing tower location, it could use a directional antenna or reduce power using the short-space rules to prevent interference. The Hayne's petition also proposed a second set of tables that define the maximum short-space distances allowed for the new class in its frequency and distance relationships with other classes of stations.
- Cost-effective strategy: By allowing the station to initially allocate a compliant location on paper and later move back to the original site, the one-step process minimizes the need for costly new tower construction.

This approach offers flexibility and cost savings for stations seeking to increase power while ensuring compliance with the latest FCC regulations.

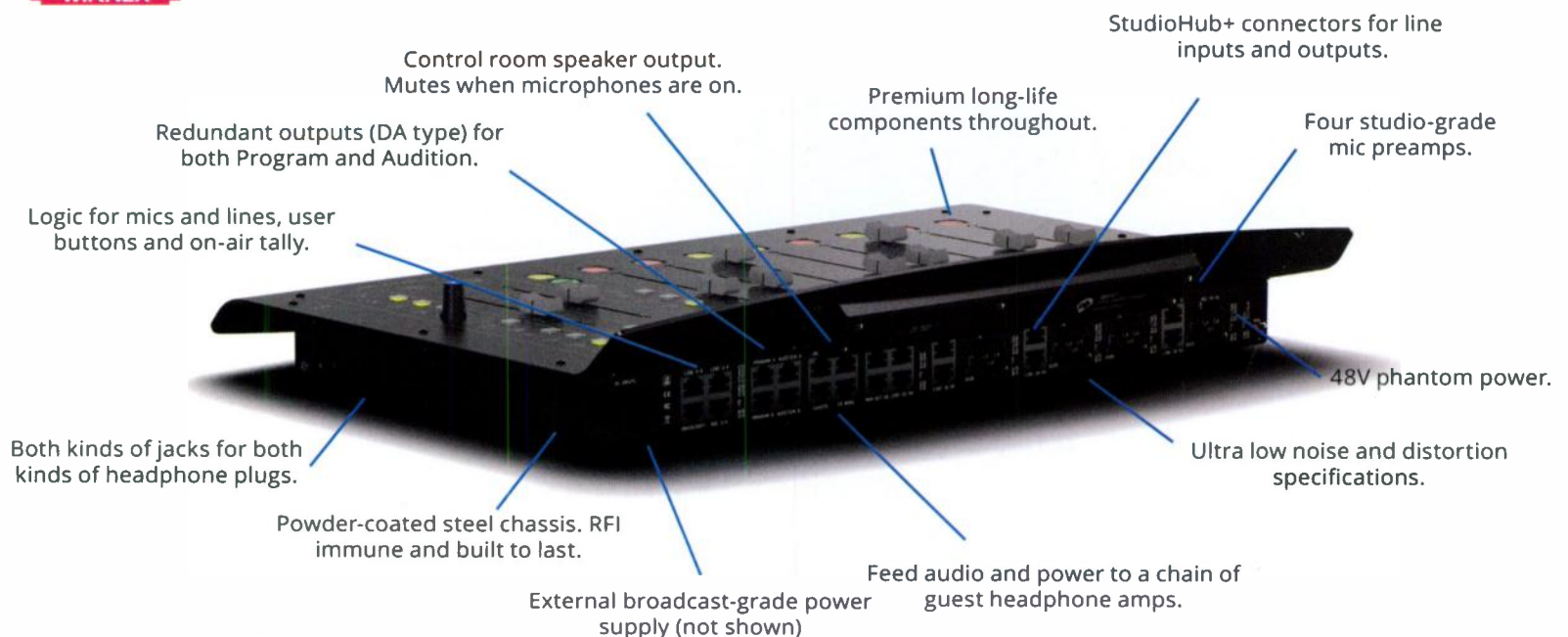
Comments about the A10 proposal can be filed via the FCC online filing system. Cite MB Docket No. 24-183. Comments were due in July but replies can be filed until Aug. 21. 



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