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FUTURE US, INC.
Future US LLC, 130 West 42nd Street, 7th Floor, New York, NY 10036

Radio World (ISSN: 0274-8541) is published bi-weekly 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.

New venture for Harland

Technology marketer will serve suppliers both in and out of broadcasting

Paul McLane
Editor in Chief

Longtime marketing executive Bill Harland has launched a new venture.

Bill is familiar in our world from his years at ERI, Andrew and Broadcast Electronics. His new company is Harland Worx, a sales and marketing consulting firm for broadcast hardware and software suppliers as well as to industrial equipment manufacturers outside of the broadcast space.

"My target customers are manufacturers and integrators that provide equipment to traditional broadcasters, professional sound integrators, and audio and video production companies," he told me. "I have also started working with companies that offer RF components for particle physics applications and equipment for manufacturing companies."

I asked Bill his thoughts about the radio business today.

"I firmly believe that terrestrial radio and television broadcasting will remain a substantial part of the media landscape now and far into the future," he replied.

"During iHeartMedia's year-end earnings call, Bob Pittman recently commented that he 'continues to believe broadcast radio is a growth engine for the company and not a declining business.' I also believe that is true.

"Over-the-air television and radio will always be the go-to source for local news, continue to provide entertainment programming that is widely viewed, and continue to be the source of critical emergency information during severe weather and other catastrophic events."

The industry is changing, Bill acknowledged.

"But so is every industry, and the range of services and marketing solutions broadcasters offer to local businesses will include digital advertising and content distribution on the Internet and other digital channels. They will remain an essential part of the value broadcasters deliver every day."

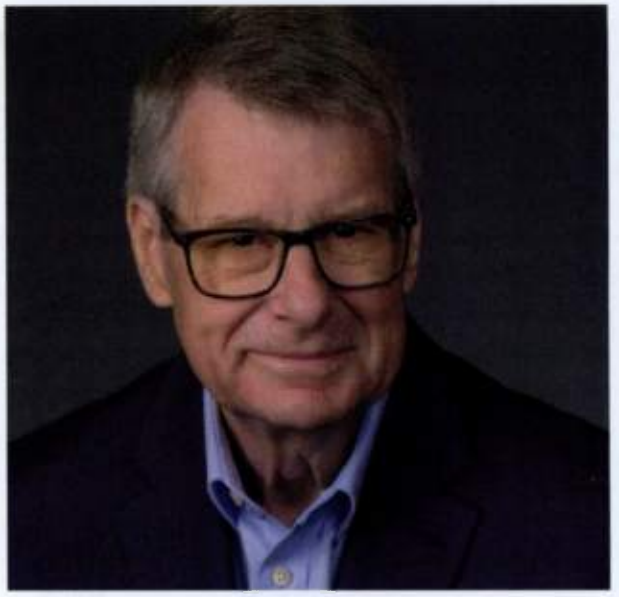
Bill was with ERI from 2003 to 2024 and was involved in projects including numerous TV and FM antennas, transmission lines and combiner systems. Many of those included towers, some of which were candelabras and T-Bar structures as tall as 1,600 feet.

He emphasized that all of these were the work of a diverse team of highly skilled and experienced people, but I asked him which ones have stuck with him personally.

"The projects I recall most often are the mini-master FM antenna and combiner system for WCBS-FM, WPLJ(FM), and WQHT(FM) and the 19-station FM auxiliary antenna and channel combiner system, both of which were installed by ERI on the Empire State Building," he said. He also mentioned the replacement of 16 of Kentucky Educational Television's full-service television station antennas and many of the transmission line systems during the TV repack.

THIS ISSUE

On the cover
Paul Shulins with the 24-inch Clark Refractor telescope at the Lowell Observatory in Flagstaff, Ariz., used by Percival Lowell to study Mars and by the Apollo 11 astronauts to study the topography of the lunar surface.



Right
Bill Harland

Other notable projects included the Audacy and Hearst master FM antenna and channel combiner modifications in Baltimore; the Audacy and Cumulus master FM antenna and combiner system on the Motower in Detroit; and the WAMU master FM antenna and combiner system manufactured and installed at American University in Wahington.

He also enjoyed being involved in unusual projects such as custom rigid transmission line components for the Spallation Neutron Source facility at Oak Ridge National Laboratory, rigid transmission line and directional couplers for the X-Ray Linac Coherent Light Source expansion at the Stanford Linear Accelerator Center, and a low-band VHF bandpass filter for the Tropospheric Doppler Radar Wind Profiler at the Kennedy Space Center.

Bill Harland's website is *https://harlandworx.com*.

> **"I firmly believe that terrestrial radio and television broadcasting will remain a substantial part of the media landscape now and far into the future."**

"International Radio Report" is just that

Launched in 1987, the program is about radio of all flavors

Writer

James Careless

The author wrote here recently about a new shortwave transmitter serving RNZ Pacific.

No matter what subject you're interested in, you can probably find a program about it on the radio. But a radio program on the radio that actually talks about radio?

For 38 years, "International Radio Report" has done just that. Co-hosted and co-produced by enthusiasts Sheldon Harvey and Gilles Letourneau, the report is a weekly 30-minute program heard Sunday mornings at 10:30 Eastern (1530 UTC) on CKUT(FM) 90.3 MHz in Montreal, and livestreamed to the world on *www.ckut.ca*. The most recent three months' worth of programs are available on the station's Archives page.

Each broadcast is also posted to the International Radio Report's YouTube channel at *www.youtube.com/@irr* shortly after airing.

What's on

The report is about radio of all sorts, whether it's shortwave, mediumwave/AM, FM, utilities, ham radio or the radio business itself, locally, nationally or internationally, according to Sheldon Harvey.

"The program started in November of 1987. As the radio station connected to McGill University, CKUT in Montreal received its broadcasting license at that time, and they were looking for programming. I wrote a proposal to them to put a show on the air talking about radio. It was accepted and the program has been there ever since."

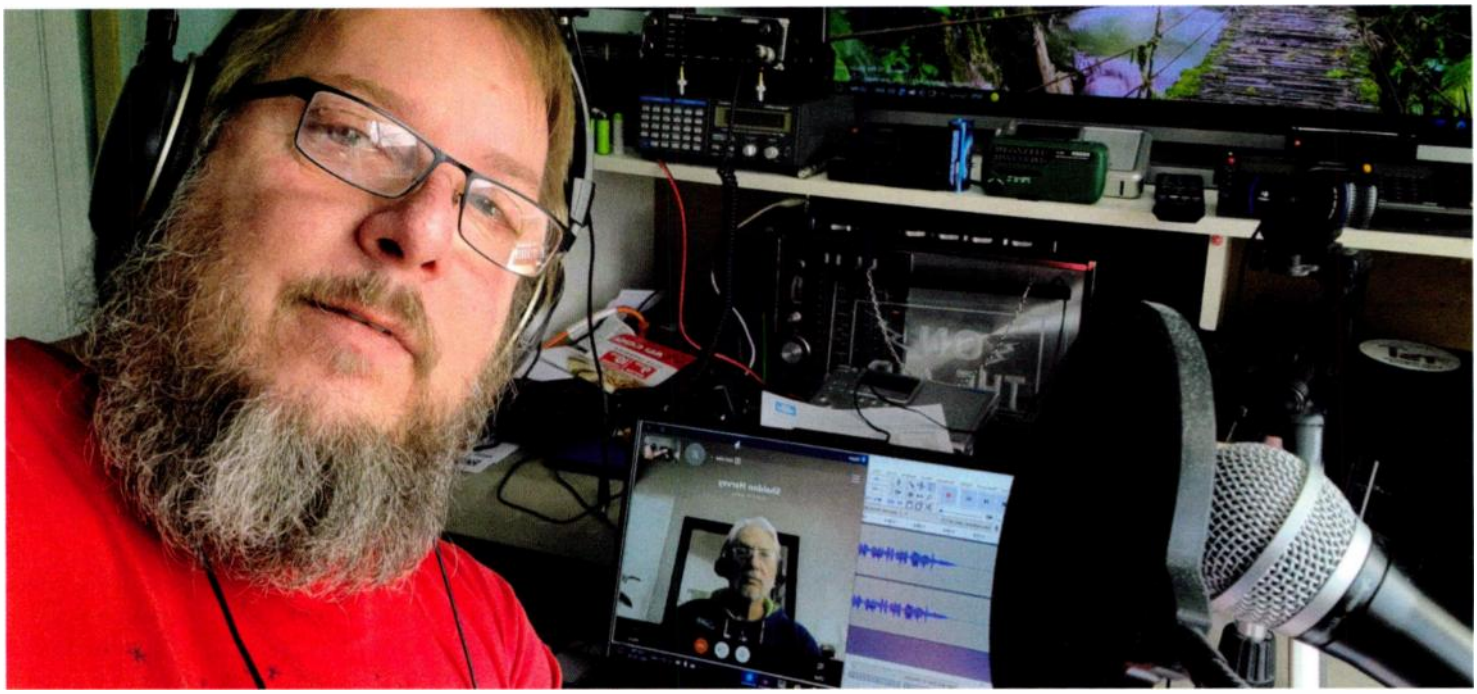
It is the willingness to talk about all kinds of radio that makes the report stand out.

Also, "We don't just focus on the radio events that people are interested in, but also news items such as how radio journalists are in danger because of government oppression," Gilles Letourneau said. "So it's really a show that covers every single aspect of radio, including the radio industry itself."

He said a recent show included a story about radio in Burkina Faso and government efforts to shut down stations that don't adhere to its views.

"We just also covered the story of the death of the famous BBC DJ Johnnie Walker. We had news of the Voice of Turkey discontinuing its shortwave broadcasting service and switching over to Turkey's TRT World television service being broadcast in its place.

Below Sheldon Harvey and Gilles Letourneau are seen recording on a Zoom call.



Above
Gilles Letourneau is shown working from his remote studio, surrounded by radio gear. He became a co-host in 2017. Show creator Sheldon Harvey is on the screen.

Right
The late Bill Westenhaver was an original co-host.

"We also cover local stories and changes to radio station formats. We look at ratings of stations in Montreal and elsewhere across Canada. And there's been a lot of talk recently of digital conversion. We have a story coming up about FM being turned off in Switzerland and DAB digital radio replacing it. It's a pretty wide spectrum."

Over the decades

The nature of the content has evolved.

"When we started the show, the focus was very heavily focused on Montreal radio," Harvey said.

"There was a lot going on in Montreal back in 1987 radio-wise, and quite a bit in Canada. But we wanted to introduce people to shortwave radio listening. Many people here probably knew nothing about it, so we used the opportunity of having a show to introduce people to it. And then as the show went along, we started to use the benefits of social media and opened up a Facebook group. We're somewhere up around a thousand members."

> **"Most of our audience are probably radio geeks who love radio in every way, and are interested in learning more about what is happening with the broadcast media around the world."**

One big change occurred due to COVID-19.

"We went from a live broadcast in the CKUT studio to a prerecorded broadcast mixed from our home studios, allowing us to do a lot more with the program that way," said Harvey.

"That also got us to open up a YouTube channel where we can archive our programs and allow listeners around the world to listen to the program anytime they like at their own convenience. That's become very popular."

Letourneau also has a YouTube channel dedicated to shortwave radio listening, called the Official SWL Channel, with 50,000 listeners.

"This has brought a lot of people from around the world to tune in and listen every week to the different stories that we have. Most of our audience are probably radio geeks

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Right
Celebrating the 25th anniversary of the program in 2012 were, from left around the circle, Alan Roberts, Howard Gontovnick, Vernon Ikeda, James Hay, Janice Laws (standing), Sheldon Harvey and David Asselin.

who love radio in every way, and are interested in learning more about what is happening with the broadcast media around the world."

Sources

The hosts rely on numerous resources.

"We keep an eye on the stories that Radio World covers, and we do incorporate a lot of those into the show," Harvey said.

"We also pick up contributions from our listeners. If they happen to hear of interesting stories in their city or in their town, or even in their country, they will pass stories along to us. We research other websites such as Inside Radio, Radio Ink, Radioinfo Africa and Radioinfo Asia, and a number of business-related websites that deal with communications and radio." The organization Reporters Without Borders supplies information about the work of broadcast reporters in various parts of the world.

"We go through the week watching for stories and incorporate them into our program, which we record on Fridays. And then Gilles does the editing and prepares it for uploading to CKUT's computer."

Said Letournea, "I always give it time until Saturday night before uploading. If there's a last-minute important story, we can get together and quickly add it to the show."

Enduring love

If Harvey and Letourneau have learned anything over those 38 years, it is that the love of radio remains strong among its diehard fans, despite the advent of streamed audio and the decline of shortwave radio due to government funding cuts.

In fact, streaming has opened all kinds of new ways to listen to radio — for instance, it makes listening to the BBC World Service in one's car in North America via the TuneIn app easy and convenient to do.

At the same time, disasters like the recent wildfires in Los Angeles prove the continuing value of the oldest radio technologies. When FM transmitter sites were in danger of being burned off the air, AM sites survived to keep the radio signals going.

"A program like ours is important for telling people [about] all the radio listening options they have available to them today," said Harvey. "And at the end of the day, you can still turn on a radio and pick up all these different types of signals."

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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.

Tips Please

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

Wayne's solution for sealing outdoor RF connectors

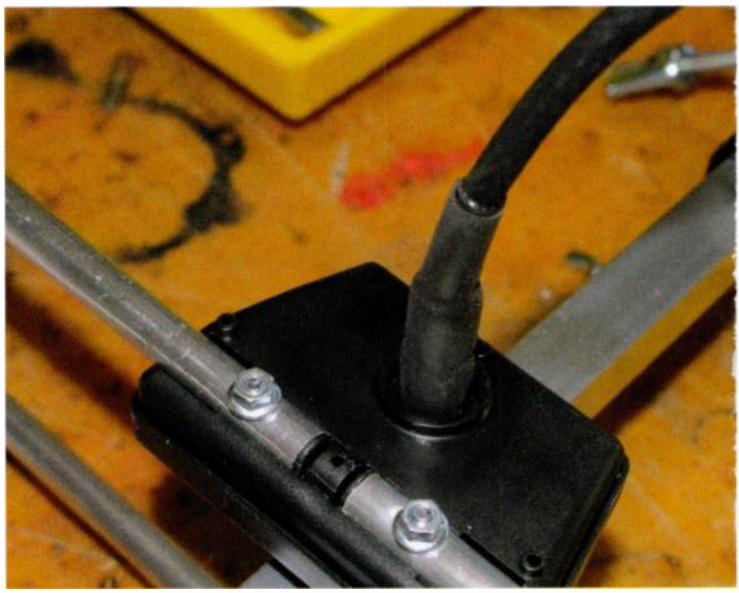
Consider the benefits of double-walled heat-shrink tubing

Common methods of weatherproofing Type N or larger coaxial connections include self-vulcanizing or mastic tapes wrapped around the connector.

Rural Florida Communications Cooperative electrical engineer Wayne Eckert notes that when working with smaller connectors such as F-connectors or cord splices, you'll often see electrical tape used to create a "seal." This isn't a long-lasting solution, though I guess it's better than nothing.

Wayne recommends double-walled heat-shrink tubing. This type of heat shrink includes an inner lining of hot melt glue with excellent bonding properties. The shrinkage ratio is better than two times (closer to three times) the initial diameter, and the hot melt glue completely seals the tubing at both ends.

The seal is moisture-proof and splash-proof. In the accompanying photos you can see that a bit of the inner



Above
The shrink comes in a variety of sizes.

Right
Sealing the F-connector terminal on an antenna.

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liner glue has migrated out of the ends as the tubing shrunk, creating a hermetic seal around the F connector.

Should it become necessary to access the connector, you can lash the tubing with a box cutter and pull it free of the connector or splice. That's not an option when you're working with mastic.

Wayne obtains his kits from *www.mpja.com*, where the stock number is 38443 HS. An assortment of 140 pieces of double-walled heat shrink in various sizes is only $11.

Above
Observe the end seal after the tubing is shrunk.

Below
Keep this USB wiring diagram handy.

Integration headache

Our colleague Dan Slentz needed a sound card for an automation system at The Rock Dog, a recently launched LPFM station. Dan chose a Focusrite Scarlett because of its price.

It offers a lot of features, including digital and balanced analog inputs/output and multi-channel capability; but Dan found that it seems to have serious incompatibility issues with the station's BSI Simian automation.

He said static and distortion would introduce themselves and increase to the point that the audio was unairable. A reboot would resolve the problem, but this meant constant monitoring and undesirable program disruptions.

Dan worked with Focusrite and BSI trying to resolve his issue. He got into the inner workings of Windows 10 Pro and did everything he could think of — giving full priority to Simian within Windows, replacing USB cables, replacing Scarlett, changing out BSI drivers. But crackling and distortion continued to occur several times a day.

Engineers don't like to throw up their hands and say "I can't make it work this way." Dan tried to resolve the problem over seven months and said he got great support from both BSI and Focusrite. Ultimately, though, everyone involved ran out of ideas.

(Why not use a broadcast-specific audio card? In addition to price, Dan has found that some cards are too big for today's PCs. Also, one card Dan tried would occasionally "glitch" and go into a digital stutter until someone came in to reboot. The "machine gun digital stutter" forced listeners to tune away.)

In the end, suspecting a code incompatibility issue, Dan developed a work-around. He bought a $50 USB-to-AES cable. From there, he went into a balanced passive AES pro "splitter," with one output feeding the AES input of the radio console and the other output feeding an AES-to-analog balancing amplifier, which feeds the analog bypass switch for the station.

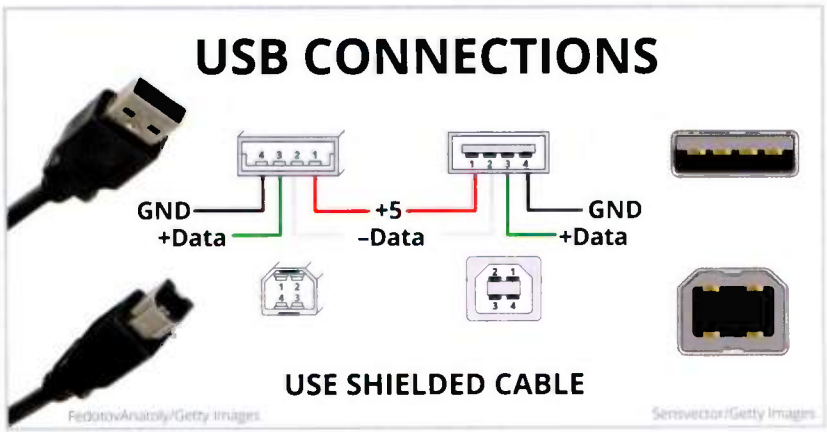
The cost was about the same as the Scarlett ($350), but he needed three pieces and multiple cables as opposed to a single box.

The lesson: Sometimes your best choice is to admit "This just won't work" and try something else.

USB cheat sheet

Engineering consultant Frank Hertel sometimes needs a cheat sheet when he's out in the field, working with no internet. Over the years, he has provided several sheets to Workbench readers.

The image shown here pulls together wiring information for USB connectors. Snap a photo for your phone for future reference!



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Shulins makes a career by staying a step ahead

From CD jukeboxes to drones and astrophotography, the NAB award recipient is always exploring

Writer

Nick Langan

The author recently profiled high school station WKHS(FM) in Maryland.

When Paul Shulins learned he was to receive the NAB Radio Engineering Achievement Award, he was completely surprised.

That's unusual. In his long career as a broadcast engineer — 45 years and no signs of slowing down — few moments have caught him off guard. His story always seems involve being one step ahead.

"I can't think of anyone more deserving of this award," said Milford Smith, who received the award in 2005.

Marty Sacks, another longtime friend and colleague, said, "A well-known motivational quote from author Christopher McDougall states, 'Every morning in Africa, a lion wakes up ... It knows it must run faster than the slowest gazelle, or it will starve.' That's Paul to a T."

A Granite State seed

Shulins grew up in Norwalk, Conn. As a child, he was interested in science and math. His love of astronomy continues today through his astrophotography hobby.

He spent his college years at Plymouth State University in New Hampshire. From 1975–79, he was a member of campus station 91.7 WPCR(FM), eventually becoming station manager. "That's where I began to learn about consoles and transmitters."

At WPCR, Shulins put that scientific mind to work. Plymouth State had a windmill that produced electricity. Already involved with the school's science department, Shulins saw an opportunity: The station's 10-watt transmitter could run off the windmill.

"In those days, people didn't talk about going green as much as they do today," Shulins recalled. WPCR ran on-air promos announcing that the current hour was being powered 100% by the wind.

A testament to his broad interests, Shulins earned bachelor's degrees in physics, chemistry and natural science. But the radio seed had been planted.

Right
Paul Shulins

Below
In an advertisement run by Greater Media in 2005, Shulins appears to the lower right of his mentor, Director of Engineering Milford Smith.

New ground

Shulins started his radio career in nearby Laconia as an assistant chief engineer for a Sconnix Broadcasting station, then moved on to chief engineer jobs in Springfield, Mass., and Rochester, N.Y.

It was in Rochester that he first experimented with coding on a RadioShack Color Computer in BASIC. He figured out how to program a sensor to determine whether a door was open or closed. "I started thinking about what you might be able to do with this at a transmitter site."

In 1985, Shulins landed in Boston, taking on chief engineer for Sconnix's 92.9 WBOS(FM).

The country music station stored its music on carts. CDs were just hitting the market, but they scratched easily and smudged with fingerprints. "Why don't we play them out of a jukebox?" Shulins wondered.

After acquiring a 100-disc CD jukebox, he coded a system allowing WBOS DJs to scan a barcode and switch between cart decks and the jukebox. By all accounts, it was one of the first implementations of its kind.

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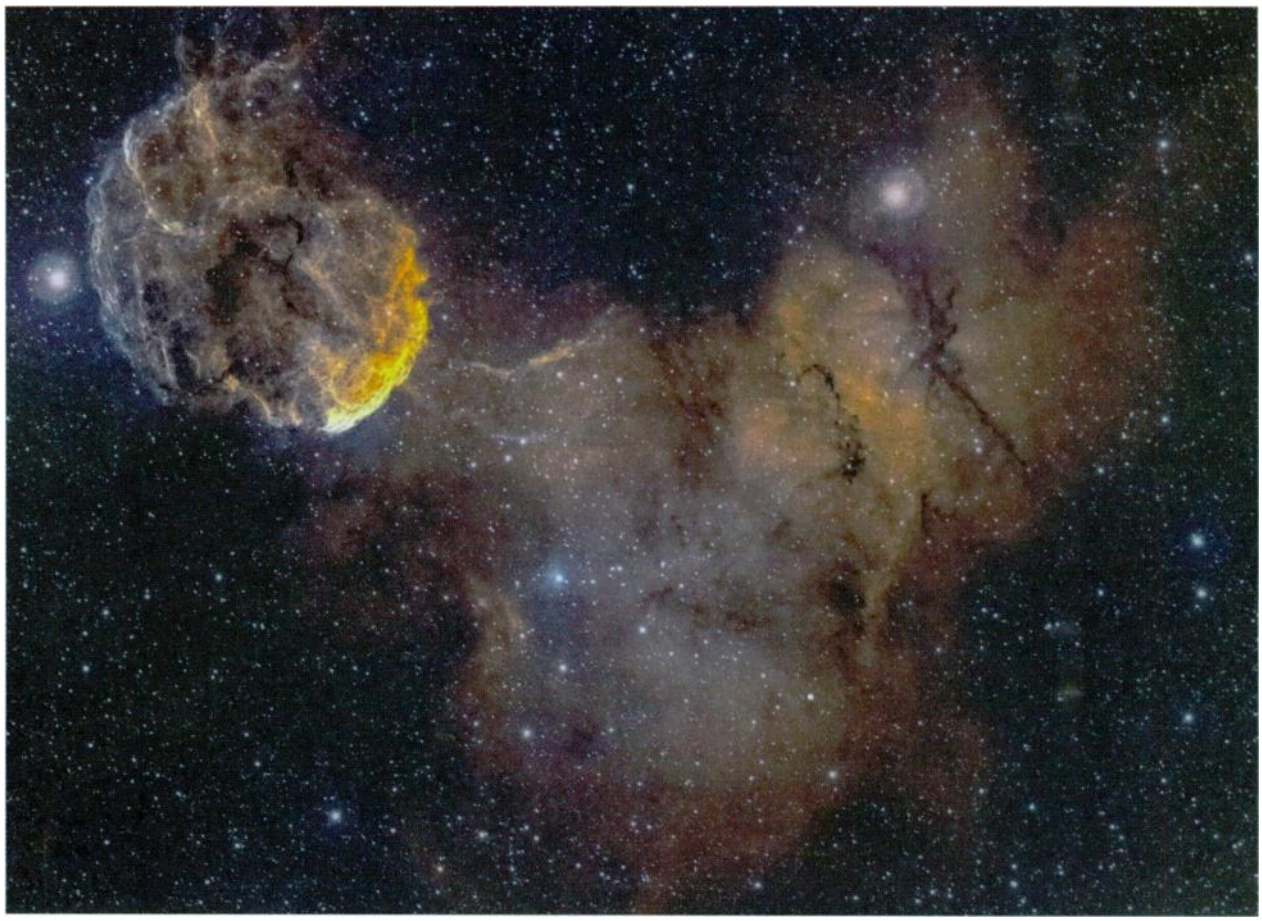
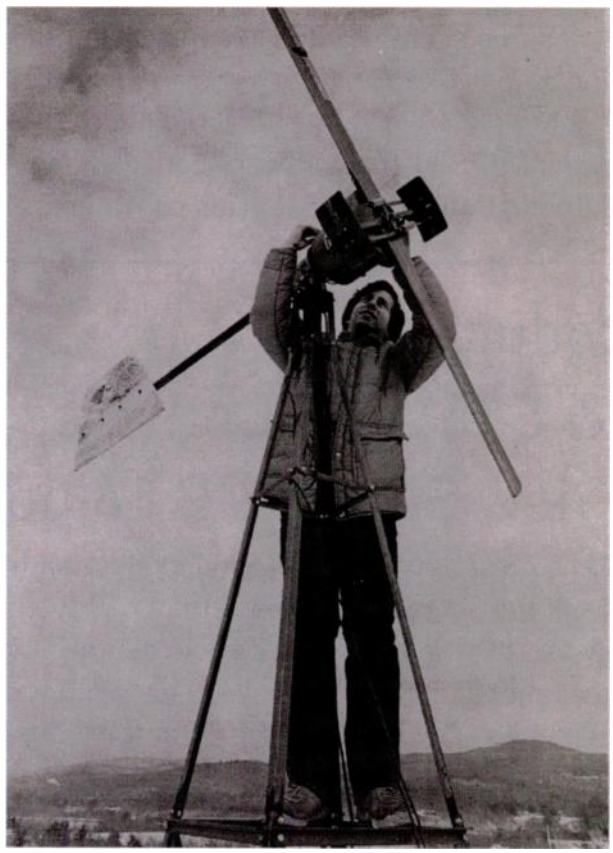
Right
According to Shulins, the Jellyfish Nebula is a faint object in the constellation of Gemini. Its light traveled for 5,000 years before hitting the sensitive chip on his astronomy camera. The photo is the result of data he captured over three nights late in 2024.



Below
As a student at Plymouth State University in New Hampshire, Shulins used a windmill to power the transmitter for campus station WCUR(FM). The photo is circa 1978.



In 1988, Shulins joined crosstown 106.7 WMJX(FM), owned by Greater Media. He convinced Director of Engineering Milford Smith, universally known as Smitty, to implement a similar system there. But would a homebrew solution hold up?

"They made me nervous at first," Smitty said of Shulins' custom-builds. He was hesitant to rely on systems tied to one person's institutional knowledge. "So Paul and I made a pact. With my approval, he could proceed with his builds as long as they were fully documented."

The two would work in concert for nearly 30 years. Shulins considers Smitty his biggest mentor. "I owe a lot to him."

Consolidated solutions

Greater Media acquired 96.9 WBCS(FM) in 1993. Then came the 1996 Telecommunications Act, triggering a storm of acquisitions that reshaped the industry. The company added 105.7 WKLB(FM) and soon acquired WBOS and 99.5 WOAZ(FM).

After the wheeling and dealing, Greater Media moved all of its stations in one building on Boston's Morrissey Boulevard. It was a massive undertaking.

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Above
Angel Flights provide free air transportation for people in need of medical care. Shulins is shown with a patient making a run from New Bedford, Mass., to Burlington, Vt.

Right
The Prudential Tower in Boston in 2004 after Greater Media added a second master antenna, below the top antenna, to accommodate WBOS, WROR and WTKK.

Shulins used the opportunity to refine his CD jukebox system, now serving five stations. The setup was visible through a glass window; when a station played a new song, one could watch the jukebox mechanism in action. A nearby monitor displayed the current song on each station. DJs could cue up songs remotely, loading up to 50 tracks at a time.

"He was in a league of his own," Sacks said of the implementation.

Eventually, Shulins integrated the system with Selector scheduling. And soon, hard drives became affordable enough to replace CDs. "But it was a lot of fun," Shulins said.

Custom monitoring and remote control

With five stations operating from different towers — four on Boston's Prudential Tower and one in Andover — Shulins also needed a real-time monitoring solution.

"Solutions for monitoring product health were all over the map back then," Sacks said. "Each device had its own parameters."

He built his own system, designing a graphical user interface that displayed data on nitrogen pressure levels, room temperature and other key metrics. His web-based system included color-coded warnings, with red for danger zones.

This foray into remote monitoring would influence much of his later career. Shulins eventually expanded its capabilities, which enabled alerts to be sent to pagers and cell phones. Later, if an RF failure occurred, the system would automatically power up a backup transmitter — without human intervention.

The "broomstick incident"

Every engineer has war stories. One of Shulins' tales comes from Boston's Prudential Tower.

In 1990, while a new master antenna was being installed, affected stations, including WMJX, transmitted from a temporary combined antenna on the building's northwest side. This caused signal shadowing toward Boston's suburban south shore.

A competing engineer attempted a rogue fix: using a coax cable and a broomstick to reradiate the signal southeast on a yagi antenna.

"Not only was that highly illegal, but it detuned the antenna so badly it burned up," Shulins said. Every station went off the air.

CONGRATULATIONS PAUL!

RADIO WORLD AND OUR PARTNERS SALUTE PAUL SHULINS, RECIPIENT OF THE 2025 NAB RADIO ENGINEERING ACHIEVEMENT AWARD.

Congratulations Paul! You really are a Renaissance man. Your leadership roles and many technical contributions to the broadcast industry truly justify this recognition.

BURK TECHNOLOGY

A well-deserved honor for one of the great engineering minds of our industry. Thank you for your friendship and support over the decades. Your friends at Comrex!

COMREX BROADCAST RELIABLE

Congratulations on this well-deserved NAB award. We're grateful for your pioneering spirit and endless talent. Thank you from all of us at DNAV.

DNAV

Congratulations, Paul. Your contributions and dedication to the broadcast industry have really made a difference. You're a genuine Inovonics Radio Hero. Sic itur ad astra!

INOVONICS BROADCAST

Your dedication to excellence and to learning is inspiring, Paul. Thank you for all you do for our industry.

nautel

Your expertise and dedication have made a lasting impact, Paul. Congratulations on receiving the 2025 NAB Radio Engineering Achievement Award.

RCS Sound Software

For 45 years you've been helping to push the boundaries of our radio industry's technology universe. Thank you Paul.

RADIOWORLD

"It's forever known in Boston engineering circles as the broomstick story. I'll never forget the smell of burnt Teflon," he added.

Smitty credited Shulins for his diligent maintenance of what would end up as a seven-station master antenna system atop the "Pru."

Renaissance man

Innovator is a word that would describe Shulins.

NAB Vice President of Advanced Engineering David Layer said his ability to listen to and connect with people is surpassed only by his deep technical skill. Sacks cited Shulins' ability to take technical concepts and apply them to everyday radio workflows. "Not only is he one of the nicest people you will ever meet, but he is just as brilliant."

But Smitty prefers "Renaissance man."

"His photography is exceptional," said Smith, while his computer programming skills are high-caliber. And Shulins has been a private pilot since 1989. He has performed charity work for Angel Flight, an organization that transports patients who need special care and live far from metropolitan areas.

He was active with HD Radio in the early 2000s, working with iBiquity on signal penetration tests. When Arbitron began to implement the Portable People Meter and markets such as Boston began to switch to the PPM from the diary, it was essential that PPM encoders at each station were operational.

"If anything went wrong with an encoder, a station might as well have been off the air," Shulins said, because of the impact on its ratings.

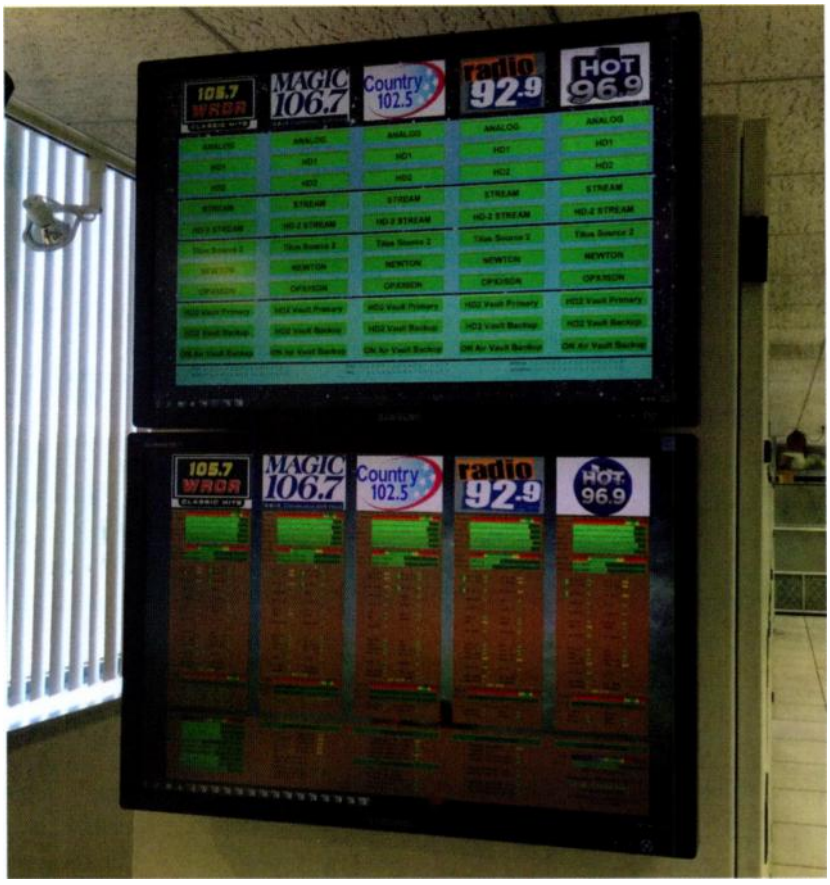
Including HD subchannels, Greater Media had around 20 PPM encoders in Boston. Shulins wrote a software program to display their status, again with logical color coding to display status. He also wrote a program that ranked music played on the Greater Media stations by their encoded effectiveness. A weekly list would be delivered to program directors in terms of what songs were good and bad for encoding success.

"It didn't dictate playlists, but it helped stations separate songs for better encoding results."

At the time, Telos Alliance was spending a good deal of effort on PPM encoder enhancements. Shulins and Sacks shared insights. "It was another example of Paul taking a great idea and executing it brilliantly," Sacks said.

After nearly 30 years at Greater Media, Shulins joined Burk Technology in 2017. Subsequently he launched his own consultancy. He also worked as a contractor for American Tower, installing transmitter monitoring and VSWR protection systems at 70 sites nationwide.

When drones gained consumer traction, Shulins saw another opportunity. He purchased an enterprise drone equipped with an infrared camera and earned a Level II certification in thermal imaging. He put that expertise to work detecting tower anomalies.



Above Shulins programmed this screen at Greater Media in Boston, showing the status of the cluster's HD channels, shortly after the technology's adoption in 2004.

"Let's see if we can find any points that are heating more than others," he said. Today, drones have become a key tool for preventive and investigative maintenance.

His work caught the attention of Jim Stenberg, NAB's 2020 Television Engineering Achievement Award winner. The two had much in common, including interests in technology and aviation. In 2023, they formed Over The Air RF Consulting, with Shulins handling radio, Stenberg covering TV.

The future

Shulins knows the broadcast engineering pool is shrinking and that there have been many high-profile retirements.

"We need to support young students who are going to school and thinking about broadcast engineering, because RF is not going away," he said. In his travels, he has met

> **"Not only is he one of the nicest people you will ever meet, but he is just as brilliant."**

Above
Shulins, center, and David Layer of NAB, right, traveled to Montevideo and Buenos Aires in 2015 to discuss radio technology with several universities in South America as distinguished lecturers from the IEEE Broadcast Technology Society. They're with Dean Raphael Sotelo.

students eager to learn more. "It is important we encourage these young people. No two of these broadcast sites are exactly the same. Every one of these sites across the country is unique. It lends itself to folks who have entrepreneurial spirit and want to solve problems."

Shulins is a past president of IEEE's Broadcast Technology Society, where his work has included developing podcasts to target engineering students. "He brought a much-needed emphasis on radio to the organization," said Milford Smith, who also is active with the group.

After the American Tower project, Shulins moved to Arizona. He owns an observatory in northern Arizona which he uses for his astrophotography purposes. "One of the reasons I came out here is that it's nice and dark," he said.

What is the reason behind Shulins' five decades of success?

"He's not afraid of change," Jim Stenberg said. "If he doesn't know how to do something, he'll find out."

"He always put his stations' performance and the welfare of his staff above his own obligations," Smitty said.

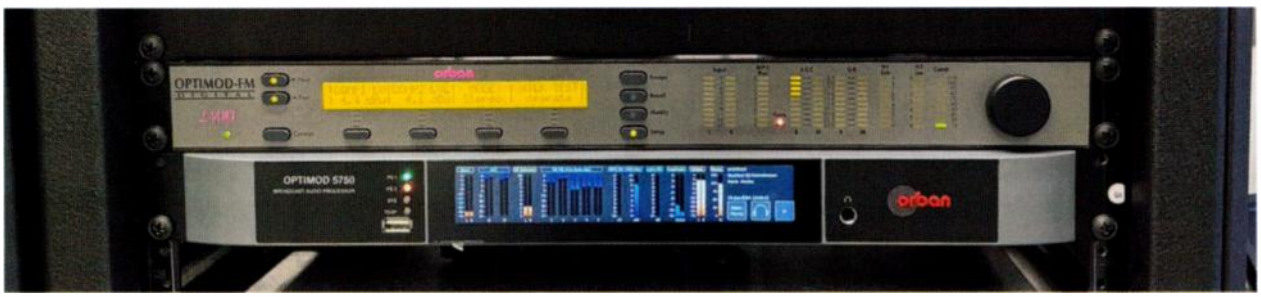
Sacks compared Shulins to Billy Joel, "always reinventing himself."

What advice would he give his younger self, fresh out of Plymouth State?

Don't be afraid to take chances. "If you believe something will benefit your station or clients, don't be afraid to experiment," he said.

It's the secret to being one step ahead.

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.



Optimod 5750 boosts coverage for WJFF

Orban processor helps Radio Catskill improve service

The author is a field services engineer and integrator for DNAV Inc.

Writer
Brad Roybal

My business partner Nick Straka and I provide contract engineering for Radio Catskill/ WJFF(FM) in Liberty, N.Y. About a year ago, we discussed the need for a new audio processor with their General Manager Tim Bruno. Their old processor was generating lots of multipath and just wasn't giving them the sound they needed.

We recommended the Optimod 5750. It relatively new at that point, but we knew what the new Optimods were capable of and were sure that the 5750's performance and sound quality could not be beat at this budget level.

From our experience with Orban processors, we knew that, compared to WJFF's old processor, we would see a marked improvement in the coverage, but we had no idea how drastic that improvement would be.

I live about 70 miles away from the transmitter. With the old processor, I would start to lose the station about 25 miles away and completely lose it about 40 miles out. I can now pick it up clear as day, with RDS data, in my driveway.

That's the case in many directions. The station has a satellite studio about 45–50 miles, on the Pennsylvania side of Liberty, and the coverage at this area also improved dramatically.

Nick and I are getting similar reports from staffers and board members at Radio Catskill. One said, "We haven't had reception at our house for many years ... but sitting in our driveway in the car we now have a strong signal." Another told us, "It seems impressive that I was able to listen to 'All Things Considered' as I followed a winding back road through a full ridge of the Catskills ... pretty cool."

In addition to improved signal reception, WJFF is now enjoying strong improvements in their audio and control capabilities. This 1 RU processor offers four processing structures, which gave the station the ability to select what they needed. Its window-gated AGC is unobtrusive and offers great level control, and processing presets including Orban's exclusive "Less-More" control made it easy for the station to dial in their signature sound.

We would recommend the Optimod 5750 for any station on a tighter budget that wants to maximize their coverage area and overall sound.

> **"I can now pick it up clear as day, with RDS data, in my driveway."**

Above
The 5750 is the lower unit shown in the station rack.

More Info
www.orban.com

Tech Update

Great Eastern Racks Up a LiON

Great Eastern Radio in West Lebanon, N.H., recently added two new Audioarts LiON FM/HD audio processors.

Made by Wheatstone, the Audioarts LiON uses AGC and limiting algorithms developed specifically for today's source content and listening devices.

Great Eastern chose the LiON FM/HD processor for the launch of El Pingüino 88.1 FM in January, Nantucket's first Latin music radio station. The format is a diverse music mix of pop, salsa, merengue and reggaeton, "now processed through the LiON's intelligent AGC and distortion-canceling algorithms to create a dynamic, yet dominant presence on the dial," Wheatstone stated.

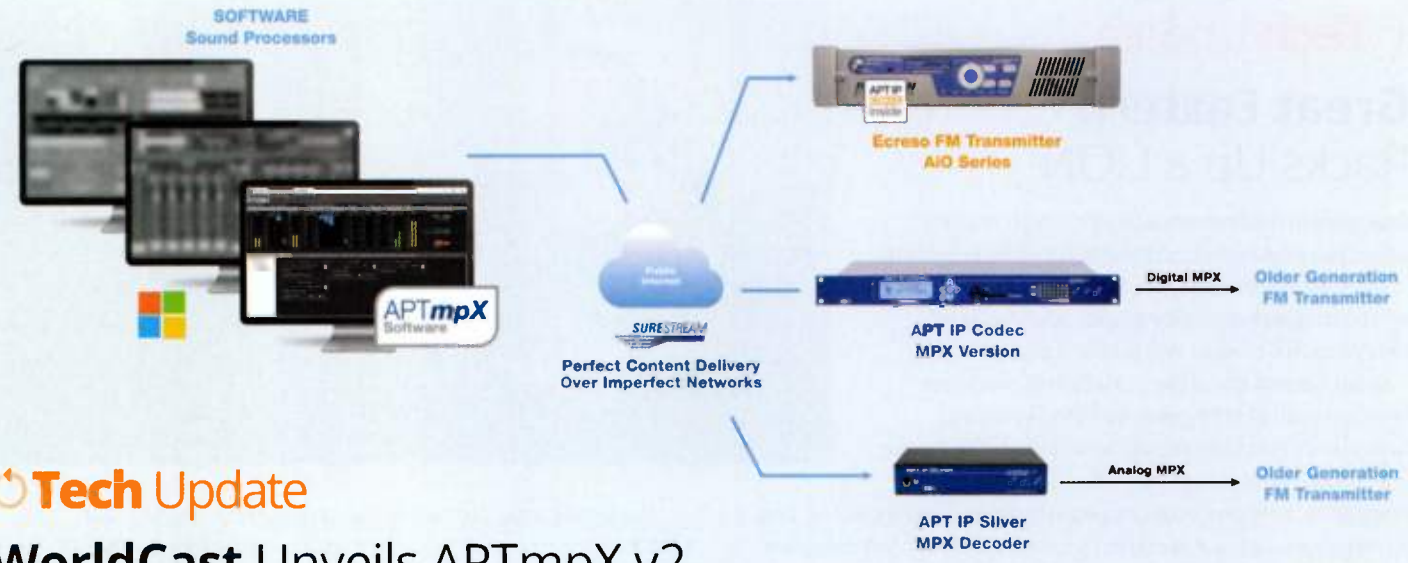
Available in double or single rackmount options, the LiON includes stereo enhancement, a RDS generator and multipath mitigation.

Another LiON was added for an HD channel. Other Wheatstone on-air and streaming processors are already in use at Great Eastern Radio for its 19 stations broadcasting throughout greater New England.

The broadcaster purchased the multipurpose MP-532 AM/FM/HD processors for its Burlington, Vt., classic rock and hot AC station acquisitions in 2022, and previously acquired Wheatstone Streamblade appliances to provision, process and manage the metadata for the group's 20+ streaming channels.

Chris Verdi, CBNT, CBNE and chief technology officer for Great Eastern Radio, is shown in front of a rack with a new LiON processor.

Info: *wheatstone.com/product/audioarts-lion*



Tech Update

WorldCast Unveils APTmpX v2

WorldCast Systems has introduced APTmpX v2, an updated composite/MPX compression format.

According to the company, APTmpX v2 compresses a fully processed, linear MPX signal with "total transparency" at bitrates of 300, 400 and 600 kbps, while also supporting modulated RDS data. The format is deployed with APTmpX Software for Windows, which runs as a virtual solution on the same workstation as the sound processor, ensuring minimal signal degradation.

WorldCast states that the MPX over IP stream does not require additional bandwidth upgrades, making it suitable for SFN deployments.

APTmpX v2 is integrated into the WorldCast Systems ecosystem, working with its encoders, decoders and codecs. It is also embedded into the company's Ecreso Aio series transmitters.

Info: *www.worldcastsystems.com*

Tech Update

Inovonics Showcases Novia 262

Inovonics is highlighting its Novia 262 Dual-Mode Stereo Audio Processor, suitable for engineers who seek straight-forward audio compression and limiting.

The processor's browser-based interface is accessible on any PC or mobile device. It has multiple factory-defined processing presets to afford a quicker installation. The presets can also be user-defined.

It also has both local and email-generated failure alarms and supports SNMP operation. The unit accepts both program line and streaming inputs and also allows for remote IP-audio monitoring.

The processor supports audio streaming as both an input and output. Inovonics suggests that the streaming output can be used as an STL from a studio to transmitter or as an audio source that can point to a multicast server for an internet station.

Other Novia series models include the 272 FM Processor and the 236 AM Processor.

Info: *www.inovonicsbroadcast.com*

Above
The Novia 262's browser-based interface is accessible on mobile devices.

Left
Inovonics' Novia 262 Audio Processor.

Tech Update

Omnia Forza Gets Software Update, New Features

Telos Alliance said its Omnia Forza FM and HDS virtual audio processors will receive new features and capabilities in upcoming software releases.

Forza FM is for FM and HD broadcasts; it is a five-band processor with new wideband and multiband AGCs and limiters, a Frank Foti-designed Silvio clipper from Omnia.11 and an integrated stereo generator. According to Telos, outputs include composite over IP and µMPX for analog FM, plus a peak-limited L/R output for HD-1 or DAB.

Forza HDS is for HD, DAB and streaming; it integrates the company's five-band architecture with algorithms, AGCs and multiband limiters. It includes Omnia Sensus codec conditioning technology for "consistent, polished HD, DAB and streaming audio," and an integrated, target-driven LUFS ITU-R BS.1770 loudness controller.

Telos said both processors can be installed on local COTS servers, pre-installed on the Telos Alliance AP-3000 hardware platform or remote-hosted using cloud services.

The upcoming v2.2 software update for Forza FM and v1.4 update for Forza HDS will benefit from the addition of a stereo enhancer, providing stations with another tool for creating their own customized sound. Additionally, the updates will give broadcasters the choice of optional Nielsen PPM encoding or Kantar watermarking. "The v2.2 update for Forza FM will enable a comprehensive built-in RDS system and standard," the company said.

Info: *https://tls.al/forza*

Tech Update

Thimeo Announces RuleBreaker Final Clipper

The new RuleBreaker final clipper, according to Thimeo Audio Technology, does what traditional clippers won't.

For decades, the company says, final clippers have been the secret weapon of radio processing. But when pushed too hard, they cause distortion on the air. The RuleBreaker is designed to avoid that trade-off.

"Normally, the left-minus-right section of the composite signal is symmetrical. That's just how it's always been," Thimeo states.

"We realized that by intentionally introducing asymmetry, we could push more audio through without clipping. In the new design we have taken this to the next level by adding a lot more intelligent analytics to reduce the amount of clipping. In other words, we're breaking the old rules to make your station sound louder and cleaner."

Hans Van Zutphen said the design provides 2 dB to 3 dB of extra loudness but without a distortion tradeoff.

"Not only that, but we changed the rules when it comes to IMD protection also, which means cleaner sound, lower distortion and massively improved bass definition." The company says the result is a silky-smooth sound with more punch in the low frequencies.

Angry Audio has licensed the RuleBreaker clipper for its new StereoToolBox.

Info: *www.thimeo.com/stereo-tool*

Cumulus streamlines in the nation's capital

These photos are of newly upgraded studio and office spaces for Cumulus Media in Washington, D.C., part of a broader corporate initiative to streamline infrastructure and save real estate costs.

This was an "in-place" remodel on the fourth floor of a 1970s-era office building in the Friendship Heights neighborhood.

The 11,000-square-foot space hosts news/talk station WMAL-FM and sports station WSBN(AM). It also is a content hub for Westwood One, originating syndicated content such as "The Chris Plante Show" and "America at Night," and is used occasionally to produce sports programming for the network.

The first photo shows a studio for Westwood One shows and podcasts. The second is a peek down a hallway that contains production studios and the WSBN main studio down the hall.

You can read about this project and see more photos in the Radio World ebook "Amazing Radio Studios 2025." Find it at *radioworld.com/ebooks*.

Alain Jaramillo Photography


Alain Jaramillo Photography

BROADCAST EQUIPMENT EXCHANGE

BROADCAST EQUIPMENT EXCHANGE

Writer

Prakash Moorut

Global Head of Spectrum & Regulatory Affairs, Shure

Ricardo Mazalan - Pool/Getty Images

WMSA puts the spotlight on sound

The charge to protect spectrum for the future of live events

Everyone remembers the first time they went to a packed stadium to see their team play, watched a show on Broadway or in Las Vegas, or saw their favorite band live on tour.

You remember because these experiences are special. The crowds, the noise and the sheer scale of the performance itself offers an immersive experience on your senses like no other.

No less special is watching your child in their school play or attending your community house of worship. Their reliance on wireless microphones is what links all the events. From game officials and broadcast communications to the theater cast and backstage support; from the musicians, to their band, backing singers, and their instruments, wireless microphones are everywhere in productions. The show cannot go on without them.

As you settle into your seat at any one of these events, radio spectrum will not be the first thing on your mind, but you may think differently once you know that the spectrum on which radio microphones rely is under severe threat.

That's why Shure, a global leader in audio electronics and technology celebrating its 100th year, has formed the Wireless Microphone Spectrum Alliance (WMSA), a coalition dedicated to ensuring access to RF spectrum for wireless microphones.

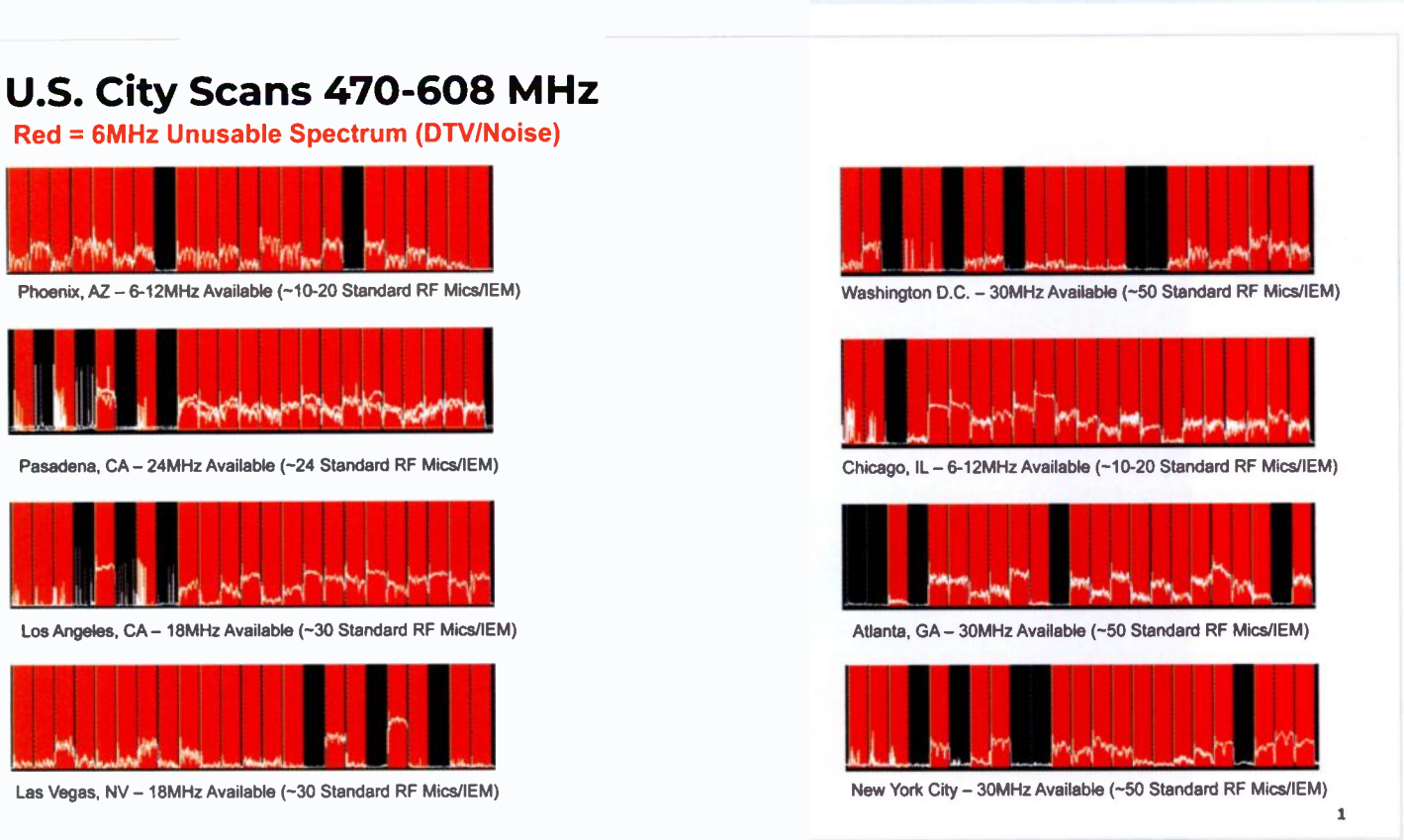
This alliance includes a diverse range of stakeholders, such as professional end users, content creators, live production service providers, equipment manufacturers and many others, all of whom share a common interest in preserving access to this vital resource.

WMSA will advocate for access to the RF spectrum that is the lifeblood of events. Whether on a global stage or a community platform, the importance of preserving access to spectrum is vital for many reasons.

An ecosystem of creative industries relies on it to successfully produce their events, which is a significant source of revenue, generating and maintaining thousands of skilled jobs, fostering technological innovation, and acting as a crucible for creativity that is exported all over the world.

Wireless microphones are a vital part of media production that forms an integral part of American culture and society and is fundamental to the country's global leadership in media. Across all platforms, their use supports content creation sectors valued at more than

Above
Almost 90% of audio links used at the Olympic Games in Paris last year were in 470–694 MHz.



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Above
Spectrum scans taken in various U.S. cities after 2017 show limited or no available TV channels for wireless microphones.

$2 trillion in economic value globally and poised to create $3 trillion by 2025, according to A. Guttman (*tinyurl.com/rw-wmsa*).

For technical reasons, UHF spectrum between 470 MHz and 1 GHz is uniquely suited and vitally important to the operation of wireless microphones, which have been a model of innovative spectrum sharing for decades, successfully interleaving with broadcasters, white space devices and public safety operations (see *tinyurl.com/wmsa-2*). They operate at low power, and use only the spectrum they need, in the places and at the times they need it. Despite sustained growth in spectrum demand for wireless microphone systems at events in the U.S. such as the Grammys and the Super Bowl, wireless microphones have suffered significant loss of spectrum availability below 1 GHz due to successive clearances of the 800 MHz, 700 MHz and the 600 MHz bands.

Shure's development of the Wireless Multichannel Audio System (WMAS) and other technologies underscores its commitment to spectrum efficiency. However, further reduction in available spectrum for wireless microphones cannot be mitigated by innovation alone.

We believe that a breaking point has been reached in the U.S.

Consequently, the remaining spectrum accessible to wireless microphones in the 470–608 MHz band, shared with broadcasters, white space devices, public safety operations, etc., is insufficient.

For example, spectrum scans taken in various U.S. cities after 2017, following the incentive auction and loss of access to the 700 MHz band, show limited or no available TV channels for wireless microphones, as shown in the accompanying graphic.

This has necessitated an increasing reliance on special temporary authority grants by the FCC to support large and medium-sized events. However, STAs are ad hoc, unpredictable, burdensome on staff and simply not a viable long-term solution to this continuing and growing need.

Recent statements made about considerations for an "Incentive Auction 2.0" of TV broadcast spectrum highlight the critical need to consider spectrum needs of wireless microphones now.

Without sufficient availability of suitable spectrum for wireless microphones, medium- to large-scale events which utilize all available spectrum in the UHF band, plus spectrum authorized via STAs, will simply become unviable in many cities.

In the next few years, the eyes of the world will fall on the U.S. when it hosts major events such as the America250 celebration, 2026 FIFA World Cup and 2028 Olympic Games. Data from the Paris 2024 Olympic Games revealed that 89% of all audio links used were within the 470–694 MHz range. France still has the 600 MHz band for wireless mics, while the U.S. auctioned it to the mobile industry in 2017 and is left mostly with the 470–608 MHz range and the 600 MHz guard band and duplex gap.

Preservation of access to this vital resource for wireless microphones is therefore critical. The future of our events and creative industries depends on it.

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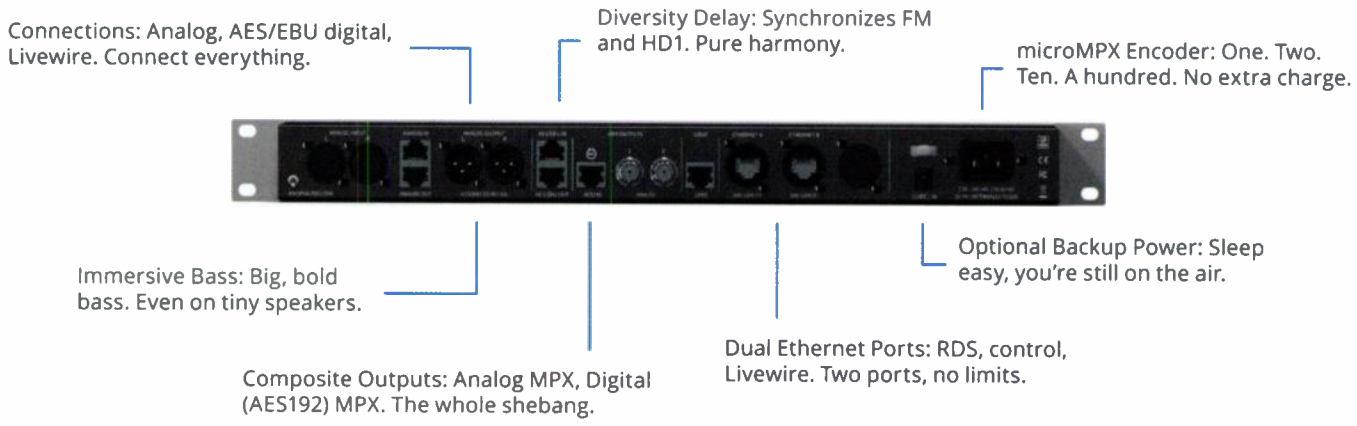
Put it on your station, and you won't just be in the race—you'll own the dial. Or, sure... blow $10K on their best and still get beat. Go budget and enjoy the sweet sound of compromise. Or get StereoToolBox and have it all. Your call.



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