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APRIL 2014 | RADIO.MAGONLINE.COM



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Bright idea.

All of our consoles have LED button lamps. They'll stay lit for — well, practically forever. Let's just say, your kids won't have to change bulbs, either.

Big Shot.

Your station super-sizes everything? No problem; iQ can scale from 8 to 24 faders. Handles even the most zany morning crew, talk show — or anything else you think up.

Control at your fingertips.

See these buttons? You can program them (or the button modules available for Element consoles) to perform routing salvos, system-wide scene changes and more. Because great power requires control.

Smarter phones.

Not only are hybrid controls built into iQ for direct-from-the-board control, the iQ6 phone system connects with just one Ethernet cable.

Network everywhere.

No need for cheesy A/V mixers — RAQ lets you put a networked, professional console anywhere, at a price that'll make the even stingiest GM smile.

Double your pleasure.

Did you know that one QOR.16 console engine will power 2 RAQ or DESQ mixing consoles? Makes your money go further on news bullpens, production pods, ingest stations, etc.

Step to the side.

Dirt and liquids: a console's most hated enemy. Element foils 'em with premium, side-loading conductive-plastic faders: dirt drops past, not in.

Who's da boss?

Clients rave about them, talent loves them: over 5,000 on the air makes Axia radio's favorite IP console.

Built to last... and last, and last.

Element modules are machined aluminum with wear-resistant Lexan inserts for long life. We've even designed custom-molded guides to prevent tears around the fader slot. No "ouchies" here.

Unlimited vision.

Some console makers give you "switched meters" to save costs. iQ does away with that annoyance: high-rez OLED displays meter all 4 buses at once.

A low price shouldn't mean "cheap".

Other companies cut corners on their low-cost consoles. Axia packs in as much as possible. Real conductive-plastic faders, machined-aluminum work surfaces, anodized rub-proof markings, aircraft-grade switches. At a price less than some analog "bargain" consoles.

Rack 'em up.

Turn your Radius 8-fader console into a rack-mount powerhouse. Great for OB vans, performance studios, concert remotes and more.

Good timing.

Unlike those other guys' small consoles, DESQ has an event timer and an NTP-capable clock — built-in, not extra-cost. Because time is money (pardon our pun!).

Small but mighty.

DESQ packs big console power into just 18" square. 6 faders, 2 buses, automatic mix-minus, Show Profiles and more. Perfect for standalone or networked studios.

Axia makes the switch.

No "plug-n-pray" unmanaged switches here; Axia builds our own custom zero-config, built-for-broadcast network switch right into our PowerStation and QOR console engines.

Show-off.

Element lets you store up to 99 Show Profiles — "snapshots" that recall channel sources, bus assignments, EQ settings, even fader positions. So every jock can have their own customized console.

Speak your mind.

Element consoles have comprehensive talkback features. You can talk directly to remote codecs, phone callers, adjacent studios... even individual talent's headphone feeds. Even our most cost-effective boards let you talkback to callers and codecs.

Handsome devil.

Our meters aren't just good-looking; they're designed specifically to convey the most information possible at just a glance. And Axia consoles support VU and PPM metering styles — something you might not find on consoles that cost a lot more.

Big power, small price.

Radius loads you up with 8 faders, 4 mix buses, automatic mix-minus, onboard EQ and voice dynamics and more — for just \$5990 USD. Shh... don't tell the accountants.

CHOOSING AXIA FOR YOUR NEXT CONSOLE IS EASY. SELECTING ONE MIGHT TAKE AWHILE.

When we introduced AoIP to radio in 2003, some folks thought we were off our nut. Today though, broadcasters agree: picking Axia is the right choice. With over 5,000 on air daily, broadcasters have voted Axia the world's most popular networked console.

Who can blame them? Axia fans say that Livewire™ networking is the most intelligent, flexible IP-Audio system in the industry. And that our huge number of partners, with over 75 broadcast products from phones to transmitters that connect to Axia networks, makes life

much simpler. They also appreciate our 5-year warranty and 24/7 technical support (not that they need it).

In fact, we calculate that thanks to our huge selection of frame, module and mixing engines, there are at least 32,209,982 different ways to order an Axia console. With that many options, you'd better get started now! Mmm... don't you just love that new-console smell?

AxiaAudio.com



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World Radio History



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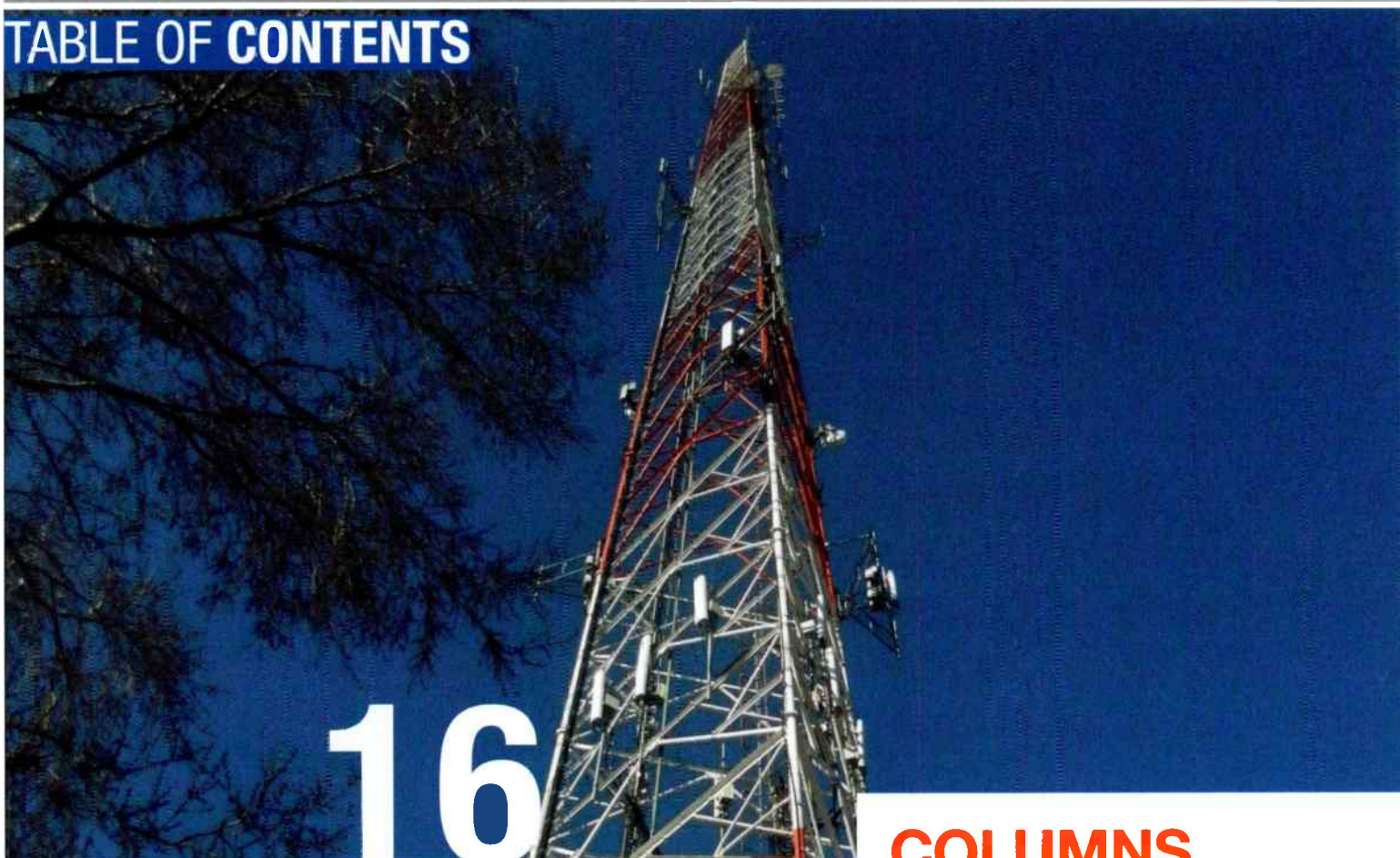
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TABLE OF CONTENTS



FEATURES

- 16 Trends in Technology**
Doug Irwin looks at what's new in the world of transmitters
- 30 Facility Showcase**
The Motor Racing Network's new broadcast production vehicle



COLUMNS

- 8 Viewpoint**
Time for a personal change
- 10 Managing Technology**
What you should know about tower lease renegotiation
- 12 FCC Update**
On-air missteps that will earn you sizeable forfeitures
- 40 Tech Tips**
Appropriate applications for circulators and isolators, and how they work

DEPARTMENTS

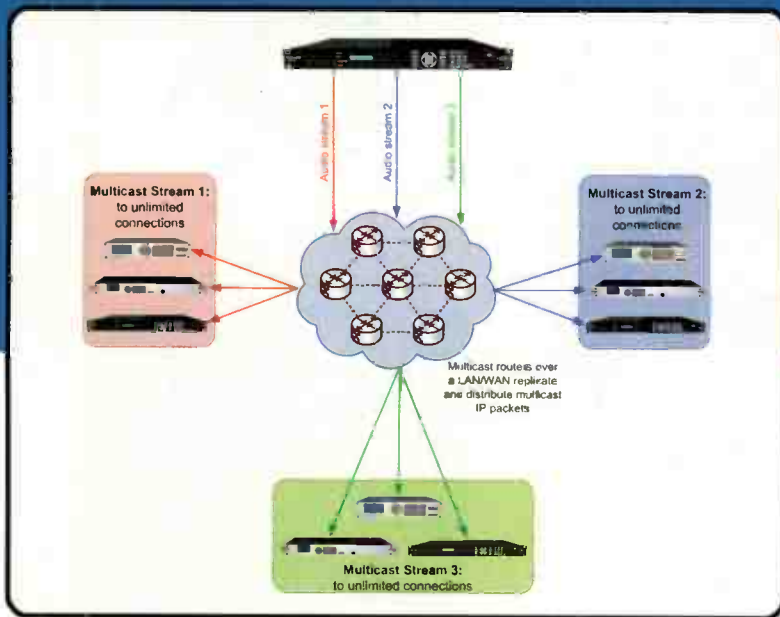
- 42 Side by Side**
Studio furniture
- 44 Applied Technology:**
Streaming with MPEG HE-AAC audio codec
- 46 New Products at the 2014 NAB Show**
- 62 Sign Off**
SBE history; Jim Kerr celebrates 40 years

Expand your Network with...

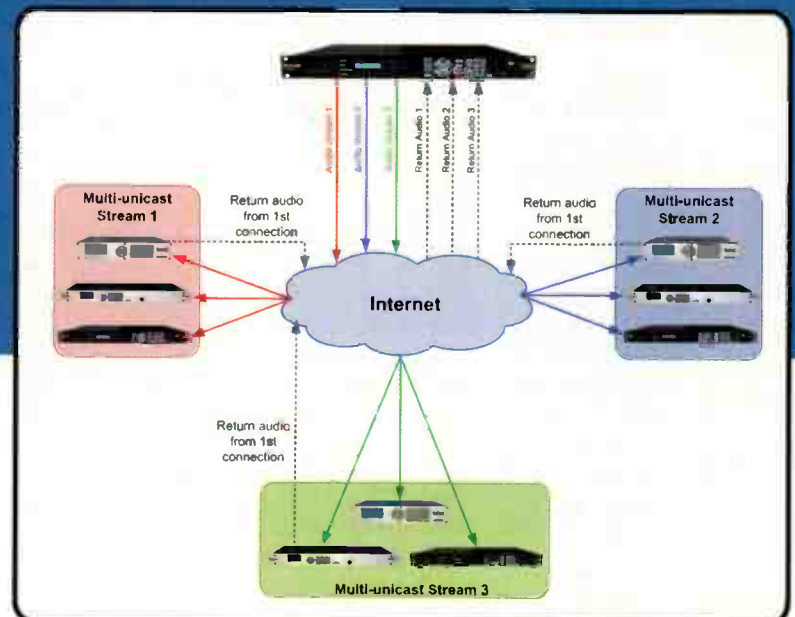


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APRE Announces 2014 Engineering Achievement Award Winners

The Association of Public Radio Engineers has announced two winners for its 2014 Engineering Achievement Award: Bud Aiello, director engineering technologies at NPR, and Gray Frierson Haertig, owner and principal engineer of Gray Frierson Haertig & Associates.

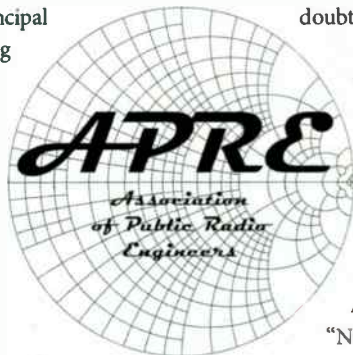
Aiello's nomination noted his work on NPR's new technical facility where he served as the primary architect for the overall systems. "From the early days of designing, to climbing in the construction hole to check the contractor's welds of the grounding grid, to wrestling into submission multiple vendors" Aiello's work proved to be invaluable.

The nomination form noted that Aiello "has

a keen eye for detail, uncanny instincts for problem solving, and is a gifted arbiter of where to take advantage of new technologies and where to avoid risks with designs he has reason to doubt will bear the tests of time."

The nomination form submitted for Gray Haertig pointed to his "prolific presence on Pubtech [that] has educated and mentored a significant number of engineers still on the steep side of the learning curve of radio engineering."

Also noted was his work with "Numerous new non-commercial radio facilities including those stations serving Indigenous populations" for which he provided RF engineering services that were needed to build, remodel, or improve.



Harris Broadcast Becomes Imagine Communications and GatesAir

Harris Broadcast, part of the Gores Group, has been split into two companies that have been named Imagine Communications and GatesAir. The announcement was made at an inaugural MediaDay held at Madison Square Garden in New York City.

Read more at RadioMagOnline.com.

FIND THE MIC WINNER FEBRUARY ISSUE

Brian Sanders
Arizona Public Radio
Flagstaff, AZ



He won a USX-100 from Hosa Technology
www.hosatech.com



The mic was hidden on the warning sign on the fence.

The winner is drawn from the correct entries for the issue two months prior. No purchase necessary. For complete rules, go to RadioMagOnline.com.

SBE to Celebrate 50th Anniversary at 2014 NAB Show

The Society of Broadcast Engineers will celebrate its 50th anniversary during the 2014 NAB Show with two events. On Tuesday, April 8, beginning at 5:30 p.m., SBE members and guests are invited to the spring SBE Membership Meeting in room S225 at the Las Vegas Convention Center. The meeting includes recognition of SBE chapter certification chairmen who have achieved milestone service years, updates on implementation of the society's strategic plan, programs and government relations efforts, and a visual look back at 50 years of SBE history. Prizes will be given away to those present as well. The first 150 people in attendance will receive an SBE 50th anniversary commemorative poker chip.



Triton Digital Webcast Metrics Local achieved Media Rating Council accreditation.

New vehicles from GM and Audi will offer embedded Internet in Spring 2014.

Ted Nahil returned to GatesAir as business development manager.

Hosa Technology is celebrating 30 years. The company is focused on new CEO Mayumi Martinez.

BIA/Kelsey promoted Mark Fratnik to SVP. Fratnik manages the company's Media Access Pro product.

Submissions for the 2014 CBI National Student Production

Awards are being accepted until May 9.

Photojournalist Joe Torelli joined Comrex after product development positions with Avid, Quantel and Apple.

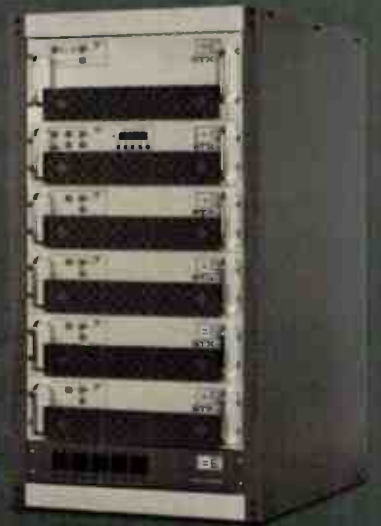
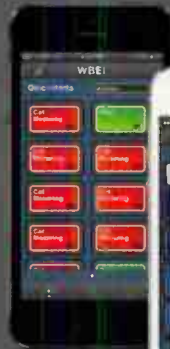
FIND THE MIC AND WIN!

Tell us where you think the mic icon is placed on this issue's cover and you could win a Hosa CBT-500 cable tester. Send your entry to radio@RadioMagOnline.com by May 10. Be sure to include your guess, name, job title, company name, mailing address and phone number. No purchase necessary. For complete rules, go to RadioMagOnline.com





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When It's Time for a Change



I'm often asked how I got into publishing. It's often assumed I was a journalism or English major. Actually, I was a music major. I studied Music Engineering Technology at the University of Miami when Ken Pohlmann (I'm sure you own an edition of his book on digital audio) was the program chairman. While I was in college I worked at WVUM, the campus radio station. That was my first taste of working in radio. For many years I had aspirations of being a touring musician, owning my own radio station and having my own show on that station, all so I could front-announce a song as saying, "This is ... me!"

So none of that came to pass, although I did my share of on-air work over the years. But this is about how I got into publishing.

One class in the music engineering curriculum, taught then by John Monforte, included a final project assignment. The assignment was to do something you can put on your resume. Some of my classmates wrote articles for what is now another NewBay publication, Mix magazine. I decided to write an article as well, but I chose Broadcast Engineering, which in 1987 still covered radio and TV. I coordinated with the radio editor, Brad Dick, and I wrote a Field Report on the PR&E Micromax cart machine for the September 1987 issue.

That's how I got my start in writing. After that first review I contributed more articles, including a few features. In 1992, when I moved to Cleveland and became very active in the Society of Broadcast Engineers on a local level, I took on the responsibility of chapter newsletter editor. The chapter chairman at the time was my very good friend, Barry Thomas. I was still writing for Broadcast Engineering, and then began writing for the newly created BE Radio when it was launched in 1994.


One day in 1997 I got a call from my magazine predecessor, Skip Pizzi, asking if I was interested in becoming the editor of BE Radio. I interviewed with Skip and Dennis Triola, who was the publisher. About a month later, I moved to Kansas City to begin the next chapter in my career.

Over the past 17 years, *Radio* magazine (we dropped the "BE" part in 2001) has been the center of my focus. It's been more than just a job. I've been on vacation and seen a tower site or a radio station and made a note about an article idea or taken a photo. I've seen technology designed for consumers or an entirely different industry and thought it had applications at a radio station. I have been able to keep my technical chops sharp by providing some contract audio and broadcast engineering services around the Kansas City area.

But after 17 years, I have decided it's time for a change. I still love radio. That will never change. But I'm ready for a new challenge. It wasn't an easy decision to make, but I know it's the right decision for me at this time. I have worked with some great people along the way. The people who have served as associate editors of *Radio* magazine — Jim Saladin, Dana Martin, Cindy Holst, Kari Taylor — and now Senior Associate Editor Erin Shipp have provided critical support and kept me in check when needed. Former Art Director Mike Knust and current Associate Publisher Steven Bell were there, too. There are so many contributors to acknowledge as well, including John Battison, Harry Martin, Kevin McNamara, Doug Irwin, Lee Petro, Jeremy Ruck and Chris Wygal.

And when *Radio* magazine became a part of NewBay Media in 2011, Carmel King, Paul McLane, Davis White, Karen Lee, Caroline Freeland and many became a part of the *Radio* magazine tradition.

But as I step aside, *Radio* magazine will continue on. I'll still be here as a contributor as I open the next chapter of my professional career.

Keep reading *Radio* magazine. 

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plugged into Skype



by Kevin
McNamara

X Tower Lease Renegotiation

Leasing space on your tower is a great option for generating additional revenue; however, many tower owners have received letters from tenants stating that their lease must be renegotiated or they will remove their equipment — either terminating or not renewing the lease. If you haven't received one of these notices, it will be a matter of time before you do. Carriers are looking for new and creative ways to save money. One of their most aggressive initiatives is to renegotiate leases at a much lower rate than the initial value. In many cases, they are also seeking additional space on the ground and on the tower, as well as the ability to have blanket permissions to make changes as needed. Most of these letters are designed to instill fear of losing the revenue stream and sadly many people agree to the new, less profitable terms, when in fact there may be no reason to accept them.

X IT COSTS THEM MONEY TO LEAVE

The first thing to know is that it costs carriers about \$200k to develop a typical collocation site, not including equipment. Here are a few other considerations:

- Along with that expense, they brought some infrastructure into that site, including power and fiber (typically) lines. In many cases there were costs associated with structural reinforcement of the tower.
- Many municipalities require a zoning process for antennas colocated on an existing structure (typically a use variance of some type), which takes time and money to gain approvals. Removal of the equipment would void the approval.

- The network may require significant redesign to move the location of any site.
 - There is an added cost to decommission a site.
- As you can see, from a carrier's perspective, they are not compelled to just pull down the site and leave.

X BUT THEY MAY HAVE A GOOD REASON

On the flip side of this, there is an ongoing effort to consolidate sites where feasible. This is particularly true where carriers have merged (i.e. Cingular/AT&T and soon, T-Mobile/Sprint, etc). In terms of getting to an acceptable "economy of scale" there are benefits to decommissioning certain sites, particularly where one or the other carrier owns their tower and it is a simple matter to migrate them to it.

The end-game for carriers who are merging with other carrier is, to some degree, to increase subscriber base; but to a larger degree, it is about having more spectrum. The growth of smartphones is putting high demands on the networks due to people using more data. It is critical to have additional spectrum to support the current 4G and emerging technologies. Current technology allows base stations to consolidate the spectrum from multiple carriers into a single system. In fact, the "base" station may no longer be located at the base. More about that later. Yes, there could be a legitimate reason the carrier is going to want to pull out.

X HOW DO YOU DEAL WITH THIS?

In my opinion, the best way is to have as much information as possible in order to understand what options a carrier might have if they leave. Here are a few points to consider:

- Is the location of your tower in a high traffic area? If the tower is located near a busy street, intersection or highway, the site is probably carrying a lot of traffic. A carrier would be less likely to disturb it.
- Are zoning regulations restrictive for locating new or adding to existing structures in the

- immediate area? If so, you're probably fine, otherwise they might be compelled to move or consolidate to another site.
- Are there a lot of towers in the area? Just because there is a tower doesn't mean it is useable. You should find out if there is sufficient (or permitted) ground space to locate equipment. It's not unusual for some older tower sites to be unusable due to a lack of space to locate ground equipment.
- Are the other towers structurally useable? With the change to the 222G guidelines, many older towers are no longer feasible, due to undersized foundations or steel. The major portions of 222G are also incorporated into the most current building codes, and therefore would require significant structural modifications to be useable for the addition of new equipment.
- Are you near any historical areas? There are particular restrictions to construct new structures/or to add equipment to existing structures that might cause some visual impact to registered historical areas, national parks and other areas. If a carrier is already on an existing structure that was grandfathered prior to many of the current environmental regulations, they are most likely going to stay put.

X SO WHAT'S IN THE LETTER THEY SEND?

There are a few companies out there that work directly with carriers, they make money based on the savings they bring the carrier. The biggest players in this space are MD7 and Black-dot, although there are a few others.

The letter generally begins like this:

"Wireless carriers' are changing how they operate due to a variety of factors, including heightened competition in the industry, changing customer needs and the bigger role Internet access is taking. In the past, emphasis was placed on rapidly building out networks in order to improve coverage. Today, the industry is shifting its focus in order to increase operational efficiency and to maximize the value of each cellular site."

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Here's where it gets good: "As a result, 'Carrier' is re-evaluating and redesigning its network in order to reduce expenses and streamline operations. These changes will take into account the shifting network requirements, operational redundancies, and overlapping sites throughout the network."

Then, not only do they want to reduce your rent, they want more control over the site.

"In order for your cell site to remain technologically viable for the network long-term, 'Carrier' will also require the addition of expansion language, basically in the form of the following:

"1. Expansion of Permitted Use: Allows 'Carrier' the ability to modify, supplement, upgrade, replace, expand or refurbish their equipment within the existing Premises.

"2. Expansion of the Premises: Allows 'Carrier' to expand the current Premises, on a space available basis, not to exceed an area equal to the current square footage of the Premises, at the current rate per square foot up to \$1.50."

What they are looking for here is the ability

to make changes to the equipment. The new generation of radio equipment is a major departure from the big bulky ground mounted base stations that you see at the base of a cell tower. The new radio equipment is actually tower-mounted. The radio systems consists of multiple tower-mounted cabinets that house the radio system. The cabinets are typically mounted in the vicinity of each antenna. Keep in mind that each radio weighs about 70 pounds and there could be three or more. Instead of coaxial cables running up the tower, they use a hybrid cable that contain both the power and fiber connections. These radios can add a significant amount of load to some towers.

X HERE'S WHAT THEY WANT TO OFFER

"'Carrier' values its affiliation with you and would like to continue a long and mutually beneficial relationship for years to come based on one of the renewal options above."

What they will offer you will vary, but likely

will be one of these:

- Increase the term of commitment to 15 years (typically initial 5-year with 2-5 year renewals). They might offer a guarantee of 5 years max.
- Same as above, but with a 3-year guarantee.
- Long-term buyout of lease (i.e. give the owner a one-time lump sum at a greatly reduced rent).
- In all cases the rental amount and yearly percentage of increase are reduced significantly.

You can consider the first two options short term leases (5- or 3-year), because they will reserve the right to renegotiate again after that. The buy-out option may cause you to give up some control over your future plans (i.e. may have a significant impact to the value of a tower you want to sell in the future).

If you are approached to renegotiate your tower lease, do your homework and never accept the first offer, everything is negotiable. ☺

McNamara is president of Applied Wireless, Cape Coral, FL.

"If you are afraid of being lonely, don't try to be right."

~Jules Renard

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by Lee Petro

On-air Missteps to Avoid

In the March FCC Update, I discussed recent forfeiture actions taken by the FCC's Enforcement Bureau regarding tower issues and the proper maintenance of a station's public inspection file. This month, I'll review several on-air missteps that can lead to sizable forfeitures.

Telephone Broadcast Rule: A recent trip took me out of the office during the morning hours. The hosts were doing a Valentine's Day promotion where they were trying to set up dates by calling unsuspecting "targets" of a caller's affection. They would get the phone number of the target from the caller, and then call the third-party to see if they would like to go to a dinner sponsored by the radio station with the caller. The unsuspecting target would almost always be surprised by the call from the station, and, in some cases, decline the date.

What struck me was that none of the "targets" were advised beforehand that they would be on the radio, nor were they given an opportunity to decline. The FCC's rules require that the broadcaster inform the party of the call beforehand that it intends to broadcast the conversation, and provide the party the opportunity to decline before the


conversation on-air takes place. Furthermore, the FCC will not accept the fact that the disclosure was made after the call was aired, as the FCC's primary focus is ensuring that a party has prior notice. Even if the hosts had contacted the third parties ahead of time, and recorded the conversation, the mere act of pressing the "record" button before giving the call recipient the opportunity to decline to be recorded is sufficient grounds for the FCC to issue a forfeiture.

Sponsorship ID: All sponsored content on a station (advertisements, political spots and/or longer form content) must clearly identify that the material was sponsored and on whose behalf the consideration was supplied. In practical terms, this means that, for all content broadcast on a station for which the station receives consideration from a third party, the third party needs to be clearly identified. It is critical for someone at the station to be screening all advertisements to make sure they include proper sponsorship identification. Lack of sponsorship ID often comes up in the context of political and issue advertisements, but this requirement applies to all sponsored content on stations. In a recent case, the

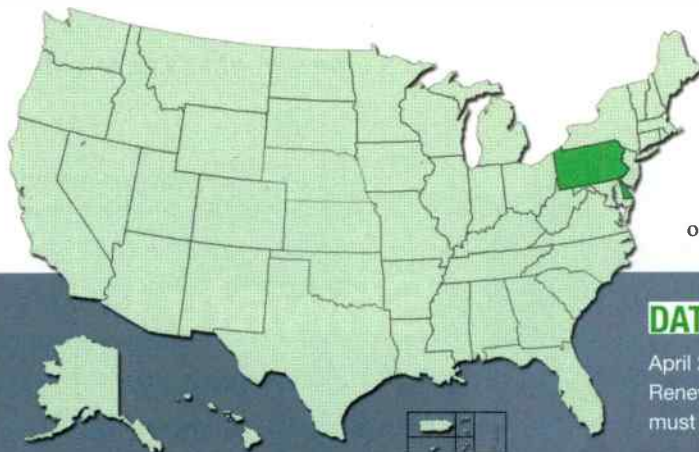
FCC upheld a \$44,000 forfeiture against a radio broadcaster that aired sponsored programming without adequately identifying the source of the content. The FCC

looked at the format of the content and the frequency of the advertisements as a justification for imposing the forfeiture.

EAS Tones: Recently, the FCC fined Turner Broadcasting System \$200,000 for broadcasting a simulation of the EAS attention signal outside of an actual emergency or EAS test. The EAS tones were included in a Best Buy advertisement and were reportedly broadcast 14 times in a six-day period. This incident serves as another reminder of how seriously the FCC takes misuse of EAS tones. Turner had argued that the EAS tones that were broadcast did not include actual EAS code (meaning that the broadcast would probably not cause other monitoring stations to pick up a false EAS alert), but the FCC did not view that as a mitigating factor. The basic rule with EAS tones or codes is simple: They should never be broadcast outside of a situation where a legitimate EAS event (a test or actual alert) is taking place.

By making sure that procedures are in place, licensees can take steps to help their stations stay out of trouble. First, proper education of your staff should take place so they are aware that these rules exist. Second, it is important to have someone with knowledge of these rules conduct frequent spot checks of the aired content to see if there are any violations. These checks do not have to be completed by just one person, and the more people at the station you have looking out for these issues, the better. 

Petro is of counsel at Drinker Biddle & Reath, LLP. Email: lee.petro@dbr.com.



DATELINE

April 2014: Stations in Delaware and Pennsylvania continue running License Renewal Post-Filing Announcements on April 16, May 1 and 16. All stations must place First Quarter 2014 Issues/Programs list in public file by April 10, 2014.

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UPDATE ON TRANSMITTERS

By Doug Irvine, CPBE DRB AMD

At least once every year we take a look at new features in transmitters. LPFM is in our industry news quite a bit as of late, so we'll look at some equipment that could be used for LPFM as well: small, stand-alone transmitters, and some low-power antennas.



Power Tools for AES

AESDA

The AESDA provides extremely high quality AES Digital to Analog conversion while providing diagnostic analysis of the incoming digital signal to help in troubleshooting signal faults.

- 110 Ohm balanced and 75 Ohm unbalanced inputs.
- Dual function level meters display either digital input signal level or analog output level.
- Dual function LEDs display digital input information or signal condition/fault type.
- Separate balanced XLR and 3.5mm headphone outputs, each output has its own volume control.

AESAD

The AESAD is a portable battery powered device for converting mic or line level analog audio into an AES/EBU digital audio stream.

- The AESAD has two high quality transformer based mic preamps and outputs a single, variable level, AES/EBU digital signal. Phantom power is available to power condenser microphones.
- The output sample rate is selectable by the user and a word clock input is provided for synchronization with other AES/EBU equipment.
- Metering is provided to monitor both the analog input and digital output signal levels.
- The AESAD has a headphone output with level control.
- Operates from 4 AA batteries or the supplied wall power supply.

AES QBOX

Generate into or monitor from your AES digital sound system with this handy tool. Also doubles as a quality A/D and D/A converter and impedance transformer.

Receive Section

- Receives 32k, 44.1k, 48k, 88.2k, 96k, 176.4k, and 192kHz.
- Identifies Pro/Consumer mode, sample rate and faults.

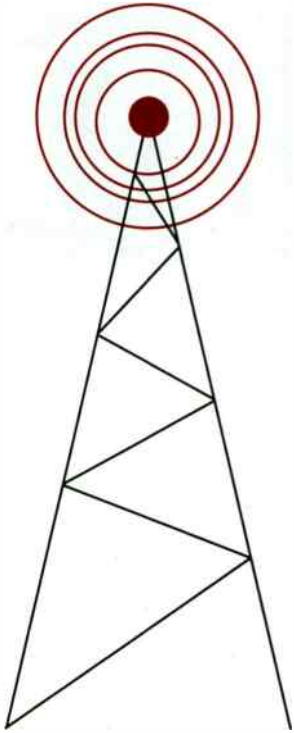
- Converts AES digital to analog and outputs the analog via built in speaker or Line Out / Headphone jack.

Transmit Section

- Transmits 48k, 96k and 192kHz.
- Generate AES digital from analog Line In jack, built in dual tone generator or built in condenser microphone.

whirlwind

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Nautel GV Series

Nautel is introducing its newest transmitter line, the GV series. This is an evolution of the NV design, which (according to Nautel) provides better analog and digital efficiency than its predecessor. Power levels range from 3.5kW to 80kW, and it has some very interesting (and more importantly, useful) features, with respect to RF generation:

- > HD PowerBoost is a standard feature
- > Asymmetrical digital sideband support
- > Adaptive pre-correction
- > Hot-swappable RF amp modules and power supply modules
- > Integrated digital exciter, optional backup exciter
- > No IPA
- > Field-repairable amplifier pallets

Of course in this day and age we all look beyond just the RF-generation aspects of a transmitter, to its monitor and control capabilities; as the number of functions around the radio station increases for the



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DAVID IV

FM/HD Radio™ Broadcast Audio Processor



Version 3 update adds more features, new controls, and greater sonic power.

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average broadcast engineer, it's important that each and every one of them is made as easy and efficient as possible. Remote access and control of a transmitter is one of the most important of these tasks. Toward that end the GV series offers the following features:

- The Nautel AUI (Advanced User Interface), which provides local control (via a 17" touchscreen monitor) and remote access with definable security and access levels on a per-user basis
- MER and a full suite of HD Radio instrumentation with spectrum analyzer and constellation view
- UPS support for control electronics and loss-of-AC-power recovery speed
- SNMP support

Nautel has been adding non-traditional features to transmitters as well. Program sources can be traditional composite or AES; or IP, USB or Livewire. Orban inside is an optional feature for processing; the exciter also supports MPX over AES from Omnia, Orban and Wheatstone. Nautel Phone Home is a system that pro-actively collects data from the transmitter and forwards it to Nautel for later analysis should a problem arise.

Harris Broadcast has rebranded its radio line as GatesAir, and the company has not been resting on its laurels. The Flexiva series is now available from the FAX50 up to the FAX3.5K (which tops out at 3.85kW). The series has an integrated low-pass filter, and so each can operate as a standalone transmitter. Coming soon for the Flexiva series is the new Generation 4 HD Radio Engine, which will feature hybrid crest factor reduction, asymmetrical sideband generation, MER metrics and advanced real-time adaptive correction. Some of the other particularly interesting features of the Flexiva series are:

- Support for Single Sideband — Suppressed Carrier (SSB-SC) stereo mode operation
- ITU 812R multiplex power limiter
- External 10MHz and 1 PPS clock reference inputs for synchronization purposes in single-frequency networks; optional GPS receiver
- Low-power preset mode, for easy power-reduction during tower work
- Remote control via eight assignable GP I/O, Web access, SNMP
- Optional Orban 5500H internal audio processor
- Accepts MPX over AES192 from Orban, Omnia and Wheatstone processors

Gates Air has also developed an IP audio codec that can transport MPX/AES192 over Ethernet (a world's-first, according to the company). This will allow the audio processors, RDS, and SCA generators to be located back at the studio — sending the entire composite package to the transmitter site by way of IP.

The latest product line from Broadcast Electronics is the STX LP series — in power levels from 1kW to 5kW. You could consider the STXe, which is based on the STX design, for power levels between 70 and 550W. The STX LP is a scalable design that (according to BE) will accommodate current and future system configurations, such as main/alternate main, FM



GatesAir Flexiva

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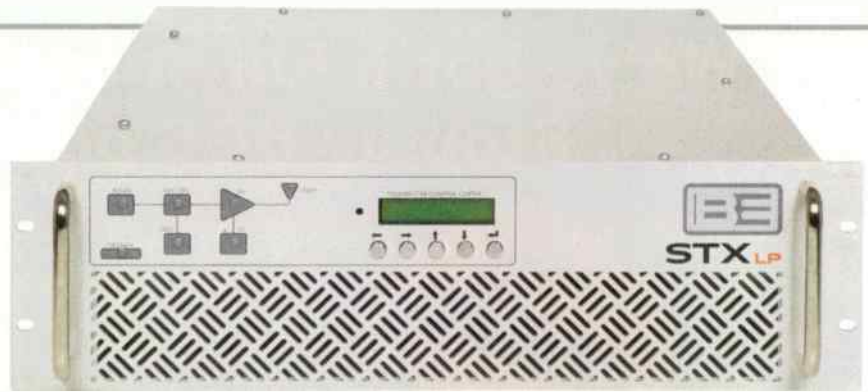


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single-frequency networks, and N+1 applications.

Some of the other STX-LP important features:

- > Integral exciter
- > RF input that accommodates external exciter
- > Integral low-pass filter
- > Composite input, with 2 SCA ports and RDS port



Broadcast Electronics STX LP

- > Plug-in stereo generator accepting L/R or AES
 - > Integral back-up controller
 - > Front-panel control, metering via LCD interface
 - > Embedded Web server allowing IP access
- The STX LP 1kW occupies 3RU. The 2kW STX occupies 10RU, the 3kW occupies 13RU, and the 5kW occupies 19RU. BE also can provide its Advanced Remote Graphical Interface (RGUI) that allows for Web-enabled control of up to eight STX-LP transmitters, also providing the means to view transmitter and PA data and logs.

Continental Electronics has maintained its familiar line of high-power FM transmitters, the 816R series. Power levels range from 11kW to 21.5kW (using the 816R-2C) up to 40kW (the 816R-7C). A single tube is deployed as the

In between, the ARC Solo is packed with the features you've come to expect from Burk. For uncomplicated remote control, there's nothing else to buy. Even the new Recordable Speech Interface is built in.

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The BD600 offers two different methods of delay buildup and

reduction: Eventide's catch-up and catch-down system, and an exclusive fast-entry-and-exit feature which allows starting a broadcast with the delay already built up to a safe amount and ending it with a rapid reduction of delay.

For HD, the BD600 offers MicroPrecision Delay™ mode which allows up to 10 seconds of delay to be adjusted in real time in 100 nanosecond increments. This is useful for synchronizing analog and digital signals while on-air, without audible artifacts, to maintain a seamless user experience.

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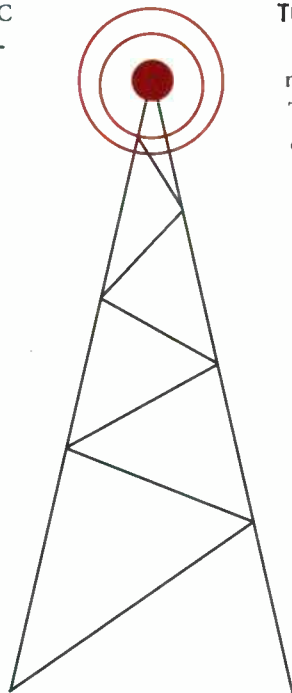
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World Radio History

final amplifier (4CX15000A, 4CX20000E or 4CX25000C depending on the power level). All of the series are self-contained, except the 816R-7C, which uses a separate power supply cabinet and external harmonic filter.

The 816R-HDR (HD-ready) is a high-power combined amplifier for IBOC applications. It can be purchased as an FM-only transmitter, while planning to add the IBOC components (the Exgine-enabled 802Ex digital FM exciter, along with an exporter) later. Continental's D816HD series transmitters range in combined TPO from 18kW to 56kW at HD power levels of -20dBc to -10dBc. These combined transmitters use only one tube each, the final power amplifier tube. The D816HD Series Transmitters are also completely self-contained, including the harmonic filter. (The 70kW has two high-voltage rectifiers and plate transformers located in two separate chassis.) D816HD transmitter systems work with Continental's 802Ex digital FM/HD Radio exciter to provide forward looking fully adaptive pre-correction, system and digital performance monitoring and on-channel spectral analysis.



TO THE LOW SIDE

LPFM stations are those authorized to operate as noncommercial educational stations, with an ERP of 100W or less. The maximum facility is 100W ERP with an antenna HAAT of 30 meters. The approximate service range (60dBu) of an LPFM is 3.5 miles in radius. LPFM stations are not protected from interference that may be received from other classes of FM stations.

During the last filing window (which was held between Oct. 15 and Nov. 14, 2013) 2,800 applications were received by the Commission; as of the time of this writing, about 1,000 LPFM CPs have been granted.

If you happen to be holding one of the aforementioned CPs, you might wonder what to do next. To create a maximum facility for an LPFM, consider this: a single-bay, circularly polarized antenna, with about 200W making it to the antenna input port. There are quite a few options in transmitters that are capable of 300W.

BW Broadcast has come on strong in the last half-dozen years. It offers the TX300 V2, a stand-alone transmitter capable of 300W. One box houses the exciter, power supply, power amplifier, a stereo generator

NAGRA Seven

A Two Channel Universal Digital Audio Recorder

The NAGRA Seven is a 2-track, 24-bit digital recorder offering sampling frequencies up to 192 kHz, with analog and digital inputs and outputs on XLR connectors, and AES-42 ready for digital microphone applications. The principal recording media is an internal 16GB memory backup with removable standard SD cards.



The NAGRA Seven has the ability to edit material and transmit files cross the globe irrespective of the network types available. The Broadcast version has an ISDN board for connection to existing digital phone networks and audio compression in MPEG formats. A GSM and WiFi circuit can be added for additional communication possibilities.

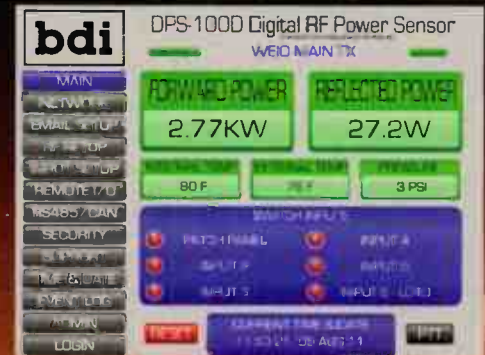
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RF Transfer Switch

The SWP-200 is a stand alone 1RU RF switch controller which can control any brand of motorized RF switch. In addition the SWP-200 manages transmitter interlocks and simplifies the connection of interlock paths. When installed as a system together with a DPS-100D, the SWP-200 provides complete Hot Switch protection by preventing the movement of a switch if RF is present. The SWP-200 also doubles as a rack mounted RF power display for up to 2 DPS-100D Sensors.

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BW Broadcast TX300 V2

and audio processor (basically lifted right from the design of the BW DSPX miniFM). Audio inputs are balanced XLR. The internal audio processor can be bypassed if an external unit will be used to drive the BNC composite input of the transmitter. The RF output is on a type-N female. The ac input can accept between 85Vac and 260Vac, which yields some flexibility with the installation. Remote control can be done via RS-232, requiring a computer at the transmitter site for remote access; or, via its new software, Ethernet access to the transmitter can be had via its embedded Web interface. In either case the transmitter site will need network access.

Armstrong is another established presence in transmitters. Its line of solid-state transmitters include the STX, LCD and B series, and are available nearly any power level. The 300W power amplifier is built on the Philips BLF 278 MOSFET. The FMX exciters provide output powers of 30, 150 and 300W. The FMX LCD series of exciters provide outputs of 30 or 100W. The FMX LCD's can be switched between five preset frequencies via remote control.

On the low-power amplifier side, Armstrong offers the FM-300S, FM-500SC and FM-500LCD with power levels of 300 and 500W.

Crown Broadcast, well known in lower power stand-alone FM transmitters, now offers its E Series (built by Ecreso). The E Series features a direct-to-channel integral exciter, and the 350W version occupies 3RU, with 17" of depth. It's a good idea to allow a rack space above and below for cooling purposes. The integral stereo generator accepts L/R analog or AES at up to 192kHz sample rate and up to 32-bit word length. It also has two BNC inputs for composite or SCAs.

An option for the E Series is a TCP/IP communications board that allows for the use of a Web-based interface for monitoring and remote control, along with SNMP support. Use of this optional board also allows support of Crown's Advanced Measurement Interface, as well as a feature known as Expert Maintenance reporting, which is a proactive reporting service that allows for the monitoring of parameters such as temperatures, currents and voltages, plus performance parameters of lifespan-constricted items such as fans. These measurements are sent via a regular Internet connection, stored in the cloud and available for analysis by the manufacturer later on, should the need arise.

Bext is also established in FM transmission equipment. For an LPFM application, the LEX series applies, which tops out at 300W.



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TRENDS IN TECHNOLOGY



Bext LEX

The LEX is a 1RU, frequency-agile transmitter, with integral stereo generator. Output power is continuously adjustable from zero up to the maximum power rating, and it has proportional power fold-back in response to high VSWR. The power supply accepts between 95Vac and 260Vac, which gives some flexibility in the installation. (LEX also includes and FSK ID keyer, should that be needed for translator use.) The LEX series also meets or exceeds FCC specs on spectral purity, and can be used as a stand-alone transmitter.

Keep in mind that the manufacturers of higher

power transmitters also make units that will work great in LPFM applications. For example, Broadcast Electronics offers the STXe for power levels between 70 and 550W (more than enough for any LPFM application). Aside from the integral controller, it has an integral low-pass filter, meaning it can be used as a stand-alone transmitter. It also has an updated GUI, so if the site has IP access, complete



Broadcast Electronics STXe

remote access is available. SNMP support is also included. With the addition of VPe (Vector Power Enhancement) this exciter can also be used in HD radio applications in FM + HD Radio, or HD Radio only. For those outside the U.S, this exciter can also be used for FM + DRM+ applications.

Gates Air makes the Flexiva series of transmitters and the FAX300 would be appropriate for the many LPFM applications. It includes a direct-to-carrier modulator, with integral stereo generator, and integral low-pass filter, meaning it can be used as a stand-alone transmitter. (The FAX50, FAX150, FAX300, FAX500 and FAX1kW are fully FCC type accepted for LPFM.) Its stereo generator has analog L/R inputs along with two AES inputs, and a built-in RDS generator. AC power input uses between 90Vac and 277Vac. It's 3RU and 20.5" deep. FAX300 comes with an embedded



GatesAir Flexiva FAX300

TRENDS IN TECHNOLOGY

Web interface, SNMP support, and local GP I/O as well. Flexiva 300 can be used for HD Radio or DRM+ as well.

Nautel offers the VS300LP, which is a special version of the VS300, type-accepted for LPFM applications. Like all the other transmitters we've looked at, the VS300LP has an integral exciter; it uses direct-to-channel modulation, and comes with an integrated stereo generator, and SCA and RDS generators. The VS300LP accepts an AES program input, L/R analog inputs, composite, or IP streams such as Shoutcast, RTP, or Livewire. It also supports MPX over AES for a completely digital connection to many audio processors. Maximum power is 330W (analog only), and it's 2RU and about 25" deep with a type-N female connector output. The ac input voltage can operate between 180Vac and 264Vac. Remote access is done via the Nautel AUI, which gives the user complete monitoring and control via IP; parallel control and SNMP access are supported as well.



Nautel VS300LP

The evolution of FM transmission continues. After years of using tube transmitters, solid-state has now become commonplace. HD Radio has been thoroughly integrated into new products. The latest trends have mainly to do with the addition of IP access at transmitter sites: Web access, remote control, and the use of streaming audio. As transmitters become more reliable, and require less routine maintenance, they don't require as many hands-on visits, and so the ability to see their operation remotely has become more important than ever. The new design features are indicative of how communication has evolved, with ubiquitous IP access and Ethernet. I hope if you are looking at a new transmitter purchase that you'll embrace these new aspects of the art. ☺

Irwin is RF engineer/project manager for Clear Channel Los Angeles. Contact him at doug@dougirwin.net.

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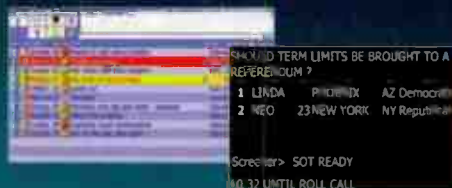
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The Motor Racing Network Takes to the Road

When building its new broadcast production vehicle, MRN applied lessons learned from the past.

By Chriss Scherer, editor

You can't really call it a remote broadcast vehicle. Yes, that's essentially what it does, but it really is a mobile broadcast production facility, and it packs more radio production capability into a 53' trailer than some radio stations have in several thousand square feet.





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Simian Gateway runs alongside Simian 2.2 **PRO** to manage TCP/IP communications between Simian Remote clients & Simian 2.2 **PRO**.

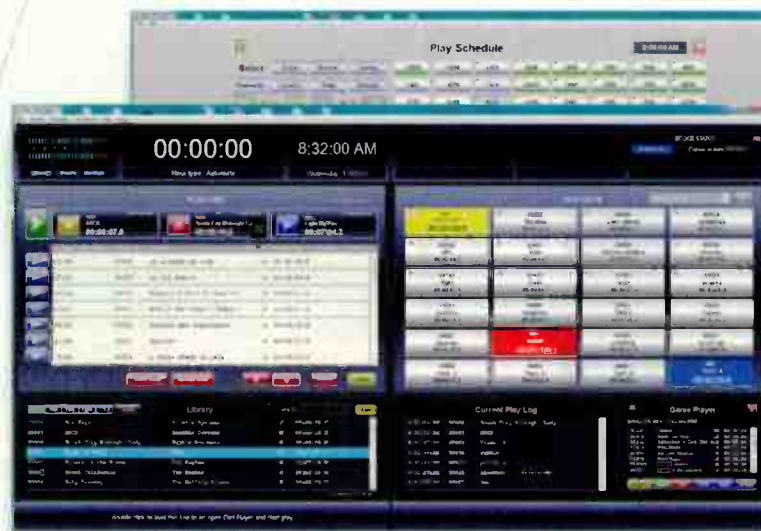
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World Radio History

FACILITYSHOWCASE



The main talent work area is also the central hall through the vehicle.

The Motor Racing Network is the primary source for NASCAR stock car racing and related radio programming. Event coverage for the network includes NASCAR Sprint Cup Series, NASCAR Nationwide Series, NASCAR Camping World Truck Series, and TUDOR



The main control room is at the nose of the vehicle.

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FACILITYSHOWCASE

Through the end of 2013, MRN operated two production trucks: a 40' Great Dane trailer, which was built 25 years ago, and a 53' Featherlite trailer that was built in 2003. The Featherlite hauler was the primary vehicle, and the 40' was the secondary. With two vehicles, MRN can cover more than one event at a time. But after 25 years of service, the 40' trailer was showing its age. Primarily, the vehicle was too small. It simply did not provide sufficient work space for the talent. It's main studio and small edit suite/office barely met the needs of the network. In 2012, the plan was set in motion to design and build a new vehicle and retire the old one.

A new 53' Featherlite trailer was ordered and delivered to Doug Watson at the MRN headquarters in Concord, NC, in Sept. 2013. That's when he and his crew of engineers Bob Wolfe and Sam Williams and drivers Dan Cressman and Mike Doncheff got started. Once the race ended, the heavy part of the project got underway in November and December 2013. MRN Director of Operations Frank Beers managed the project from start to finish.

A DAY IN THE LIFE

- > It is expected the new vehicle will log about 30,000 miles/year. Once an event is complete, the vehicle is usually driven to the next event directly and stored rather than driving back to a home base every time.
- > When maintenance is required, the first attempt is to do so on the road if possible. Concord, NC, is the primary home for major work.
- > A typical race weekend: Crew travels on Thursday, arrives at the track by noon/1 p.m. and set up begins. By the end of the day, the broadcast set up is about 90 percent complete. On Friday, setup is completed. Once the final race is complete on Sunday, the truck is packed up and prepped to go. The crew goes to hotels for the night and flies home on Monday.
- > At the track, there are two turn announcers, three pit reporters, and one producer in the booth in the tower. The broadcast booth is connected to the vehicle via a fiber optic link. An assistant producer is in the truck.



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The main studio can seat up to three guests.

The five-man team was able to complete nearly all the work in building the vehicle to have it ready for use at the Rolex 24 in Daytona on Jan. 21, 2014. While a few finishing touches remained, the trailer was ready for use.

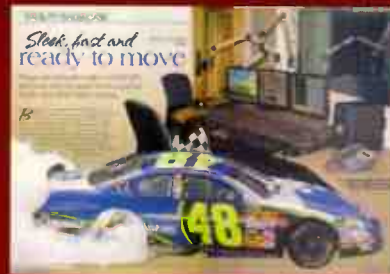
Now that it's in use, the old 40' trailer has been retired. The previous 53' truck has since moved to secondary use.

But the new vehicle is not a repeat of the 2003 design. It's very different all around.

The primary difference can be seen in the chassis. Both trailers have a space to transport a golf cart for use at event. The 2003 trailer used a low chassis where the cart was raised up and stored above. The 2014 hauler has a high chassis, and

MORE ONLINE

Radio magazine has profiled the work of MRN before. Access these articles at RadioMagOnline.com.



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Studio 2 can seat two guests.



Control room 2 is also used as an editing suite.

the golf cart is stored in the belly. This is the obvious difference from the outside, but the internal differences are numerous.

The first step in planning the design was for engineering, operations and production to come together and discuss all the needs and wants. The 2003 trailer was a baseline for a design, and a wish list was created to

decide what could be improved in the new vehicle. In the end, every idea proposed was implemented in the new vehicle.

For example, the 2003 vehicle was comparatively small and cramped. It has a two-seat studio and control room, but that space is confining. The office was in the nose of the vehicle. The traffic flow of the vehicle is such that

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people have to move through the studio to get to the office. This is far from ideal when a show is in progress.

The new vehicle places the larger studio, which seats three, in the nose of the truck. (A floorplan for the vehicle is online.) There's also a second studio and control room. The new vehicle has slide outs like the 2003 trailer, but the new slide outs are not symmetrical.

The larger slide out is on the street side. It holds the second control room and second studio. The small slide out on the other side provides access to the main control room.

While both trailers have small edit suites, the second control room in the new vehicle can also be used as an edit suite when needed.

Another major upgrade is in the audio wiring. Since the previous trailer was built, IP audio has evolved rapidly. An Axia Audio network handles the audio throughout. The mixer in the main control room is an Allen and Heath GL2800, but each channel and each output is connected to audio network nodes so the full capability of audio routing and switching is still realized. The routing capability also allows the main studio to be accessed

EQUIPMENT LIST

Allen & Heath GL2800
 Axia Xnodes, RAQ, QOR,
 XY router controllers
 Bose 151
 Comrex Access
 Denon SD recorders
 ESE ES 185U/NTP, ES 943U
 EV RE-20
 JBL Control 1
 Lectrosonics Venue
 Sony MDR-7506
 Telecast Adder
 Telos Zephyr Xstream
 WideOrbit Automation for Radio
 Wilburt pneumatic mast
 Yellowtack Mika

by the second control room if needed (and vice versa). Two full programs (and likely more) can be produced within the vehicle.

The high chassis design also helped with wiring. The wire count was reduced by the IP audio network to begin with, but the trailer design allows wiring to be run in the belly of the vehicle, which is much easier for the engineers. Likewise, the golf cart storage is easier; it drives up a ramp instead of being elevated on a platform. The panel on the back that is painted with the Voice of NASCAR is where the golf cart is stored.

With IP at the truck's core, the trailer can connect to the MRN headquarters at any event. A single CAT5 cable to the outside allows the vehicle to access the data servers and the IP phone system from the road.

Additional access is provided by the power and network outlets on the outside of the vehicle. There are also fold-out tables on the exterior to provide more work space.

The new broadcast production vehicle has been designed with all the lessons learned from its predecessors to create a highly efficient use of space with greater connectivity and flexibility in audio routing. **0**

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Motor Racing Network chose an ESE Master Clock System it could trust to provide accurate and precise time throughout the facility to keep everything synchronized. ESE offers a forward-compatible Master Clock and Time Code Displays in many different sizes with the option of blue, MRN's signature color, LEDs for a clean, customized look. ESE's affordable ES-185U/NTP is a GPS Master Clock/Time Code Generator/NTP Server that generates reliable time and date information in all the most common time codes including Network Time Protocol (NTP). NTP keeps computers and any other equipment on the network in sync. The Time Code Displays have ESE's Option NTP-C/PoE, introduced at NAB 2013, which allows the units to receive NTP time code and power-over-Ethernet via one 48V Ethernet cable.

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Practical Use: Circulators and Isolators

by Doug Irwin
CPBE DRB AMD

Circulators and isolators are commonly used in RF work. You should know how they work and the appropriate applications for each.

A circulator is a three-port device that has an interesting characteristic. (See Figure 1.) When the RF signal is applied to port 1, it rotates through the device and will exit via port 2. Likewise, any RF signal applied to port 2 will rotate through the device to port three; and an RF signal applied to port 3 will rotate through the device to exit port 1.

Now take a circulator and place a termination on port 3. The RF signal applied to port 2 will exit and be terminated at port 3. The better the termination on port 3, the better the isolation will be back to port 1. By adding this terminator, the circulator has just become an isolator.

What happens inside a circulator though? From Nova Microwave, we have a reasonable explanation. (Italics are mine.)

“A junction circulator is a three-port device formed by a symmetrical Y-junction strip line coupled to a magnetically biased ferrite material. A ferrite disk and the intersection of three transmission lines from the Y-junction is where the actual circulation occurs. A signal applied to a ferrite disk will generate two equal, circularly polarized counter-rotating waves that will rotate at velocities $\omega+$ and $\omega-$. The velocity of a

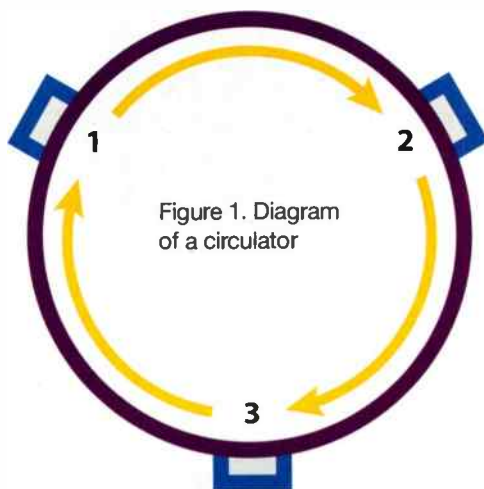


Figure 1. Diagram of a circulator

circularly polarized wave as it propagates through a magnetically biased microwave ferrite material will depend on its direction of rotation. By selecting the proper ferrite material and biasing the magnetic field the phase velocity of the wave traveling in *one* direction can be made greater than the wave traveling in the *opposite* direction. If a signal were applied at port 1 *the two waves will arrive in phase at port 2 and cancel at port 3*. Maximum power transfer will occur from port 1 to 2 and minimum transfer from port 1 to 3, depending on the direction of the applied magnetic field. Due to the symmetry of the Y-junction, similar results can be obtained for other port combinations. *Externally, the circulator seems to direct the signal flow clockwise or counterclockwise depending on the polarization of the magnetic biasing field.*”

IN USE

Applications for isolators (a circulator with a termination on port 3) are many. A common use is in the output of an HD Radio transmitter. Here the idea is to shunt RF from the analog transmitter that is present in the HD Radio antenna for one of many

reasons in to the termination, as opposed to directly back in to the RF output of the HD Radio transmitter, where it could easily cause intermodulation products to be generated.

Having an isolator in the output of a UHF or VHF transmitter is not uncommon when the desire is to take all the various signals that are induced in the antenna that the transmitter is seeing on the far end of the transmission line, that subsequently come down the transmission line, and shunting them in to a termination (port 3) so they do not get back in to the output amplifiers of the transmitter, where they could easily generate intermodulation products, that would subsequently travel back up the transmission line and in to the antenna, and into space afterward.

A third application is in the output of an amplifier that is sensitive to its load conditions. A tube transmitter that has a solid-state IPA with VSWR fold-back is a perfect example. Often, when brought up from a cold start, the final amp of a tube transmitter will present a considerably different load than when it is warm. A solid-state IPA will sometimes suffer from VSWR foldback in this condition — leaving you with a transmitter that won't produce enough (if any) RF. The use of an isolator can cure this problem by effectively letting the IPA see a fixed load, even as the tube warms up. You can optimize the grid tuning while the tube is warm and not have to worry about it presenting a bad load (at the same tuning points) to the IPA when it is cold.

For high-power VHF isolators, contact an antenna vendor. For UHF and lower-power VHF isolators, try some the manufacturers in the resource list. **0**

RESOURCES

Meca Electronics | e-meca.com
Microwave Filter | microwavefilter.com
Nova Microwave | novamicro.com
Telewave | telewave.com

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*USB sound card supports USB HID compatible PCs

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World Radio History

Studio Furniture Is the Foundation

The studio furniture is the foundation of any studio. It's the canvas on which everything else is placed. With that in mind, it could be considered the most important piece of equipment in the room. And while it may seem like just a spot to place the console and mic booms, it will define how the entire room functions.

An early decision is selecting the furniture provider. Several manufacturers who ship nationally are listed here, but there are local and smaller shops that can create a quality product. One point to keep in mind is that while the local cabinet-maker may be skilled at making kitchen cabinets, designing and building studio furniture is a different skill set. Even simple items like the proper spacing of rack rails and the width of the 19" rack opening (It's actually a little more than 19") easily justify an experienced studio furniture manufacturer.

There are essentially two choices for a countertop surface: wood or composite. Both are practical and offer advantages. The composite surfaces (such as Corian) yield different aesthetics than wood. Talk to your manufacturer of choice to determine which is best for your application and budget.

It's easy to think of the furniture as something to simply hold the console, but a radio studio today can be seen and not just heard. Video is everywhere, and good-looking furniture makes for a good-looking studio. And what better way to show off the facility to advertisers and underwriters than showing them the air studio>

When designing the furniture, keep in mind that everything has a place. And everything must be placed where it's easy to use and reach. You've likely seen the air studio where an equipment rack is placed just a little too far to the side or at not quite the right angle. Announcers and operators shouldn't have to twist or contort to perform a regular task.

Our studios now look more like flight control centers than audio production facilities. Consider how multiple video monitors and keyboards will be placed. And keyboards often need to be stored as well. Operating function, visual sight lines (especially if you shoot video) and equipment placement all come into play.

For the engineer, access is key to a good furniture design. Whether it's a closed or open design, cable routing, ac voltage management and general equipment access are all key considerations. Equipment cooling is also important.

These are just a few items to keep in mind the next time you need to order studio furniture. **0**

Arrakis ACCENT | arrakis-systems.com

The ACCENT line is comprised of advanced component studio furniture for radio. And Arrakis once again has redefined the standard for quality and beauty. The metal structure is artfully integrated into the visible design decor of the cabinetry,



creating an even more durable and attractive studio. As the result, ACCENT is a contemporary blend of brushed metals, pleasing colors, and interesting textures.

ACCENT furniture is the definition of function combined with flexibility. Standard configurations meet the needs of most studios. While the custom features enable the user to define what they really want out of a studio.

Graham Studios Modulux | graham-studios.com



Graham Studios has shipped over 3,000 furniture packages in the past 30 years. Our Modulux line is unique, in that specially designed metal posts tie the tops, sides, and floors together. Hardwood plywood floors and toe kicks help make Modulux the sturdiest furniture in the industry.

Hardwood is used to trim tops and sides. Other standard features include: curved interview ledges with headphone jacks, vented access doors, interior cabinet lighting, console cutouts, and custom hatches where needed. Modulux ships assembled or flat pack, and can be assembled in less than 60 minutes. Modulux has a 10 year limited warranty.

RAM Systems | ramsystemsonline.com

Ram Systems prides itself in the unique challenges involved with the custom design and manufacturing of studio furniture. The company will create a design that meets customers needs, flows well and will hold up and continue to look as good in ten years as it did the day installed. The company's heritage provides a foundation on the past, and its skill set along with today's technology give it the ability to "future proof" its designs for the future.



The company's heritage provides a foundation on the past, and its skill set along with today's technology give it the ability to "future proof" its designs for the future.

GatesAir Smoothline & Quickline | gatesair.com

GatesAir Smoothline and Quickline studio furniture solutions are available in custom and quick-ship configurations to meet the requirements and deadlines of any new or refurbished studio project. Sturdy, sleek, aesthetically pleasing and cost-effective, Smoothline and Quickline solutions come in sit-down and stand-up configurations to suit the activity level of any show. Corresponding dimensions accommodate the desired number of host and guest positions.



Strategic designs assist with quick set up, incorporating cable trays, punch holes and more to ensure clean wiring. A wide array of options for turrets, shelves and enclosures are available to comfortably house and protect source equipment including special designs for today's extensive use of monitors and IT hardware. Robust surfaces and supports ensure that consoles, automation systems and other desktop components are safe and secure, while also integrating microphone, headphone controls and more as required.

Omnirax Shapes | omnirax.com



Omnirax Shapes line of custom furniture is recognizable for its use of mass and architectural forms. There are some projects that call for more than simplicity and the company's signature curves shout to be noticed. Cumulus' Nashville facility is shown here.

Cumulus' Nashville facility is shown here.

"I think Omnirax pulled off what no other company could. They built us a one-of-a-kind piece of art that is as functional as it is breathtaking. When someone like Taylor Swift walks in and says, 'Oh my gosh. Look at this.' You know you've hit it out of the park. I couldn't be happier."

~ Blair Garner, Host of "America's Morning Show"

Studio Technology | studiotechology.com

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higher-end furniture using solid-surface materials because of it being a certified fabricator. Studio Technology furniture can be found in broadcast facilities both large and small country-wide. The company goal is to develop a design that fits a budget and operational needs. The company will work with the project's our architect, systems integrator, and local staff and offer complete delivery and installation using Studio Technology employees.



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Streaming with the MPEG HE-AAC Audio Codec

by Matthias Rose, Fraunhofer IIS

It's hard to believe that the first Internet radio broadcast took place just 20 years ago. Today, tens of millions of people stream Internet radio to their smartphones, tablets and other connected devices. Nearly every terrestrial radio station as well as Internet-only broadcasters offer streaming services to reach listeners. Thanks to changes in consumer listening behaviors, users are embracing Internet radio on a massive range of devices and the Internet radio audience is expected to continue growing over the next years. During 2013, the number of U.S.

Internet radio listeners grew to approximately 147 million, up 11 percent from 2012.

Streaming services face significant monetization challenges as Internet services pay higher content royalties than cable and satellite radio, while AM/FM radio services are not required to pay any fees. There are several audio codecs in use for streaming but they vary significantly in their ability to provide and maintain reliable audio quality at low bit rates. Yet one codec stands out from the others: The ISO MPEG standard High Efficiency AAC (HE-AAC), which has become the audio codec of choice among leading broadcasters, including the BBC, NPR and

Cienradios as well as music service providers such as Pandora and iTunes Radio.

In their search for the best audio codecs, U.S. public radio broadcaster NPR conducted a test of six codecs, including HE-AAC, LAME MP3, AAC-LC, AMR-WB+, and xHE-AAC (Extended HE-AAC). NPR tested each codec over a wide range of bit rates and programming formats, and found that HE-AAC was the top performer, citing its high-quality audio, low bit rates and broad compatibility with target device platforms such as Android, Apple iOS, Windows, Mac as well as Adobe Flash and leading HTML5 browsers. The researches also

noted that HE-AAC does not require any content distribution fees, and that it provides support for audio-specific metadata for loudness normalization.

Co-developed by Fraunhofer IIS, the HE-AAC audio codec provides the same quality audio at one-half or one-third the bit rate of other audio codecs. Thanks to audio bit rates down to 96kb/s for 5.1 surround, HE-AAC also allows broadcasters to stream in surround sound without switching to stereo when bandwidth becomes constrained. This can avoid a simulcast of stereo and surround programs.

NPR's study also tested xHE-AAC, the latest member of the AAC codec family co-developed by Fraunhofer IIS. Researchers found that xHE-AAC performed very

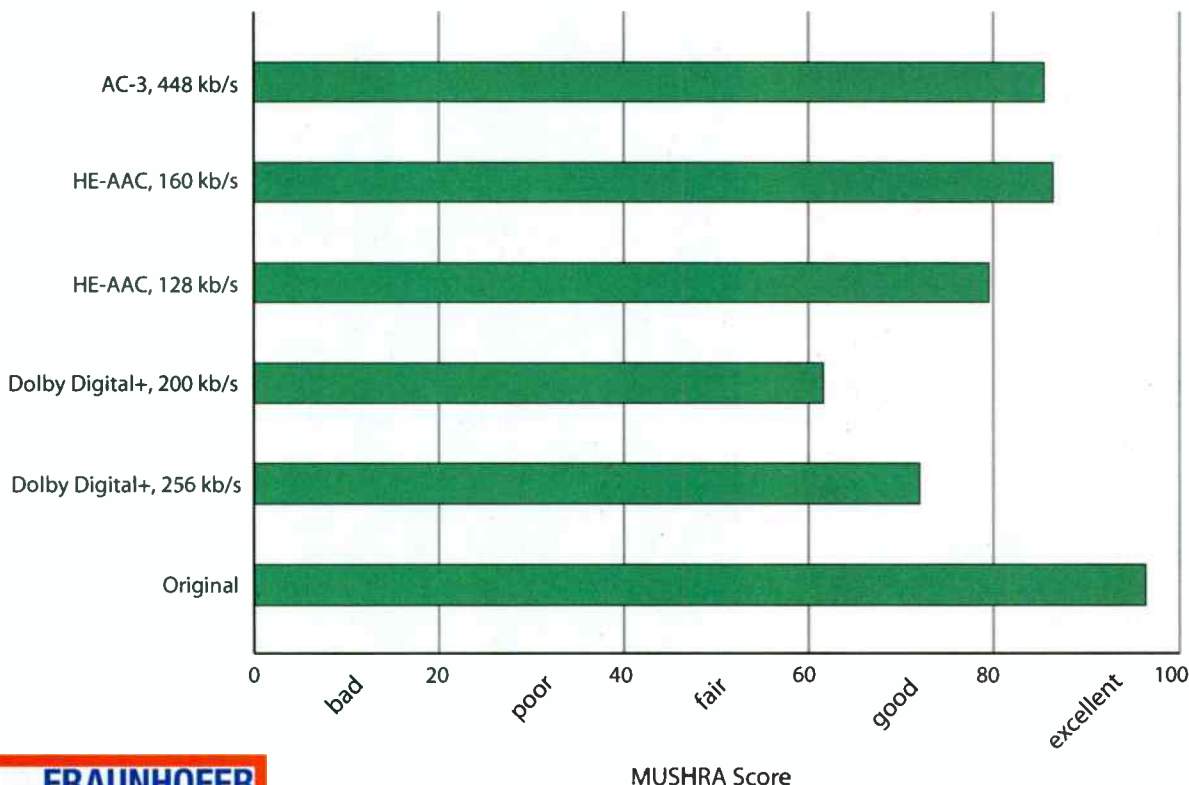


Figure 1. For HE-AAC bit rates ≥ 160 kb/s, the average of all 10 test items was found to be in the region of excellent. (See EBU report)

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well at low bit rates for mixed content containing both audio and speech signals. Previously, providers of low bit rate streaming and digital radio broadcast services had been forced to select and prioritize either an audio or speech codec. This resulted in poor quality for some signals. xHE-AAC eliminates this dilemma by providing one unified codec suitably for all content types. Because of these impressive results, NPR considers to adopt xHE-AAC as it becomes more widely deployed on consumer devices.

This recent NPR study is not the first time HE-AAC has been rated the best performing audio codec for Internet radio. A 2007 study by the European Broadcast Union (EBU) evaluated a variety of open-standard and proprietary audio

codecs, and found that, "HE-AAC has proven, in several independent tests, to be the most efficient audio compression scheme available worldwide." The codec provided remarkable results for bit rates equal and higher than 160kb/s for 5.1 surround sound, marking it the favorable choice for broadcasters.

Another sign for HE-AAC's role as the de-facto standard for radio streaming, was its selection by one of the largest Internet radio broadcasters in Latin America, Cienradios, that recently licensed HE-AAC from Fraunhofer IIS for its growing digital platform. Cienradios brings users the experience of listening, enjoying and choosing their favorite entertainment within a specific genre, offering listeners more than 500 stations to select from. Transitioning from broadcaster to anycaster, Cienradios seeks to deliver content anytime, anywhere to listeners in as many formats as possible. The site receives approximately 1 million page views per day and its adoption of

HE-AAC as the only audio codec for all of their Internet radio stations is key to the company's goal to become Latin America's premier 24-hour Internet streaming service.

Cienradios is just the latest streaming service adopting HE-AAC. Thanks to the availability of HE-AAC in the complete broadcast and streaming ecosystem, many more broadcast systems and Internet audio services such as CBS and Clear Channel have been on-air with HE-AAC for a long time. With the introduction of HE-AAC as the mandatory stereo and optional surround audio codec in the DASH-AVC/264 Implementation Guidelines for dynamic adaptive streaming over HTTP and its native support in HTML5 browsers, HE-AAC will further expand its position as the number one broadcast and streaming audio codec worldwide. 


Rose is PR officer of Fraunhofer IIS.

RESOURCES

NPR Labs Study | tinyurl.com/NPR-Report
EBU Report | tech.ebu.ch/docs/tech/tech3324.pdf


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THE AWARD WINNING, ACCLAIMED
FMHD-1
NOW WILL SIMULTANEOUSLY DECODE & DISPLAY
4 HD AUDIO STREAMS!




- Direct Sampling of the FM RF Carrier
- Digital FM Carrier Demodulation
- Frequency Agile on both Antenna & High Level RF Inputs
- RF Spectrum Analysis with FFT Power Band Calculations
- Adjustable RF Mask for High Power/Asymmetrical HD Sidebands
- Metering of Analog Total, Pilot, L, R, L+R, & L-R
- Metering of HD L/R/L+R/L-R Audio Streams
- Time Alignment Cross Correlations Analysis ±16384 Samples, ±375ms
- HD Control and Status Information
- HD SIS and PAD Data
- BER (bit error rate) Measurements
- User Assignable Email, Relay & Display Alarms
- RJ-45 Ethernet Interface with Remote PC Software

THE ALL NEW FM SOLUTION
FMCS-1
All-in-One FM Modulation Monitor
Now includes Peak Weighting! (with software update)

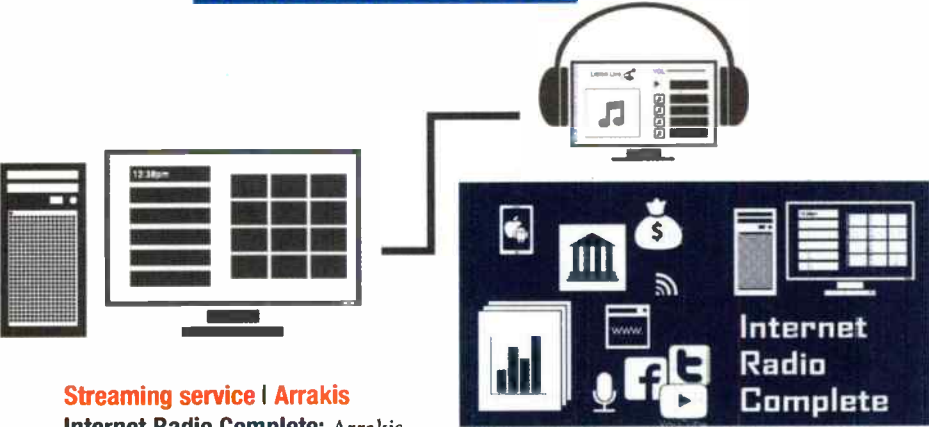


- Direct Sampling of FM RF Carrier
- Frequency Agile on both Antenna & High Level RF Inputs
- AM & Sync AM Noise Measurements
- Variable BW Digital IF Filtering
- Digital FM Demodulation with 100dB 75µs SNR
- Variable BW Composite Filtering
- Digital Stereo Demodulation with 100dB L/R Separations
- Full Metering of Analog Peak and RMS Values
- RDS Injection and Full Data Decoding
- Two Digital SCA Decoders
- RF, Composite and Audio FFT Spectrum Analysis
- User Assignable Email, Relay & Display Alarms
- RJ-45 Ethernet Interface with Remote PC Software



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Streaming service | Arrakis

Internet Radio Complete: Arrakis

Systems is partnering with Securenet Systems Internet streaming service, to provide an end-to-end system for creating an affordable Internet radio station. Nicknamed Internet Radio Complete, it's designed for novice and experienced Internet radio users alike. It provides the radio automation software to produce and present program material, and the streaming service that has the control panel to monitor streams, the players for listener's media devices, media accounting, ad delivery and much more.

arrakis-systems.com

Log periodic antenna | Shively Labs

Model 6025: The Model 6025 antenna features vertical, horizontal or slant polarization options, and a 5kw power rating per antenna element. It is non-pressurized with directional pattern studies available and comes packaged partially disassembled. Frequency range is 88-108MHz with 50ohms impedance. Elevation gain is 1.15 in vertical or horizontal position and 0.55 in slant. Power gain is 5.97 in vertical or horizontal and 2.53 in slant. Gains calculated for 98.1MHz. Parallel boom kits for directional arrays are available for requirements in need of two antennas side by side to create a narrow pattern. Anti-rotation arms are also available.

shively.com

Software | Digital Alert Systems

DASDEC MultiStation: Adding MultiStation to any DASDEC device provides sequential forwarding and selectable text-to-speech (TTS) conversions. Now CAP messages with multiple language blocks can be selected to play back on specific stations with a high-quality TTS conversion. Combined with MultiStation software, one DASDEC-II system can replace five separate encoder/decoder sets, in turn reducing wiring, rack space, and power requirements.

digitalalertsystems.com



Digital multiplex interface | Wheatstone

baseband192: baseband192 uses open standard technology that eliminates the need for an analog composite interface between processing and transmission — clearing the last obstacle to a 100 percent digital air chain. A single cable between a Wheatstone processor and the transmitter carries the baseband signal up to and including the RDS, bypassing the need for multiplexing in the exciter and eliminating the resulting signal overshoot with associated loudness tradeoff. The baseband192 interface is now available as a standard feature in Wheatstone AirAura X3, FM-531HD and VP-81P audio processors.

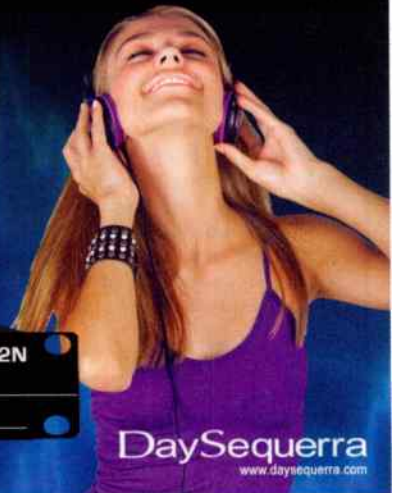
wheatstone.com

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the products inside out. They are based all over the US, so you can have the peace of

mind that there's always someone close at hand to help and advise.

TX300 V2 is only available from SCMS, so call us today and order yours.



www.scmsinc.com

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sales@scmsinc.com



Audio processor | Orban

Optimod-FM 5700: The 5700 provides stereo enhancement, equalization, AGC, multiband compression, low-IM peak limiting, stereo encoding and composite limiting - everything needed to compete in any market. The front-panel display includes a 2x40-character LCD and LED bar graphs that show all metering functions of the processing structure (two-band or five-band) in use. The metering is always visible while adjusting the processor. Navigation is by dedicated buttons, soft buttons (whose functions are context-sensitive), and a large rotary knob. Ethernet connectivity is standard, as is an easy to use PC remote control application that runs on Windows XP and higher and that can control many 5700 units on a TCP/IP network.

orban.com

Business automation | Myers Information Systems

ProTrack v6.07: ProTrack offers comprehensive scheduling and business management for individual, multichannel and multi-station facilities. Built on a more-powerful SQL database management engine, the new radio version further streamlines facility workflows and incorporates numerous functionality and user-experience enhancements. Among them: New single or multi-channel "Master" template; improved as-run functionality; enhanced broadcast log toolbar; and new channel groups to assign spot/interstitial eligibility.

myersinfosys.com

LED aircraft obstruction lighting | Dialight

Vigilant L-864/L-865: With FAA certification for all tower and aircraft obstruction heights, the new Vigilant obstruction lighting line provides lower power consumption, smaller size, less wind load and lighter weight. The L-864/L-865 dual medium intensity red/white strobes are offered in the same small and lightweight housing as the L-864, which results in a 5-pound weight reduction. This generation of LED obstruction lighting also adds the red L-864 beacon that is 25 percent smaller and 22 pounds lighter than the previously white-only version. Dialight's Vigilant beacons and strobes are the first product line to be fully tested and verified by Intertek ETL to the 2012 Transport Canada CAR 621 specification. With the use of diamond-cut tooling and Dialight's patented reflector-based optics, the new lights provide an absolute razor sharp light cutoff that essentially eliminates light pollution. Ruggedized for harsh conditions, the strobe is designed for operation in ambient temperature range of -40 degrees C to +55 degrees C and is highly resistant to lightning, vibration and shock.

dialight.com



"I love their support. Smarts folks are transparent. They'll fix it with you on the phone, explaining every step ... or send a file that fixes everything. I really recommend Smarts and their Skylla automation."

- Greg Pyron, Earls Broadcasting, Branson, MO

"We have found it so simple to use, we now broadcast from many more events in our community. In this day and age, we have to be more local with our stations and this gives us the perfect opportunity to do just that."

- Wayne Johnson, GM, Media Logic LLC/Sterling, CO



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NEW!



ACS 16.2 Stereo Audio Matrix Switcher
Provides matrix audio switching of 16 stereo inputs to two stereo outputs.

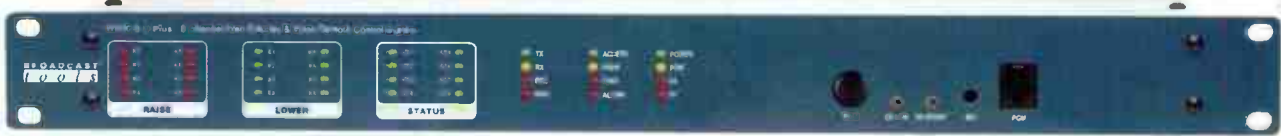
NEW!



AES SWITCHER Sentinel 6+2
Web-enabled audio switcher with six AES inputs, two analog inputs and MP3 streaming.



SITE Sentinel 16 16 Channel Web-enabled Site Remote Control System
A robust, full-featured; web-enabled sixteen channel remote control system.



WVRC-8 Plus 8 Channel Web & Voice Remote Control System
A one rack-unit solution for web based and/or recordable voice response dial-up transmitter site control.

NEW!



STREAMING Sentinel 4 4 Channel Internet Radio Monitor
Four channel internet stream monitor with email/dial-out alarm notification and balanced analog monitor audio output.



AUDIO Sentinel Streaming
A web-enabled two channel stereo silence monitor combined with a transparent, integrated audio switcher and MP3 streaming.

NEW!



AES Switcher Sentinel 3+1
Web-enabled audio switcher with three AES inputs, one analog input and MP3 streaming.

NEW!



DAC-1 Digital Audio Converter
A professional quality 24-bit stereo digital-to-analog audio converter.

NEW!



WVRC-4 Plus 4 Channel Web & Voice Remote Control System
A 1/2 rack-unit solution allowing dial-up recordable voice response and/or web-enabled control and monitoring



Designed in Washington State
World Radio History and Assembled in the USA

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www.broadcasttools.com



Connectors | Neutrik

powerCON TRUE1: New powerCON TRUE1 connectors are Neutrik's first true mains connector with breaking capacity according to IEC 60320 and UL 498 standards. This feature enables these connectors to be connected and disconnected under a live load. The UL and VDE certified, single-phase system is designed for 16A, 250V. The cable connector comes with an integrated twist-lock mechanism. Model designations include NAC3FX-W and NAC3MX-W, where the "W" indicates weather resistance. Being IP65 weather-resistant certified, these connectors have water-sealing gaskets at the rear. They are offered in both male and female genders, enabling cables to be easily chained without the need for couplers. Additionally, powerCON TRUE1 is a complete system encompassing an in/out duplex chassis connector for devices that get daisy chained.
neutrik.com



Remote control | Burk Technology

ARC Solo: The ARC Solo offers many of the powerful features of the ARC Plus together with the simplicity of the ARC-16. For uncomplicated sites the ARC Solo has everything needed, all in a single package: wiring interface, built-in Web server, macros, alarms, dialup and more. There is nothing else to buy. ARC Solo even includes new Recordable Speech Interface for dial-in and dial-out telephone access. ARC Solo works with the available AutoPilot 2010 PC software to comfortably manage multiple ARC Solo sites along with ARC Plus sites. Get Jet Active Flowcharts to make automatic functions even easier.
burk.com



RDS sign driver/receiver | Inovonics

INOmini 402: Inovonic's INOmini 402 is a small form-factor RDS/RBDS message sign driver. It tunes the FM band, taking a station's now playing text and sends it to a variety of large format scrolling LED/marquee signs. This provides for continuous RDS display of now playing messaging in station studios, control rooms and external billboards.
inovonicsbroadcast.com

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Headphones | AKG

K812: The K812 offers an oversized 53mm driver for the highest dynamic range ever in an AKG headphone. Its copper-covered aluminum voice coil extends sounds beyond the limits of human hearing, hitting a full spectrum of frequencies. Each K812 is built for comfort with a fast, adjustable headband and extremely soft ear pads to ensure comfort in any application, for extended periods of time.

akg.com

Streaming appliance | Comrex

StreamPilot: StreamPilot from Comrex is a dedicated streaming appliance designed with hardened Linux-based hardware and software and no moving parts; not even a fan. It provides AES3 and analog balanced inputs, special audio processing options enhanced for streaming and is configured through an intuitive Web-based interface that provides audio metering and status to any computer. StreamPilot can deliver a source stream to any Shoutcast/Icecast-based streaming server, and given enough bandwidth, can deliver 100 streams directly to listeners. Connecting to an audio stream is simplified by giving a choice of formats, either HE-AAC or MP3 because StreamPilot is capable of dual mode encoding. StreamPilot is a compact unit occupying half a rack space.

comrex.com

Parallelable three-phase UPS | Staco Energy Products

Firstline PL: Available for 10-40kVA applications, these units boast efficiencies of up to 94 percent for lower energy costs and reduced carbon footprint, while delivering maximum availability and flexibility. Compact and reliable, internal batteries allow a smaller footprint, while cooler operation extends internal component life. True on-line, double-conversion technology is achieved through IGBT and Digital Signal Processor (DSP) control, enabling delivery of a high input power factor of 0.99, and a low input current distortion of less than or equal to 1 percent at full load. All units can be set for 50/60Hz frequency conversion; some models can operate as a precision power conditioner, which is upgradable to a UPS in the future. SNMP and MOD-BUS communication, and paralleling circuit are all standard.

stacoenergy.com



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NABSHOW NEWPRODUCTS

Fiber transport system | Studio Technologies

Model 412: The Model 412 is a high-performance portable or rack-mounted router for transporting multiple serial digital video, MADI digital audio, as well as gigabit Ethernet signals over single-mode optical fibers. The Model 412 comes in three versions offering a range of SDI/MADI input and output configurations.

It uses optical multiplexing to transport six SDI or MADI signals over two single-mode optical fibers. The SDI or MADI signals, at rates of up to 2.97Gb/s, are transported over the fibers at wavelengths of 1310, 1490, and 1550 nm. In typical applications, the launch power and receive sensitivity are such that signals can be transported over a minimum distance of 10 kilometers. SDI input signals can be SD (270Mb/s), HD (1.485Gb/s), or 3G (2.97Gb/s). The 3G signals can be in either Level A or Level B format. DVB-ASI (270Mb/s) signals are also compatible.

studio-tech.com



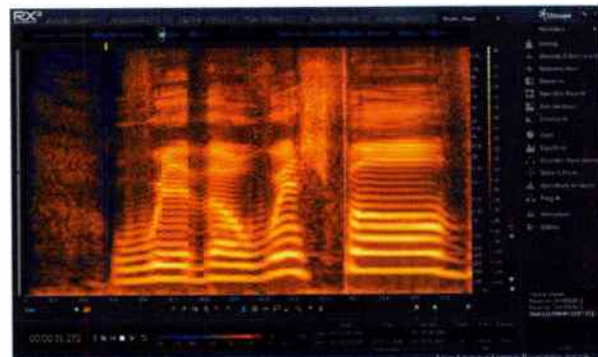
Processing algorithm | TC Electronic

Reverb 8: Reverb 8 is a new reverb algorithm for TC Electronic's System 6000 audio processing platform. A single System 6000 MKII frame is capable of running two Reverb 8 instances, delivering 16 output channels of ultra-realistic space. For an even higher channel count, multiple System 6000 MKII frames can be linked in a network, offering reverb for virtually any channel-count. Reverb 8 may be fed with any input signal — mono, stereo, 5.1, 7.1, etc. — and deliver to an infinite number of output channels.

tcelectronic.com

Audio repair suite | iZotope

RX 3, RX 3 Advanced: With remedies for noise, clipping, hum, buzz, crackles, and more, RX 3 is a robust and quality-sounding audio repair toolkit. RX 3 Advanced extends the standard version of RX 3 with specialized features designed for audio professionals. Work up to six times faster thanks to under-the-hood processing enhancements and a redesigned user interface. Remove or reduce reverb from audio using the new dereverb module in RX 3 Advanced. Clean up dialog on the fly with RX 3 Advanced's real-time dialogue denoiser. Use both eyes and ears to identify and fix problems within a spectral audio editor. Never lose an edit again with the unlimited undo history, saved automatically with audio data into the new RX document format.



Remove or reduce reverb from audio using the new dereverb module in RX 3 Advanced. Clean up dialog on the fly with RX 3 Advanced's real-time dialogue denoiser. Use both eyes and ears to identify and fix problems within a spectral audio editor. Never lose an edit again with the unlimited undo history, saved automatically with audio data into the new RX document format.

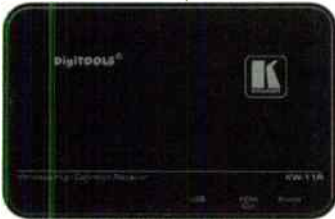
izotope.com

**Wireless high definition transmitter/receiver set |
Kramer Electronics**

KW-11: The KW-11 transmitter and receiver set is a wireless high-definition HDMI system, utilizing WHDI technology. The KW-11T converts the HDMI signal into a wireless signal that it transmits to the KW-11R. The KW-11R converts the wireless signal back into an HDMI signal. The units send the uncompressed video resolutions up to 1080p @60Hz with zero latency up to 40'.

The KW-11 can be installed under the table or in a closet with no direct line of sight required. It features MIMO 5GHz technology, and a very secure AV link through its AES-128 encryption.

kramerelectronics.com



**Multi-camera
production systems |
NewTek**

TriCaster 410, 460, 860: All

systems now offer four or eight full mix/effects (M/E) channels, expanding the system's switching performance. Producers

can use these M/Es to generate layered and composited real-time video, produce sub-mixes in the main video program, and output content as a secondary program — all with complete switcher behaviors, transitions, overlays, multi-source layering and virtual sets. Additional enhancements now standard across the entire product line include advanced virtual sets with new camera motion controls; new "holographic" virtual sets that blend panoramic images with layered and composited video; broad media publishing functions for simultaneous multi-channel content delivery; expanded buffers for creating hundreds of custom motion and animated graphics; new, unique remote robotic camera controls; and extensive macro and automation functions that greatly simplify the execution of system commands during a live program and integrate with venues that already use comprehensive MIDI automation.

newtek.com



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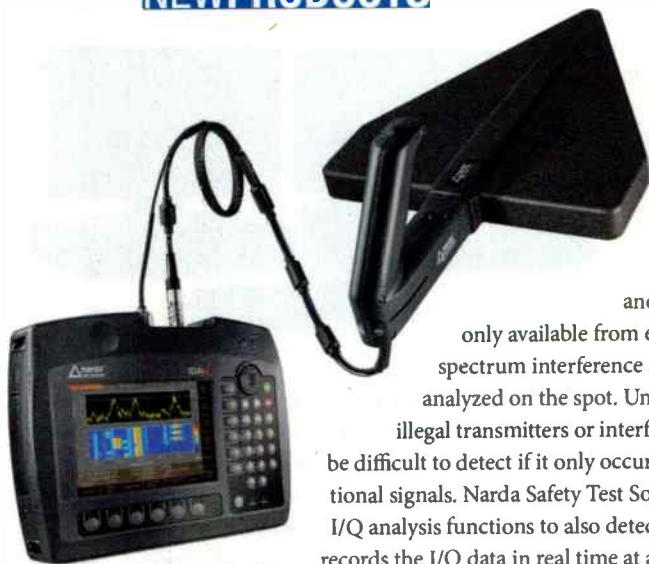
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RF test equipment |
Narda Safety Test Solutions
Interference and Direction Analyzer

2: Based on the I/Q analyzer function data, this device generates high-resolution spectrograms, persistence spectrums and time domain displays that were previously only available from expensive laboratory instruments. Radio spectrum interference and impairments can thus be detected and analyzed on the spot. Unintentional or deliberate RF interference, illegal transmitters or interference between permitted radio signals can be difficult to detect if it only occurs sporadically or is hidden under conventional signals. Narda Safety Test Solutions has equipped the new IDA 2 with I/Q analysis functions to also detect and locate such signals. The instrument records the I/Q data in real time at a maximum channel bandwidth of 32MHz, and saves up to 250,000 I/Q data pairs without compression, i.e. without loss of data.

Based on this data, the IDA 2 computes high-resolution spectrograms, persistence spectrums or oscilloscope-like displays versus time. Computation is done continuously during the measurement or subsequently from the stored data set. Since the underlying data remain unchanged in the device memory, display parameters such as the frequency or time resolution afterwards can be altered, and the user can zoom in on details down to the original resolution offered by the I/Q data.

narda-sts.de



Microphone, monitor arms | Yellowtec

Mika: Yellowtec has expanded Mika, its elegant and versatile studio mounting system with three new additions: Pad Dock, a holding that allows the use with iPads and other tablets; Mic Arm TV, a microphone holder with a customized design for TV broadcasts, which leaves the visual field of the user free; and Copy Stand, a versatile script holder.

yellowtec.com



SkimmerPlus

Skimming, Logging and Air Checks with ease.

SkimmerPlus Features

- Creates high-quality and highly compressed files simultaneously
- Supports multiple professional audio formats, such as PCM MP2, and MP3
- Supports recording from triggers
- Automatically manage hard drive space
- Up to 24 record decks available
- Individually customizable title bars and record features for each deck
- Create and save event logs for fully customizable unattended recording
- Control over record break points for long-term recording
- Central skimming for multiple-station clusters

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- Supports user account creation
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- Listening to last week's records is just a calendar's click away

www.bsiusa.com

For More Information Call: 1-888-BSI-USA-1 ~ Email: sales@bsiusa.com





Active monitor | Genelec

8010: The smallest member of the 8000 product range, the 8010 features a balanced XLR input, 3" bass driver, 3/4" tweeter and efficient Class D power amplifiers – one for each driver. The 8010 produces more sound pressure level than might be expected from a monitor of this size. The Intelligent Signal Sensing ISS circuitry saves energy by automatically putting the monitor to sleep when the audio signal has been absent for a period of time. Once a signal is detected again, the monitor wakes up automatically. This circuitry can be bypassed when the automatic standby function is not desired. A full range of versatile accessories is available for the 8010, which cover all mounting needs.
genelecusa.com



Transmitter | Broadcast Electronics

FM 40T: The FM40T maintains the folded half-wave cavity, providing performance and reliability. It avoids the most common cause of transmitter failures by eliminating plate-blocking capacitors, output coupling capacitors and sliding contacts. The FM40T also includes BE's latest exciter technology with the STXe60.
bdcast.com

Multi-format AIC over IP encoder/decoder | 2wcom

AIC: AIC is a 19" unit that combines IP encoder and decoder functions in one chassis. It supports all current audio formats and provides solid network streaming connections (DDP, RTP, SIP/SDP) even under difficult conditions. Regional studios can use it for WAN connections to broadcast centers, and the versatile multi-purpose capabilities are ideal for mobile broadcasting units. The AIC features redundancy management with automatic switching to backup sources, monitoring and alarms, and GPS-based latency control for use in SFN FM networks.
2wcom.com

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- Built In Waveform Editor – Trim – Normalize - Tempo
- Built In Streamer [Shoutcast / Icecast, wma] + TTA metadata
- Includes Mic Mixer - Program EQ – VST Plug in Compatible
- Works with Win XP, Win7, Win 8 – 32 & 64 bit
- Optional: Web Training & Phone Support

NAB2014 Booth C3017

Price: \$595.00

Download a 30 day demo at www.digitaljukebox.com
or call Sales at Digital JukeBox 702-487-3336



Audio modules | WorldCast Systems
Oslo 1U E1/T1: Previ-

ously available only for IP audio transport, the Oslo 1U now offers greater flexibility in configuration and can be deployed in many different networks. Based on a modular architecture with four available slots, the unit can accommodate up to three audio cards when fitted with a new T1/E1 module. Each of these audio cards supports four channels of audio in simplex, duplex, analog or digital format and the configuration is fully software-selectable with no hardware switching required. Alternatively, when deployed for audio over IP transport, the unit can support up to 16 channels of audio across four AoIP modules. Each of these modules combines audio, IP transport, management and auxiliary data — the complete functionality of a codec unit — onto the single, plug-in module.

apcodecs.com



Audio recorder | Roland
AR-3000SD: The AR-3000SD is the next generation digital recorder/player that features a new programmable timer and LAN

control with Web server functionality enabling settings and control from anywhere. Pick the optimal playback schemes for the application or system setup with control from the input connector or RS-232 port on the back. There are five different playback types that include direct, program, binary, computer and MIDI as well as loop and repeat options. The AR-3000SD can be an integral component of a larger installed system. Improved external controls of the AR can be achieved using switch-based audio guidance, sensor-activated guide narration, computer, phrase playback and timecode using MIDI or control over a network. It supports a variety of audio formats for recording and playback. It has AES/EBU allowing for output of high-quality digital audio.

rolandus.com

Headphones | Audio-Technica



ATH-M50x: Part of A-T's remastered M-Series line of headphones, the ATH-M50x has the same sonic signature as the original ATH-M50 professional monitor headphones and adds refined earpads and three detachable cables. From the 45mm large-aperture drivers to its sound-isolating earcups and robust construction, the ATH-M50x's innovative design was engineered to provide hours of maximum comfort. ATH-M50x headphones have exceptional power handling and very high SPL capabilities while delivering clear, natural, accurate sound with impactful bass and high-frequency extension. The headphones also feature a closed-back cushioned earcup, providing exceptional clarity and superior isolation in high-volume listening situations.

audio-technica.com



Audio processor | Nugen Audio

Stereopack: Stereopack is a complete toolset for stereo image enhancement and manipulation including expansion, positioning, and low-frequency control. It is designed to offer maximum flexibility in a highly accessible and configurable combination of tools. With Stereopack, users can naturally widen or reduce the stereo image, focus and define low frequencies, and move specific captured spectra within the stereo sound-field. Each Stereopack component integrates advanced audio analysis feedback directly into the user interface, delivering intuitive control of all main parameters with clear and immediate dynamic feedback. All three plug-ins are highly mono-compatible, using unique algorithms that maintain the original character of the source audio without introducing any strange phase, reverb, or delay-related artifacts. Each tool is compatible with 64-bit OSX, AAX (32- and 64-bit), and the latest VST3 standards.

nugenaudio.com

Remote video production | Marshall Electronics

Micro Studio: The Broadcast A/V, Pro Audio, and Optical Systems divisions of Marshall Electronics have come together to build the Micro Studio — a compact, affordable studio setup for professional video production. The Micro Studio contains everything an individual needs to stream and record videos live on location. The latest Marshall compact cameras provide crisp, HD video viewable in vivid color on Marshall's V-MD173-DT monitor. MXL microphones pick up clear, articulate sound. Complete the setup with an audio mixer, a video switcher for multiple camera views, and an encoder to record and stream the live content. The best part is the Micro Studio is scalable.

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Mobile technology | RCS

RCS2Go: Merging the abilities of several products, including GSelector4 music scheduling software with its mobile compliment service Selector2Go, automation platform Zetta with its mobile sidekick Zetta2Go, users have greater ability to work remotely and have more control on-the-go. Adding the advanced traffic software Aqira and Aqira2Go, and RCSnews newsroom software, users can access all station functions from outside the studio.
rcsworks.com

Coffee table book | Broadcast Music, Inc. (BMI)

"75 Years of American Music": To mark its 75th year milestone, BMI has announced a yearlong program of commemorative projects and events celebrating its history and contributions to the growth of American music. The program will kick off with the introduction of "75 Years of American Music," a coffee table book written and art directed by Bob Guccione, Jr., the founder of *Spin* magazine. "75 Years of American Music" will chronicle the story of American music as related through rare images, documents and interviews from the BMI archives interspersed with current voices from influential songwriters, music publishers and entertainment executives and tastemakers.
bmi.com

Distribution amps | Sonifex

RB-DDA6A3, RB-DA24MD: The RB-DDA6A3 digital distribution amplifier is used for distributing AES3id digital audio, repeating both the audio data and the status information of the input whilst re-normalizing to standard digital audio levels. It has a single BNC AES3id audio input, which is distributed to six BNC AES3id audio outputs. The RB-DA24MD is a 24-way audio distribution amplifier, with two inputs that can be individually routed to 12 outputs or mixed and routed to all 24 outputs. The inputs can be configured as either dual mono, input 1 routed to outputs 1-12 and input 2 routed to outputs 13-24, or mixed-mono, inputs 1 and 2 mixed at a pre-set level and routed to all 24 outputs. Each output is also protected against connection to both POE (power over Ethernet) and phantom power circuits.
sonifex.co.uk



High-resolution USB to analog/digital decoder | Gefen

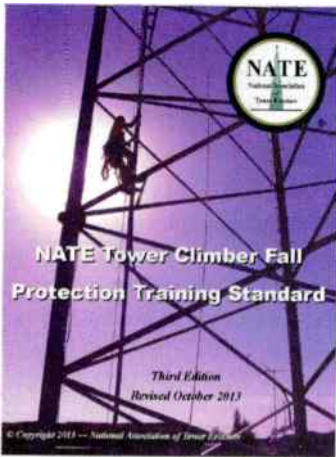
GefenTV: The GefenTV audio decoder enables the user to listen to streaming digital media coming from a computer to an analog or digital sound system using left/right speakers. The decoder supports digital audio up to 24 bits and 192kHz sampling rate coming from the USB port of a Windows PC or Mac computer, and converts it to optical digital (TOSLINK) and analog left/right audio. The outputs of the decoder can be connected to A/V receivers, analog pre-amplifiers or headphones. It is compact, easy to install, high performance and versatile.
gefen.com



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Reference book | National Association of Tower Erectors
Tower Climber Fall Protection Training Standard, 3rd ed.: The NATE CTS was last revised in 2008 and the new edition includes updated references to the ANSI Z359 Fall Protection Code and Z490.1 Criteria for Accepted Practices in Safety, Health and Environmental Training standard. The updated NATE CTS also includes additional terminology in the definitions section of the document. The NATE CTS was originally developed in 2005 to establish the minimum requirements to which all tower climbers should be trained. The NATE CTS outlines individual standards for varying levels of tower climber expertise: Authorized Climber, Competent Climber and Competent Rescuer. The document also contains a Course Training Plan to demonstrate how to implement and utilize the NATE CTS.
natehome.com

Audio routing | Barix

SoundScape: SoundScape is a comprehensive solution to manage audio distribution over IP networks, offering a centralized management portal and audio players at multiple locations. Music service providers can efficiently power in-store radio networks with SoundScape, using the portal to manage, configure, group and monitor SoundScape audio players and device status network-wide. SoundScape also enables content scheduling through built-in software, or allows service providers to use custom scheduling solutions.
barix.com

Radio re-broadcast receiver | Deva Broadcast

DB7007: Thanks to the built-in monitoring system, upon audio loss at the inputs, the DB7007 will send a notification and automatically switch to the back-up RF chain. In case of a failure of the back-up, the DB7007 will switch to the incorporated IP stream, MP3/AAC back-up audio source player. The audio files and playlists can be uploaded in the device's internal memory directly from a PC, via any FTP client. When the signal at the default input is restored, the DB7007 will automatically switch back to it. Several types of alarm notifications are utilized: e-mail, SNMP and SMS. The DB7007 has an easy-to-read, high-resolution OLED graphical display, front-panel alarm indicators and ultra-bright bar graph with up to 40 LED segment indicators that allow reading at a glance of the MPX, left and right audio and the RF level. The IF bandwidth filters guarantees unprecedented signal selectivity, while the difficult adjacent-channel problem will be completely solved.
devabroadcast.com

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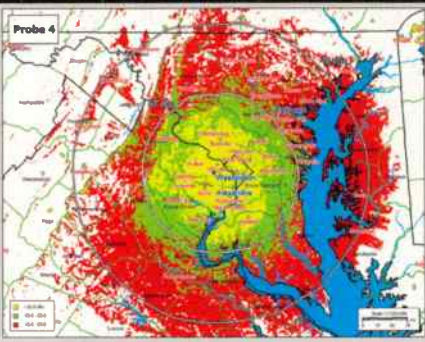
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