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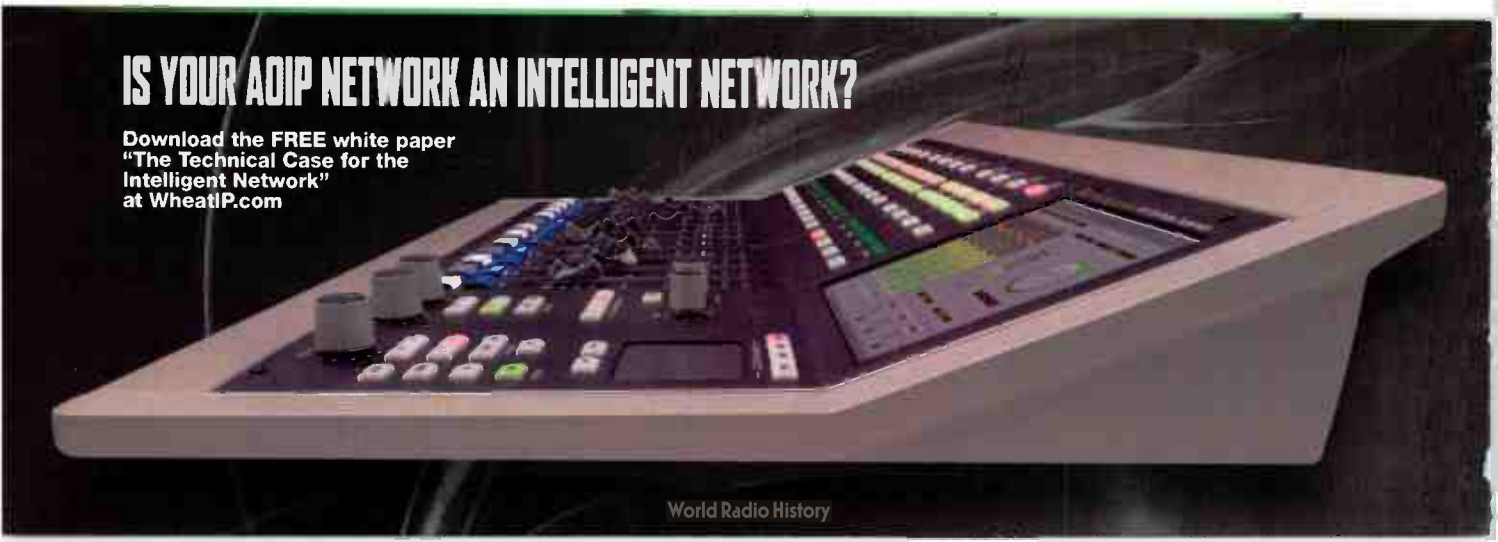

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ON THE COVER

Dial Global meets its network expansion needs by building a new facility in Denver. Check out the full story on page 22.

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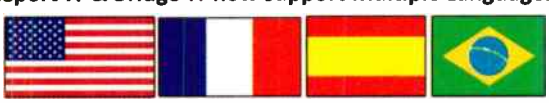

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Currents Online

Recent headlines from www.RadioMagOnline.com.

AES Executive Director Roger Furness To Step Down

The Audio Engineering Society is forming a search committee for his replacement.

Furness

2011 NAB Marconi Radio Award Finalists Announced

The winners will be announced on Sept. 15, at the NAB Marconi Radio Awards Dinner and Show held during the 2011 Radio Show.

Harris Antenna Structure from World Trade Center Featured in Commemorative 9/11 Events in Quincy, IL

The 15' long, 7,000-pound steel structure was part of the antenna tower located on World Trade Center Building number 1.

Elvis Duran to Host 2011 NAB Marconi Radio Awards Dinner and Show

The event takes place Sept. 15, at the 2011 Radio Show in Chicago.

Radio Show Super Session Focuses on Entertainment and Information in the Car

The session will address the past, present and future of entertainment, information and communications in cars.

Court Reverses FCC Cross Ownership Rules

The Philadelphia court says the FCC failed to provide adequate public notice.

131st AES Convention Announces Broadcast/Streaming Program

Among the planned events is a celebration of FM stereo's 50th anniversary.

FEMA Holds EAS National Test Webinar

FEMA will produce a best practices and test procedure document that will be released in late September 2011.

Site Features

2011 Product Source Online

The 2011 Product Source, which is included with this issue, is also posted online at RadioMagOnline.com.

Newsletters Bring You the Latest

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Pick Hits Videocasts

Watch demonstrations of the top 15 new products chosen by the Pick Hits panel from the 2011 NAB Show.

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Industry Events

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Agilent Technologies

Still think streaming is not important?

Online streaming has been the quiet partner in the audio delivery realm, although we have talked about it since the late 1990s. Some stations have streamed all this time, while others have come and gone; and some have come back.

From a business point of view, streaming's challenge is its profitability (or lack thereof so far). The complex and comparatively expensive royalty issues alone discourage many from pursuing it. The bandwidth costs of the one-to-one transmission (rather than the one-to-many system of broadcast) are also a challenge. The more popular your stream becomes, the more expensive it is to deliver.

Through all this, there are those who maintain that streaming is just not worth the effort. If that's the case, why are online services so omnipresent? Pandora, Slacker, iHeartRadio and others maintain visibility in the news, in social network circles and even our own industry press. How many sessions at conventions include some mention of if not a total focus on streaming? For an activity that's not that important it sure has a following.

For Pandora, Slacker and others, online is their only game. Unlike iHeartRadio and CBS Interactive, which have established broadcast brands to fuel their efforts, the online-only crowd has to make it solely on their online efforts. Streaming is not a value added, it's their asset.

In July, Clear Channel's iHeartRadio made a splash about adding more Pandora-like features to its app. That's good for iHeartRadio, but also a push for Pandora (which also recently gained public investors). We know the saying about imitation being the highest form of flattery.

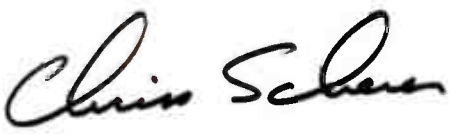
Clear Channel has planned a huge Las Vegas event in September to kick-off the new features. As the event approaches we'll hear more about it, but we'll also hear more about listening to streams online. It seems streaming is important again.

While radio likes to downplay the role of online-only streamers, they should still be watched. As I noted earlier, streaming has its downsides, but the number of consumers carrying some kind of connected device continues to grow. While the NAB pushes to have FM included in all cell phones, broader online choices continue to grow. (I should note that this entire discussion relates to streaming in general. The debate of streaming vs. over-the-air broadcasting during emergencies and times of high data traffic are not the norm. Over-the-air has certain advantages at certain times, but this is all about the routine use, not emergencies.)

What's the appeal of Pandora? The new features of iHeartRadio seem to answer that. Listeners can access various stations online of course, but they can also create their own custom stations based on their listening preferences. Clear Channel says its new service will also add non-audio features such as song lyrics, contests and locally targeted news updates. Localism added to an Internet stream? Gee, that sounds just like ... radio.

Clear Channel also says it won't need to make money from the new service. I find that hard to believe. A business is created to make money in some way. According to an iHeartRadio statement, the service will be successful if it helps Clear Channel reach audiences in different ways. There's merit to that idea; extending the reach and reinforcing the brand is a good thing. But if it's not adding something to the bottom line I don't see the practice continuing forever.

Radio stations have one advantage in streaming: They already know how to create an audio stream to a target audience. And while anyone has yet to really find the hook in making streaming a profitable venture, it has the advantage of furthering a station brand. It also keeps a station relevant in the eyes of the online listener.



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Building codes and RS222-G

By Kevin McNamara

One of the realities of the broadcast business is that we all use antennas, whether mounted to a structure or simply using the structure as the antenna. In most cases that structure is a tower or pole. Those of us that have had to build a new tower, or modify an old structure are well aware of TIA-222, the standards document that provides guidance in the design of communications towers. This standard has been around since 1949 and fittingly titled "Structural Standards for Antenna Supporting Structures and Antennas".

A few years ago I outlined the history of the development of the TIA-222 standard. While I'm sure the majority of you have a pretty good understanding of the document, it would be worth reviewing since it has evolved dramatically over the years.

The evolution of TIA-222

The EIA RS-222 standard was first published in 1949 and encountered only two updates until 1980, when the 222C version was published. This was an important document because it took into account more of the real-world knowledge acquired as the deployment of so-called tall towers (up to 2,000') were becoming widespread and the effects of wind and icing were becoming apparent. Not only were these towers taller, but they supported significantly more weight, particularly with TV antennas.

Version C provided a method for rating wind load based on the tower's height and location. A map of the United States was delineated into three wind zone categories labeled A, B and C. The wind loading was considered over the full length of the structure and was measured in pounds per square foot (PSF). The specific PSF rating started at about 30PSF and increased based on the tower height.

The 222-D specification made a dramatic change to the way wind loading was calculated. First, the wind speed was measured in miles per hour (MPH) and a new map was created that depicted basic wind speeds measured at 33' above the ground. The value for basic wind speed increased as a function of tower height.

Revision E was the first iteration of the code to be defined by the TIA and Electronics Industries Association (EIA) and thusly called EIA/TIA 222-E. It further created a wind-loading map based on specific counties within each state, as well as directing the engineer to consider and design for specific conditions that might exceed the standard values.

EIA/TIA 222-F was adopted in 1996, expanding to include the effects of ice loading. Basically, it provided two methods for analysis of ice. Both assume an accumulation of ice based on that specified by the engineer; however, the wind load applied to the tower could be analyzed at full-speed or at about 75 percent of the full assumed speed.

The current version ANSI/EIA/TIA-222G took effect Jan. 1, 2006, and was essentially a top-to-bottom rewrite. It is also the most comprehensive standard to date and takes into account certain classifications of a structure based on its location and anticipated wind, ice and seismic factors. It considers topography that may affect a structure's exposure to wind, i.e. behind a mountain, atop a hill, etc. In previous standards the design of a structure was based on "allowable stress" 222G bases designs on "Limit State Loading." In this case Limit State Loading is based on two conditions: Strength Limits, which essentially define the maximum loading a structure can tolerate and still be safe for the subject location and classification; and the "Serviceability Limits State" describes how the tower will perform under more normal conditions. There are now requirements for towers located in seismically active zones.

222G also expands on the safety requirements that were addressed in the previous version. It categorizes the experience of individuals that might climb a structure and specifies specific safety items to be included with the design of a tower, i.e. safety cables, ladders, rest platforms, etc.

222G vs. ASCE 7 vs. IBC

New tower construction became more prevalent over the last 10 years largely due to the widespread deployment of wireless mobile telephone networks. The majority of municipalities were not prepared for the volume of applications to construct new towers. In many cases, weak (or no) zoning ordinances were on the books, leading to confusion and several heated zoning meetings. More recently most of these same municipalities have become much more sophisticated in terms of balancing the needs of the tower owner with those of the public. While the zoning piece of the deployment process is well defined, there has been confusion with the permitting and subsequent inspection of an approved structure.

Early building codes did not address the unique nature of tower construction. Once a permit is issued, how (and on what) does the municipality perform a proper building code inspection? The general answer is that an inspector will only sign off on the foundation(s) and assume the structure passes if the design/construction is based on drawings stamped/sealed from a professional engineer licensed in that state. In the earlier revisions of the 222G standard (E and below) there was no correlation between the standard and any building code.

Until 1994 there had been three different building codes used: BOCA National Building Code (BOCA/NBC), Uniform Building Code (UBC) and Standard Building Code (SBC).

The history of building codes in this country could be the subject of a separate article, but it is important to know that these codes were combined into a single document called the International Building Code (IBC) first published in 2000. Most jurisdictions currently use either the 2006 or 2009 version of the IBC. Portions of the IBC, particularly those that require competency in specific engineering disciplines, reference other standards documents. One such standard is the Minimum Design Loads for Buildings and Structures published by the American Society of Civil Engineers (ASCE-7). In civil engineering applications this document the effects of wind, ice and seismic activity on traditional building structures. The 222G standard now incorporates the wind map data specifies in ASCE-7, which uses the latest information gathered throughout the country. The previous version of the 222(F) standard also referenced an earlier version of the ASCE-7(-93), which utilized a different method to calculate wind and ice loading (fastest mile) but ASCE-7 has been revised three time since then and are using a different method (3-second gust) to calculate loading. The latest version ASCE-7-10 has made further adjustments to the loading tables.

Now the loading for both tower designs and building designs are can be addressed in the IBC as specified uniformly through ASCE-7.

You should note that both the ASCE-7 and 222G standards were written so all or portions could be included within the IBC. It is still up to the specific jurisdiction as to whether they chose to adopt these portions into their local codes.

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

More info at RadioMagOnline.com

LPFM/FM translator resolution in sight?

By Lee Petro

The June 2011 FCC Update discussed the FCC's release of a public notice calling for comments relating to the possible impact of LPFM stations on full-service FM stations. That effort is part of the overall implementation of the Local Community Radio Act of 2010 (LCRA). On the heels of the public notice's release, the Commission released the third further notice of proposed rulemaking in order to break the log-jam of long-pending FM translator applications, and to resolve LCRA's requirement that the Commission take into consideration the local community's needs when balancing the processing of LPFM and FM translator applications in the same area.

To that end, the Commission has proposed the creation of LPFM ceiling floors that would condition the processing of FM translator applications on the availability of spectrum remaining in local markets for LPFM use. In particular, in the top 150 radio markets, the Commission will require the reservation of spectrum to allow for the subsequent licensing of LPFM stations. If there is adequate spectrum for LPFM stations that remains after this reservation, only then will the Commission process the pending FM translator applications in that market. All other FM translators will be dismissed.

Dateline

Aug. 15: All radio stations located in North Carolina and South Carolina run License Renewal Post-Filing Announcements, continuing on Sept. 1 and 15, and Oct. 1 and 15.

Aug. 15: All radio stations located in Florida, Puerto Rico and the Virgin Islands run License Renewal Pre-Filing Announcements, continuing on Sept. 1 and 15.

October 3: Noncommercial television stations in Iowa and Missouri file their Biennial Ownership Report (FCC Form 323-E).

October 3: Radio stations in Florida, Puerto Rico and Virgin Islands file License Renewal Application and EEO Program Report. Noncommercial radio stations also file their Biennial Ownership Report (FCC 323-E).

Under the Commission's plan, sufficient spectrum in the top 20 markets must remain to permit the licensing of eight LPFM channels. Next, in markets 21-50, sufficient spectrum must be set aside to permit the licensing of seven LPFM channels. In markets 51-100, six LPFM channels must be protected, and in markets 101-150, spectrum must be set aside for five LPFM channels. The Commission will consider previously licensed LPFM stations in determining if the floor has been met, and will then proceed to process those FM translator applications in the top 150 markets.

The Commission took the first cut at showing how the process would work, and which of the top 150 markets would be open for processing of the pending FM translator applications. Of the top 40 Arbitron markets, only San Antonio (#31) and Orlando (#34) have sufficient LPFM channels available for the Commission to process the FM translator applications. In the next 10 Arbitron markets, only Raleigh-Durham, NC, Nashville, TN, Greensboro-Winston Salem, NC, Oklahoma City and Memphis, would be open for processing of the pending FM translator applications. The Commission is seeking comment on the use of the floor, and whether the use of Arbitron radio markets is the proper definition of the radio market for this purpose.

Next, the Commission is seeking comment of methods to prevent the trafficking of FM translator construction permits and licenses. The Commission noted that the top 15 filers in the 2003 window submitted 50 percent of the applications. The Commission also noted that several entities actively marketed construction permits acquired during the 2003 filing window, with one entity assigning half of its permits to other parties. As such, the Commission is seeking input on different approaches to meet this goal. One option it raises is to cap the number of applications one entity could prosecute in a particular market. Another option is to reinstate a cap on the number of applications, but raise it from the previously used maximum of 10, to 50 or 75 applications with the expectation that the applicant would focus on those markets in which they actually intend to operate.

Finally, the Commission is considering lifting one of the restrictions imposed upon the use of FM translators by AM stations. When the Commission adopted its rules permitting such use, it stated that no FM translator that was authorized after May 1, 2009, could be utilized for such purposes. However, the Commission noted that the rule change has been very successful and that AM stations have be able to take advantage of the nighttime service afforded by FM translators to provide local service to their communities. Therefore, in concert with the other changes necessary to implement LCRA, the Commission is considering lifting the May 1, 2009, restriction to permit greater use of FM translators.

The date for submitting comments in the proceeding has yet to be set. Please check back in future FCC Updates for more information.

Petro is a member of Fletcher, Heald & Hildreth, PLC, Arlington, VA. Email: petro@fhhlaw.com.

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Remote Site Control

Find the fit for the functionality you need with a plethora of choices

By Doug Irwin, CPBE DRB AMD

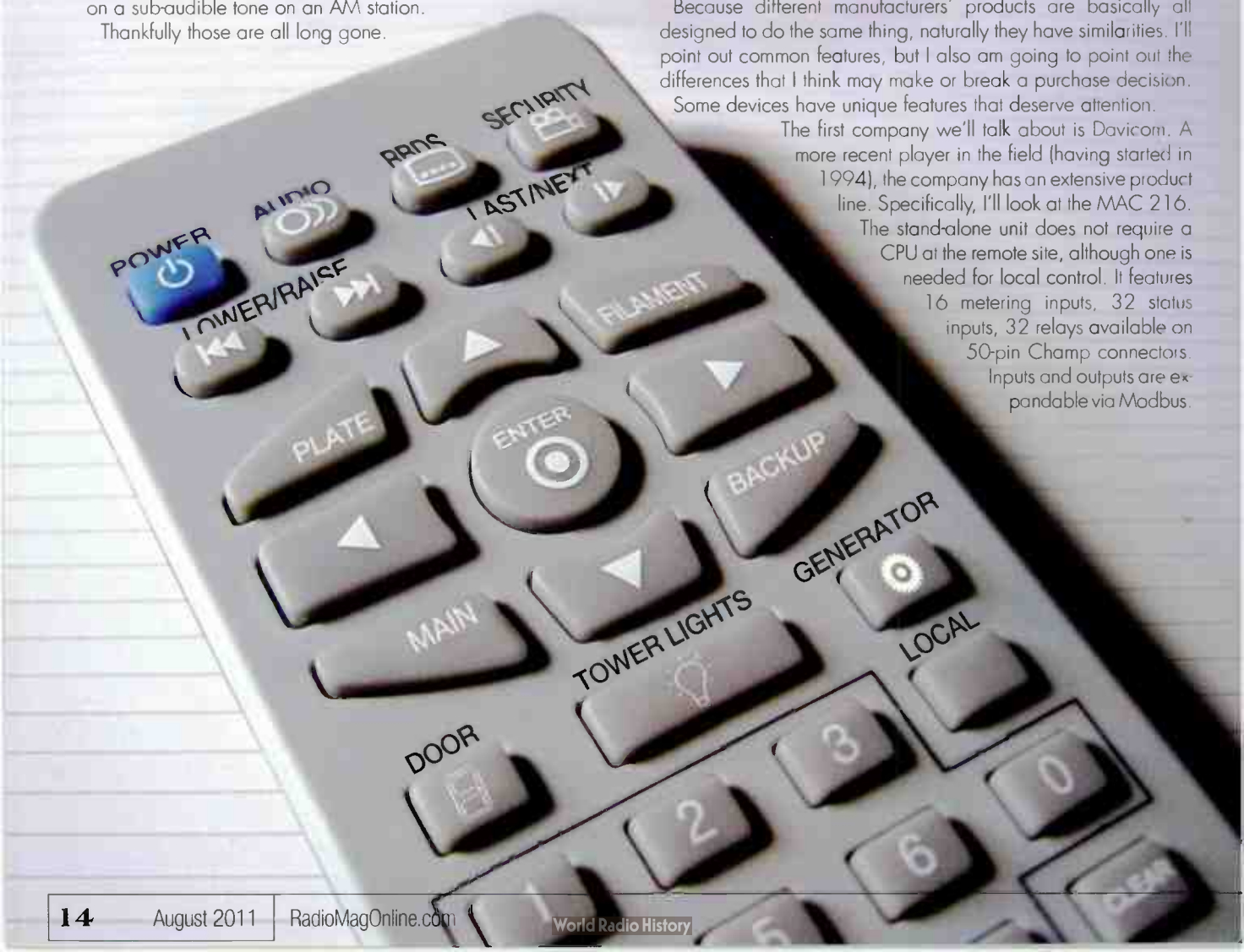
The technology behind remote controls has changed dramatically during my time in this business. When I first started I had a remote control that needed dc continuity between the transmitter site and the studio. That was problematic, to say the least. I also had a system that used a super-audible tone going up to the site on the microwave shot, with metering coming back on an SCA. I had another one with metering coming back on a sub-audible tone on an AM station.

Thankfully those are all long gone.

Remote controls that are around today accomplish the same thing that the older units did, but fortunately the communications links between the two ends are different. Adding POTS accessibility in the mid-1980s was great; but, adding IP accessibility (within the last couple of years) was even better. Typical remote controls can now have HTTP, SMTP, SNMP and NTP functionality, making the life of the typical broadcast engineer a little easier.

Because different manufacturers' products are basically all designed to do the same thing, naturally they have similarities. I'll point out common features, but I also am going to point out the differences that I think may make or break a purchase decision. Some devices have unique features that deserve attention.

The first company we'll talk about is Davicom. A more recent player in the field (having started in 1994), the company has an extensive product line. Specifically, I'll look at the MAC 216. The stand-alone unit does not require a CPU at the remote site, although one is needed for local control. It features 16 metering inputs, 32 status inputs, 32 relays available on 50-pin Champ connectors. Inputs and outputs are expandable via Modbus.



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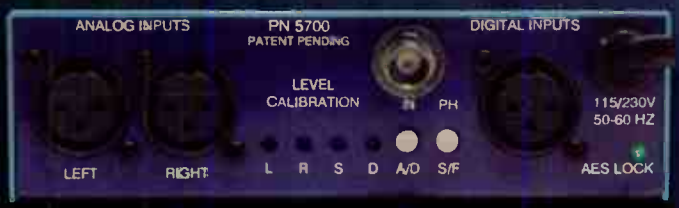

When it comes to audio, a quick, accurate and intuitive way to know what's happening is essential for a successful result. That's where SAM comes in.

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SAM's dual tri-colored Single Stereo Displays show this information in an intuitive and easy-to-comprehend format. Both analog and AES/EBU digital signals can be monitored with SAM. Its compact size allows monitoring three stereo audio sources in only 1 RU of your valuable rack space.

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Remote Site Control

The metering range is ±2.5V, ±10V, ±20V at 12-bit resolution and 100kΩ loading. The status inputs are optically isolated with a 22kΩ loading. It is accessible via HTTP, NTP, SMTP and SNMP. A POTS connection allows it to calls out with voice messages and respond to DTMF commands.

Programmable actions can be taken on conditions or events, and alarm emails can include HTML or XML file attachments. Up to 128 internal timed events can be programmed. There are no internal moving parts (no HDD or fan). It specifies RF immunity in fields up to 10V/m field intensity. The unit occupies 2RU and is 12" deep.

Like all remote control devices in this category, all the inputs, outputs and status connections need to be broken out from their multiple-circuit connectors. The MAC 216 has quite a few unique features. It has a built-in PSTN dial-tone detector. It's nice to know ahead of time if your phone line to the unit is dead (although you'll have to be informed via IP in some fashion). It logs caller-ID on incoming calls. (Who was it that just turned the transmitter off?) It has 16 different call-out lists, which is handy because you might want the unit to call a PD directly for a dead-air status alarm. Not everyone on the call-out list has to deal with every type of status alarm then.

Davicom MAC 216

MacComm is the software used on the device, and it has four primary features. First, it allows users to configure what Davicom calls workspaces, which allows the user to make up a one-line diagram of the broadcast system being controlled by the unit. It allows for the creation of complex operations by means of virtual logic gates, mathematical functions, qualifiers and inverters. It allows the user to look at telemetry in a graphical form; and finally, it allows the user to see trends in telemetry by means of graphs.

Another player in the remote control space is Statmon. While the company offers an extensive product line, the system I'll focus on is Axess. This system is different than what we've typically used over the years because it isn't a stand-alone box that we think of as a remote control. This is a system that is assembled, and consists of the computer, the Axess software, and the interface known as the GPX-32. A basic remote control system has 32 optically isolated status inputs (either polarity available, 88-264Vac input or 18-60Vdc input), 32 balanced metering inputs (100kΩ, ±5Vdc or ±15Vdc, 16-bit ADC) and 32 relay outputs. The opto-isolated outputs, relays and metering inputs accessed via a PDP (punch-down panel), which consists of Krone blocks mounted on a 2RU panel. The PDP connects to the GPX-32, which occupies 1RU.

POTS accessibility is via a modem attached to computer running Axess software. Serial ports can be used for communications between Axess and other devices. The CPU and GPX-32 communicate via Ethernet. The unti provides HTTP, SMTP, SNMP and NTP support. Each remote user is assigned level of control based on his password. The current version of Axess will run on Windows 7 Pro, Windows Server 2003 or Windows Server 2008 R2 32/64-bit.

Statmon Axess

Aside from using a computer to look at all the various pieces of information supplied by the GPX-32, you can use what Statmon calls OVI (Operator Visual Interface) to build a GUI

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that shows (for example) signal or data flow, equipment layout, or facility parameters such as ac line voltage, room temperature or door alarms. A video camera can also be accessed as an object in OVI. You can build an OVI template, and copy it, then paste it to another site. In addition to OVI, Statmon provides the Statmon Control Language that allows the user to build scripts so that Axess will perform user-defined actions, based upon input status, metering, and control.

WorldCast Systems Audemat Relio

The WorldCast Systems Audemat remote control product is known as Relio. (The particular device I will discuss is actually manufactured by SeaLevel; Audemat makes its own versions known as Relio Silver, along with Relio-mini.) It's a stand-alone unit that occupie 1RU. All the inputs/outputs are brought to multiple-circuit connectors on the rear panel. There are 64 relay outputs (using two separate relay panels, 2RU each), 64 status inputs (using two separate status panels, 1RU each), and 24 analog inputs (1RU panel) with a 14-bit, ±10Vdc input range. Two Ethernet ports, five serial ports (four for RS-232 or RS-485; one for RS-232 only) and four USB ports provide connectivity. A built-in POTS modem with programmable call-out responds to DTMF tones. The unit supports HTTP, SNMP, SMTP and NTP. It uses a Linux-based operating system, CompactFlash storage and a hard drive to store logs.

Like the other units mentioned previously, Relio is a stand-alone unit that lives at the site to be controlled. Even though it supports HTTP, the normal GUI used is called MasterView, and that lives on a computer in the control location. To have access to the Relio at the remote site, you need to place a computer there running MasterView. Configuring of the device is done via software (written by Audemat) known as ScriptEasy.

Resource Guide

Broadcast Tools
877-250-5575
www.broadcasttools.com

Burk Technology
800-255-8090
www.burk.com

Circuitwerkes
352-335-6555
www.circuitwerkes.com

Davicom
418-682-3380
www.davicom.com

Innovative Broadcast Systems
662-324-2769
www.hawkremote.com

Sine Systems
615-228-3500
www.sinesystems.com

Statmon Technologies
310-440-8053
www.statmon.com

WorldCast Systems
305-249-3110
www.audemat.com

Scripteasy also allows the user to develop scripts, based on objects such as analog inputs, status inputs, relay outputs and other logic operators, so that the device will carry out pre-programmed events. Audemat also has developed two APIs (Advanced Programming Interface) so that Relio can communicate directly (via serial ports) with the Harris Z-series transmitters and the Nautel NV series.

Burk ARC Plus

The remote control manufacturer with the most history in our industry has to be Burk. (Moseley and TFT no longer make remote controls, and Gentner's remote control line was picked up by Burk.) Specifically, let's take a look at the ARC-16 Plus. A stand-alone, 2RU unit, it connects via Ethernet to a Plus-X Integrated Input Unit for 16 dedicated status inputs and another 16 status/or metering channels (which occupies 1RU). Add a Plus-X Integrated Command Relay unit (also 1RU) for 16 relays. Control access is available via HTTP, while SMTP or SMS can be used for outgoing alarms.

An optional Enhanced Speech Interface is available for remote dial-up control and alarms. The unit has a front-panel vacuum-fluorescent display and jog-wheel and front-panel LCD command buttons with text. The optional PlusConnect directly connects to various transmitters via serial or Ethernet and provides SNMP support.

The ARC Plus is backward compatible with legacy ARC-16 units. Optional AutoPilot 2010 software provides control functionality via PCs running XP, Vista or Windows 7, and allows control of legacy ARC-16 units and the Gentner GSC3000 and VRC2500. Optional Jet-Active flowcharts act as an extension of AutoPilot 2010. They allow user to configure flowcharts that tell the ARC Plus how to respond to different conditions.

Probably the most unique aspect of the ARC Plus (for the purposes of this article) is the fact that it has front-panel controls, which none of the aforementioned remote controls do.

Simpler approach

In some cases, a facility's remote control application might be fairly simple, and as such any of the four remote controls already discussed would qualify as overkill. Perhaps you just need a more economical alternative; perhaps you need a backup remote control (always nice to have); or perhaps you need remote control for translator or booster site. Fortunately there are many good options available.

As an example, Broadcast Tools offers the Site Sentinel 16. It's a 1 RU device with 16 channels, each with 12-bit, 0-10Vdc sample, and optically isolated status inputs. There are 33 SPDT relays, programmable as latched or momentary, and a stereo silence sensor. The plug-in Euro-block screw terminals provide access to relays, status inputs and the silence sensor. There are four temperature-probe inputs and a programmable macro sequencer (up to 100 events). HTTP access permits Web browser access, and SMTP support can notify up to eight destinations for email alerts. It also supports SNMP, and keeps time via NTP or a battery-backed clock/calendar. The Site-Sentinel 16 doesn't have POTS access, only IP access.

Broadcast Tools Site Sentinel 16

Another example of a more economical remote control is the Sine-Systems RFC1/B. This product has been around for a long time and as such probably falls in the classic category for a lot of broadcast engineers. The most basic configuration consists of the control unit (RFC-1/B itself) and at minimum, one interface panel (RP-8) to occupy at least 3RU. It has (at minimum) eight channels of relay control, plus eight metering inputs (per RP-8). Access is via POTS. DTMF is used to program and control the unit. Up to 80 timed events can be configured. The RFC-1/B can be programmed to perform events corresponding to telemetry input. It can call out in the event of alarm conditions.

Accessory options: Additional RP-8s, status input module SIP-8, audio failsafe AFS-3 and temperature sensor module TS-1/ps.

Sine Systems RFC1/B

To make programming an RFC 1/B easier, Innovative Broadcast Services has developed the My Sine. This PC application can also store and manage multiple Sine setups for easier retrieval and loading. The Hawk 2B can be used to provide an IP interface to a Sine setup.

Innovative Broadcast Services also manufactures the Air Hawk, which is a stand-alone remote control. It connects via cellular, Wi-fi and Ethernet, and can be accessed with an iPhone/iPad app. Data is logged, stored and displayed on customizable Trend Charts. Eight analog or status input channels can be monitored with the base unit, and the system is expandable to support up to 100 modules. It includes eight opto-isolated outputs. Customized notification sequences are sent via email or text message with multiple contacts defined for each alarm and delays between notifications.

Circuitwerkes TAC-5

Finally, there's one of the most economical remote control solutions out there, the TAC-5 from CircuitWerkes. If you don't need telemetry, just actual control functions, then this may be the way to go. Its primary features include:

Five form-A (normally open) relays that can be programmed as latching or momentary. Each relay can be programmed to respond to any of the 16 DTMF tones. One DPDT relay can be used to switch a balanced audio line. All the relays appear on screw terminals. It is POTS accessible, and an up-to-8-digit password can be set for command access, with another password to allow a caller to listen only (no relay command access). It has a built-in audio hybrid with send audio input along with receive audio output. A status input precipitates call-outs by the unit. It is programmed via any DTMF-capable telephone, and it can be mounted on the wall mount or with an optional rack-mount.

It seems pretty clear that the primary design goal of the TAC-5 is to allow a user to remotely control an automation system or other program-source switching. While you are online with the device, the built-in hybrid lets you hear what is going on at the other end. Considering how far-afield some engineers are, this is important because many times you cannot hear the station you are dealing with on the radio. It could simply be too far away.

Remote controls have come a long way from the days when you needed an actual dc continuity circuit from Telco to make it all work. All the telecommunications methods that make our lives easy in other ways have all shown up in these remote control products, thankfully. In this day and age of tight budgets it's important to let the device you obtain precisely fit the functionality that is needed. With all the devices available out there, that should be pretty easy to do.

Irwin is transmission systems supervisor for Clear Channel NYC and chief engineer of WKTU, New York. Contact him at doug@dougirwin.net.

Follow-up: The July Trends in Technology on TDM and AoIP routing raised some questions. Access that article online to read the follow-up.

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A National Move

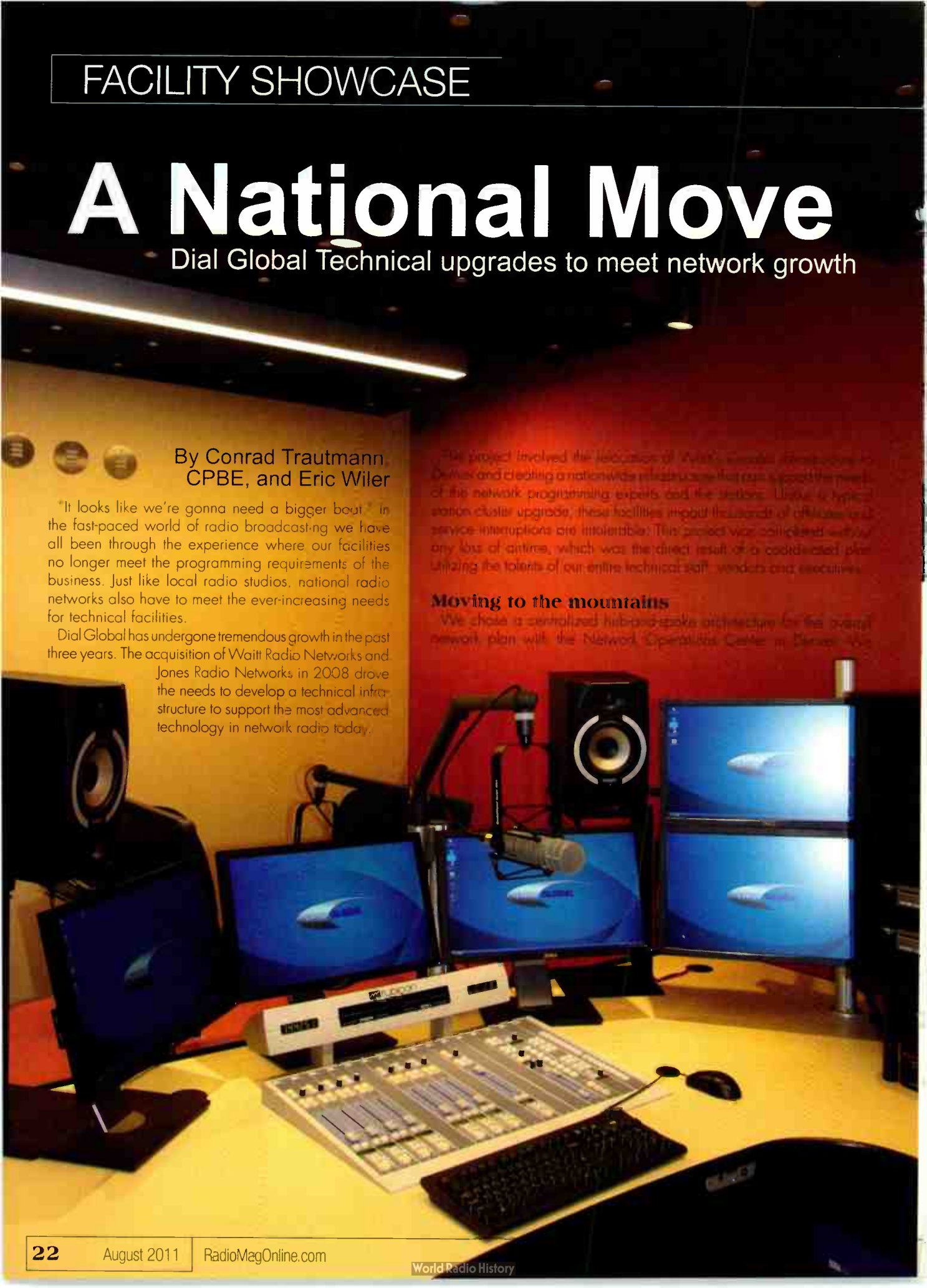
Dial Global Technical upgrades to meet network growth

By Conrad Trautmann, CPBE, and Eric Wiler

"It looks like we're gonna need a bigger boat." In the fast-paced world of radio broadcasting we have all been through the experience where our facilities no longer meet the programming requirements of the business. Just like local radio studios, national radio networks also have to meet the ever-increasing needs for technical facilities.

Dial Global has undergone tremendous growth in the past three years. The acquisition of Waitt Radio Networks and Jones Radio Networks in 2008 drove the needs to develop a technical infrastructure to support the most advanced technology in network radio today.

Moving to the mountains



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A National Move

also overlapped a distributed network topology for our redundancy employing other facilities to ensure the network provides unparalleled reliability in the event of an outage condition in the hub. For example our Valencia, CA, network facility can take over uplink operations in the event of a disaster situation in Denver or even in the situation where maintenance may have a potential impact to affiliates.

The Denver facilities were upgraded with 11 new studios and a significant expansion of the older Network Operations Center; control center and rack room.

The project was multi-faceted, including:

- Real estate space expansion in Denver
- Architect selection
- Needs analysis and space design
- Power, generator and UPS upgrade
- Studio and network operations center design
- Temporary studios
- Satellite consolidation
- Affiliate migration
- Head end relocation
- Staffing and coordination of cut over

Photo by Richard Douglas, Windimagery

Space design, materials and color selection were all coordinated by an interior designer.

An Onan 750kW generator was installed to provide auxiliary power to Dial Global's network operations center.

Closing the Omaha facility

The project had its beginnings in the summer of 2009 when we analyzed the best location in which to expand and consolidate. Once Denver was selected, discussions with our landlord began to pick up the option on a few adjacent suites to the ones we already occupied. The lease was revised and space secured in early 2010.

Next was the need to hire an architect/designer. We decided to stay local to Denver in our search primarily due to local architects having expertise with local building departments and ordinances and also for their familiarity with local engineering firms and general contractors. We went through interviews with a number of firms. We found pricing to be competitive, but design ideas to vary widely. The firm we ultimately selected (RM Design) matched with our way of thinking and presented a resume of a number of other previous projects that we really liked. They also demonstrated ability to work cooperatively with the highly technical nature of the project and understand the differences from a standard office type project.

With our design firm on board, we began working on planning of the space. We worked with our programming department to get a sense of exactly how many studios we needed. That, coupled with our need to expand our centralized technical center

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A National Move

"rack room" to house additional head end equipment, it quickly became apparent that our existing power service was inadequate to handle the needs of the expansion.

The available utility power proved completely inadequate for the needs of the project. The service to the building was near capacity and needed to be upgraded. In our first approach to this, we attempted to design a system with a second transformer provided by the power utility so we wouldn't need to interrupt power to our current operation. After much back and forth with the utility, we lost the battle for the second transformer and ended up increasing the size of the existing one. That forced us to redesign the power distribution inside the building and required temporary use of our existing generator during overnight hours for several days to update the wiring and install the larger transformer. The time it took for us to sort this out with the utility and acquiesce to their refusal to cooperate required a complete redesign setting us back on our timeline. We had been hoping to be done and moved by the end of 2010, but that didn't happen.

We finished the relocation of Omaha to Denver by the hard deadline of January 2011 by building temporary studios to utilize during the project design and construction phases. Under the pressure of a lease conclusion, announcers and management were able to vacate the previous location. We were also able to relocate the Omaha head end to Denver, providing our patented STORQ technology from the new centralized Network Operations Center.

With this relocation we were also able to combine our STORQ technology into our main carrier, which is used for our Wegener delivery platform. We also took the opportunity to upgrade our central audio router to the latest version of firmware. SAS has added new features into the 32KD router that offers silence alarms and audio processing. The addition of TCP/IP relay routing will make switching our automation systems to air much easier as well.

Offset walls with a complimentary carpet pattern make the space visually stimulating.

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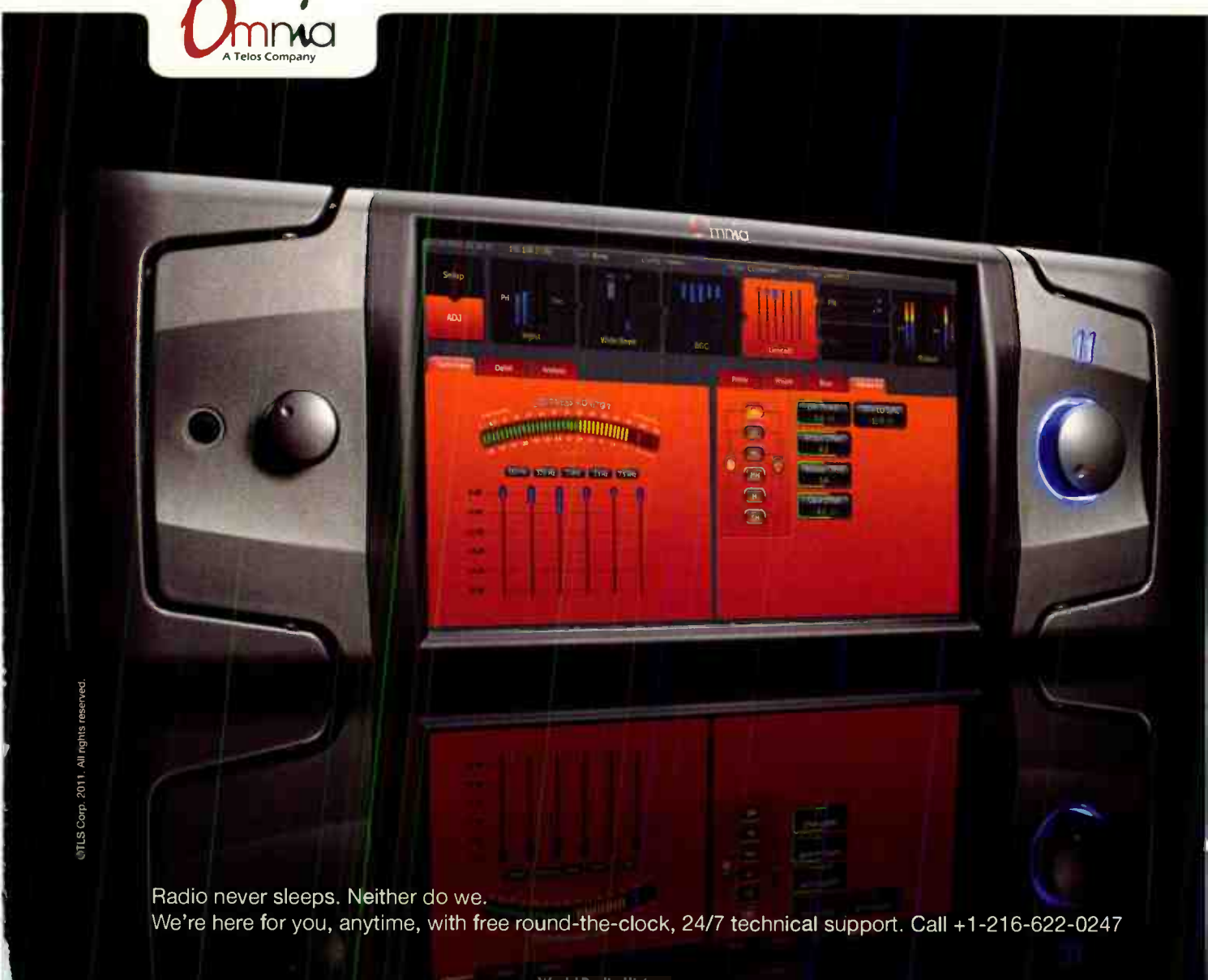

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A team effort

Concurrent with the space planning and mechanical design, our engineering department came together as a single team for the project. Geographical diversity didn't stop the open exchange of ideas from flowing from every division of the organization. We decided to expand on our existing digital infrastructure working in cooperation with the vendor, SAS Audio. This coupled with furniture and other ergonomic input from our program directors finalized our technical plan, allowing us to move forward with budgeting and finally executive approval.

A key challenge we were able to meet without sophisticated digital infrastructure was the use of a single studio design to operate with multiple production and on-air software packages for our different products. Rather than a simple "we use automation brand X" we had to accommodate several systems in the same studios. This complex equation was easily met by a talented amalgam of several company's technical associates combined into a single unified division of Dial Global.

The process took time as we worked with the mechanical design engineers to ensure adequate cooling was available for every area of the company. The first pass of the design by the mechanical engineers was excessive, but we were able to

Satellite transmission equipment in the racks of Dial Global's Denver Network Operations Center.

Wire management racks were used for Ethernet and digital audio cross connects.

Equipment List

Adobe Audition 3
Amco racks
Belden wire and cable
Dell Precision workstations
Electro-Voice RE-20, RE-27
Krone blocks
Omnirax furniture
Onan 750kW generator
Powerware 480kVA UPS
Raritan Dominion KX II
SAS 32KD, Rubicon SL
STORQ
Symetrix Airtools 2x
Tannoy Reveal 601A
Tascam CD01 Upro
Telos VX
Yellowtec Mika

cooperatively reach a compromise that met the needs of equipment cooling, talent comfort and financial responsibility.

We finally had a design and the process of selecting a contractor was now at hand. We obtained bids from four contractors and used the "bid leveling" process to help narrow the selection. We took each bid and compared pricing "line by line" for carpet,

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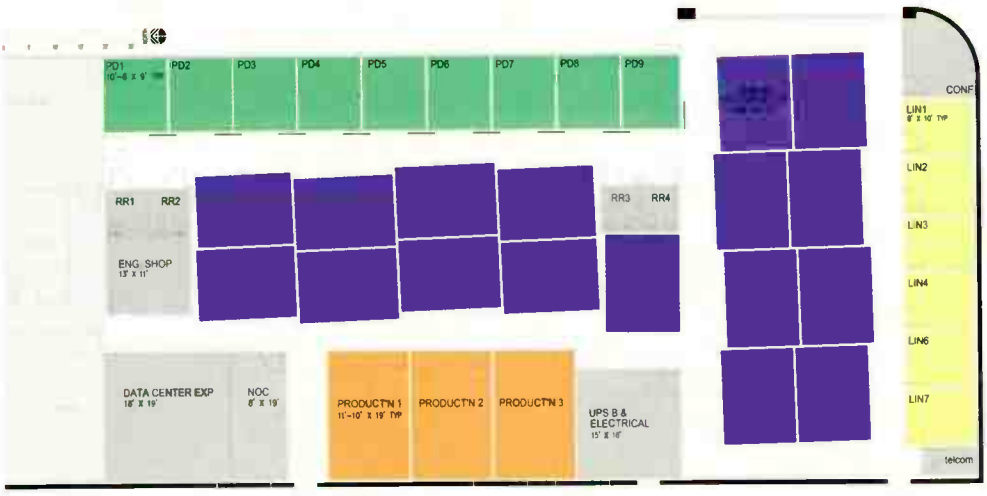

drywall and other specific items. Asking questions why prices were higher in some areas and lower in others was invaluable in not only keeping costs under control, but also to gain insight into their competence in each discipline. By interviewing each group as to their specific costs and justifications, we were able to reach a final selection in Swinerton Builders in December 2010.

Construction began in January 2011 and took five months. This included the coordination with the utility companies and other complex maneuvers necessary with construction around a live network distributing programming to thousands of radio stations.

At the beginning of June, the project moved forward with the full force of the entire Dial Global engineering staff. We assembled "tag teams" to the project, attacking each facet of the build out with the most experienced talent available. This project management approach truly made the expansion a "Global" (pardon the pun) affair rather than a single facility project.

One interesting design aspect involves the studio placement, which is obvious on the overall floor plan. To break up long, plain hallways, Dial Global worked with Rochelle Manhart Design, who skewed the studios slightly compared to the other spaces. The canted walls approach makes the hallways much more visually appealing.

Completion of the project occurred at the beginning of July with our program directors occupying beautiful new office spaces as well as new studios and the supporting technical infrastructure.

Trautmann is EVP Technology and Wiler is SVP Broadcast Engineering and Network Operations Division at Dial Global.

PPM and Streaming

Here's one way to monitor your online PPM signal.

By Mike Kernen

If you engineer at any radio station in one of Arbitron's 48 PPM markets you are already familiar with Arbitron's PPM encoding and encoding monitoring systems. For those unfamiliar, PPM is a clever system that uses acoustical masking techniques to hide codes within a station's program audio for the purpose of continually identifying that broadcast station. While inaudible to humans, these codes are easily heard by the pager-sized Portable People Meters worn by Arbitron panelists for the purpose of generating ratings data. To a station in a PPM market, un-encoded audio is tantamount to being off the air. No codes, no ratings; a worst-case scenario that has already happened at least once and cost that station one whole month of ratings. Yikes!

Arbitron provides an encoding monitor for every encoded audio service; HD Radio, Web streams, AM, FM, etc. These monitors are your only source of confidence that your stations' audio is truly encoded. For this they must be connected to a reliable source of audio – a source representative of what a PPM panelist would hear; what their Portable People Meter will receive. This is a fairly simple and straightforward scheme for the over-the-air broadcast: connect a well-fed tuner to the input of the encoding monitor and connect the encoding monitor to a suitable alerting system. Repeat once for each station you need to monitor.

The scenario changes when you consider needing to monitor encoded Internet audio streams. For us, that adds six more encoded audio paths and leads to a puzzling predicament. For me, it wasn't enough to simply monitor what was hitting our streaming encoder. I wanted to make certain the PPM codes were intact after their long journey through processing, codecs, and distribution channels. Again, representative of what an actual Portable People Meter receives. This meant having to continuously feed audio from something that could tune in the streams.

Previous solution

My first solution was not a bad solution by any measure. I didn't want to run six computers full time so I bought several Roku Soundbridge M1001 network music players, had Middle Atlantic provide rack mount shelves with custom cut faceplates, mounted them and fed them to the encoding monitors. I thought this a well-

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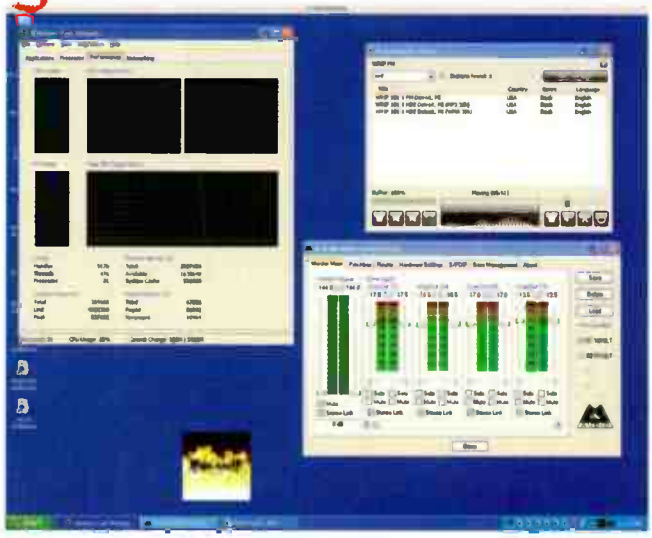
PPM and Streaming



Left: Six Radio? Sure! Pro applications running at once. Above: Task manager shows minimal resource requirements, the mixer app for the M-Audio Delta 1010LT cards, and one of the applications.

designed solution and it worked reasonably well for several years. Unfortunately, Roku has discontinued the M1001 and I have found no satisfactory replacement. While the Roku is a reasonable unit for anyone wishing to use such an appliance it was none too happy being pressed into continuous service. Frequent attacks of silence and user interface freeze-ups had us restarting one or more of them almost daily. Not what you want feeding an alerting system. Remember Aesop's fable about the boy who cried wolf?

Recently our stations made several upgrades to the streams. Most significant was a switch to AAC encoding which the Roku M10001 couldn't decode. The time had come to replace them.

Clearly the need was for a compact, inexpensive and above all reliable source of audio to feed our streams to the PPM encoding monitors. My intention was to feed every encoding monitor from just one computer. The benefit would be low cost, lower power consumption, low space requirement, and single point management. For this to be viable several challenges had to first be met. Obviously a computer that could accommodate six simultaneous audio outputs would have to be found. I would need to find software that was not averse to "tuning" several streams and outputting them each through independent audio ports.

The hardware and software

Finding a suitable rack mountable computer was simple. A quick browse of the storeroom yielded a used 2RU case with a 2.66GHz Pentium 4 and a fresh install of Windows XP Pro. I first tried without success to use two Digigram MixArt audio cards that provide four outputs each, unfortunately their age and tricky wave driver support made them unsuitable. For an alternative I found the M-Audio Delta 1010LT that provides four stereo unbalanced outputs is relatively inexpensive and supports my PC's PCI-X bus architecture. I bought two. Total cost: $340.

The software proved to be the hard part. I first checked out the usual suspects: VLC, Winamp, Quicktime, iTunes, Window Media Player. All had issues. You couldn't run more than one instance of the player or you couldn't select the desired audio output – each stream has to be assigned it's own dedicated audio port. Also important is repeatable configuration so that if the system needs to be restarted all of the audio patches remain. Naturally no software designer ever imagined it necessary to connect to more than one stream so I needed to find a way to run six instances of the player application each assigned to its own dedicated audio output.

Following a somewhat exhaustive search I fell upon an obscure player and web stream recorder application by The Best Ware Studio called Radio? Sure! Pro. Thinking the program aptly named I tried it and found it hit all of my bullet points. I could run six instances each pointed to a different output of the two M-Audio Delta LT1010 cards installed in the system. Best of all each instance could be started by way of a simple desktop shortcut. Total cost: $10.

Configuration

Radio? Sure! Pro reads its configuration at application startup from an XML file located in whatever folder you chose to run the executable from. This makes it possible to install several copies of the program, edit the XML accordingly, and create a shortcut. The XML file is really the key here. If the programmer had chosen to save his settings in the registry, it would not have been possible to create several slightly different setups whereby the audio output and stream URL are unique. Of course editing the XML file is a snap too, compared with attempting to locate and manipulate several cryptic registry entries.

With six streams all playing out simultaneously, I note a minimal 20-30 percent CPU load and very consistent ~500MB of RAM memory in use. As I write this, our system has performed without fail or interaction for three solid months and I suspect it will run smoothly well into the future.

Kernen is the chief engineer of WCSX, WRIF and WMGC, Greater Media Detroit.

Tips, tricks, hints and more

By Doug Irwin, CPBE DRB AMD

Golden find: 111C coils

So while you were cleaning the storage area at the transmitter site, you found these things with solder terminals on top and a painted label that says 111C repeating coil (or something to that effect). What is it, you may ask? Don't throw them out. After all, they officially belong to the telephone company, although they'll never be claimed of course.

What you have is a valuable nugget.

In the old days (before digital phone line circuits) if you needed to send audio to the transmitter site (as an STL) or somewhere else, you would order 8kHz or 15kHz lines from the telephone company. When the installer showed up at your facility, he stuck these transformers on the wall in your telecom closet. The line side windings were wired in series, and the drop side windings were wired in parallel. See Figure 1. This presented a 600Ω termination to the equipment and sent the audio toward the nearest central office (CO) with a 150Ω source impedance. This is because each winding will present a 300Ω load (assuming each winding is terminated in 300Ω).

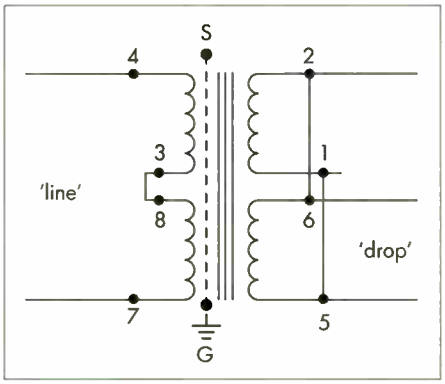


Figure 1

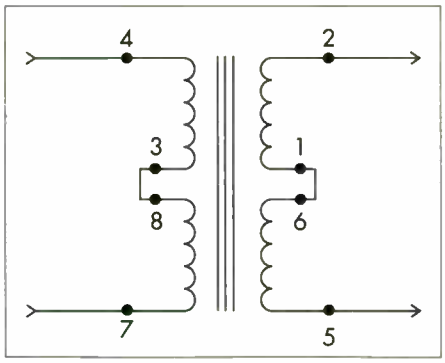


Figure 2

These transformers are great little problem solvers to keep around. Here are just a few things that they can do.

Source isolation. I used to do a lot of remotes with stereo phone lines (in the days before ISDN) and I had a set of 111C coils mounted to a piece of pine with terminal blocks on the ins and outs. If I needed to isolate the source (like a front-of-house system) from the remote broadcast equipment, I would insert these in the lines from the stage. Nothing works better at killing ground loops than 111C coils. Both sides would be wired up for 600Ω (Figure 2).

Program distribution. You can use each winding separately of course; if you were to feed one winding with a 300Ω source you would see that program repeated on each of the other three windings. It's a good idea to make sure each winding is terminated in 300Ω (Figure 3), otherwise the frequency response of the system may be aberrant. You could call this a poor man's distribution amp (DA), but the fact of the matter is it works great, and it's passive.

Mono-Summing. You can mono sum with two of the windings, but make sure that you have the source impedance correct. Each winding needs to be fed with a 300Ω source impedance. You may need to add build-out resistors in series with any DA or other output amps, otherwise the windings could compromise the peak output level of said output amps, creating a headroom problem. In addition, you need to make sure the phase relationship is correct between the left and right channel (unless maybe you want an L-R source?). See Figure 4. The two remaining windings will have L+R on them.

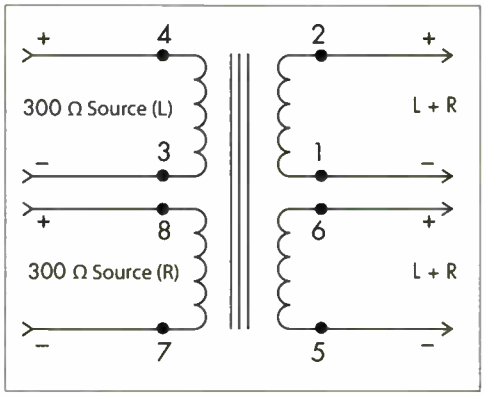


Figure 4

RF isolation. One of the neatest things about the 111C coils is the built-in faraday shield between the line side and the drop side (see Figure 1 again). If you have a long line bringing analog audio to some location, say near an AM transmitter site, you can isolate that line from any amplifiers connected to the line side by connecting the S terminal to your local ground.

In this day and age of balanced AES digital circuits, Ethernet and fiber, the functionality given by the old trustworthy 111C coil isn't nearly as important as it once was; however, one day it may save your bacon. Keep a couple on hand just in case.

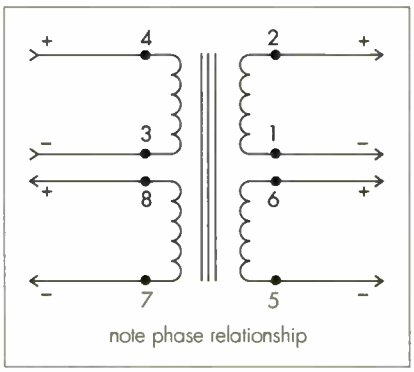


Figure 3

Irwin is transmission systems supervisor for Clear Channel NYC and chief engineer of WKTU, New York. Contact him at doug@dougirwin.net.

Do you have a tech tip? Send it to us at radio@RadioMagOnline.com

Ideas submitted to Tech Tips may be suitable to earn SBE recertification credits.

RDL EZ-MCP1 Mic Compressor

By Chris Wygal, CBRE

Broadcast engineers get paid to wear many hats. From brushing snow off uplink dishes, to programming automation systems, we find ourselves with plenty of responsibilities. While many tasks are drudgery, some things are fun to tinker with. For me, I've always enjoyed compression, limiting and other processing-like ventures. From on-air processors to microphone compressors, I take pride in getting as much saturation as is possible, before the process becomes noticeable. Ear fatigue is a big concern of mine, and finding that "sweet spot" can take a while. So I was pleased when Radio Design Labs recently unveiled the EZ-MCP1. It's an inline compressor that works its magic at the microphone low-impedance level. It's a neat tool that makes audio work headache-free.

Performance at a glance

Transparent control and leveling of dynamically challenging mic levels

Small size

Easy to operate

Accommodates dynamic or condenser mics

Six can be rack-mounted together in 1RU

Compresses mic levels, not line levels

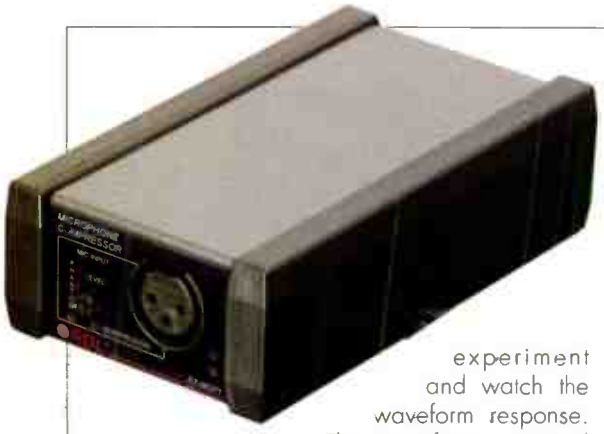
I engineer football broadcasts for Liberty University's sports network. Some of our announcers have really big mouths! For football I have a rack full of equipment, some of which keeps the announcers' levels smooth and in check. However, for basketball, only the announcers travel and take a small case containing headphones and a codec. Because they aren't fond of carrying mic preamps with compression and limiting, I began investigating inline compressors they could easily plug in and use, with little or no settings to contend with. I found the EZ-MCP1 from RDL and was amazed at how it met the need perfectly.

What it's got

The EZ-MCP1 accepts mic level, compresses mic level and outputs mic level. This is somewhat unheard of, as compressors generally process line-level audio on the downhill side of an input amplifier. It has two simple setup trimmers: output level and compression (great for announcers who aren't allowed to push buttons). The output level trimmer has a nominal or "normal" output marking that indicates no adjustment to the mic signal as it passes through. Of course, as is usually the case, some level may need to be recovered after the processing. Setting the compression is as simple as "turn it up, or turn it down." The one-knob operation makes intuitive threshold, ratio, attack and release settings. These built-in compression settings are remarkably intelligent.

The unit ships with a 24Vdc wall wart power supply. It is 1.5" tall, 5" deep and 1/6 of a rack space wide (several units can be ganged together in a rack with available rack hardware from RDL). It weighs next to nothing. Dynamic or condenser mics can be used. The unit provides phantom power when it is supplied by a console or other preamp (indicated by an LED when phantom is present). The EZ-MCP1 handles dynamics unlike any other simple compressor I've used.

When checking levels, speak normally and turn up the compression level until the "compression" LED barely flashes. Then, yell into the mic and see what happens. I found it best to record this



experiment and watch the waveform response. The waveform remained consistent throughout, whether I was yelling or speaking normally. Our play-by-play announcers used the EZ-MCP1 during a basketball game and the results were fascinating. Levels remained consistent and the dynamic control was transparent. Attack and release times aren't noticeable. Absolutely no distortion was found in the chain anywhere. Essentially, during normal speaking the unit simply passes the mic audio along. But when levels exceed the desired threshold it smoothly pulls the level down to match normal speaking level without compromising the quality of the audio. The EZ-MCP1 would be useful in any audio plant as protection against transients, no matter what type of compression or limiting may be downstream. In fact, if the compression adjustment is turned up all the way, the unit actually makes a punchy little compressor limiter!

The simplicity of the EZ-MCP1 is misleading. The lightweight little box with two adjustments and XLR connectors in fact packs a punch. The dynamic control it provides is stellar and it can definitely improve intelligibility in a live mix or on-air situation where dynamics run amuck. For incessantly loud vocal talent, or environments where consistent voice levels are lacking, an EZ-MCP1 provides great relief from riding gain knobs and constantly tweaking compressors.

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Editor's note: Field Reports are an exclusive Radio magazine feature for radio broadcasters. Each report is prepared by well-qualified staff at a radio station, production facility or consulting company.

These reports are performed by the industry, for the industry. Manufacturer support is limited to providing loan equipment and to aiding the author if requested.

It is the responsibility of Radio magazine to publish the results of any device tested, positive or negative. No report should be considered an endorsement or disapproval by Radio magazine.

Behringer EPA150

by Gil T. Wilson

When choosing a PA system, the main factor to take in is how much area needs to be covered with sound. The most looked at aspect is having a system that is big enough. You don't want to under-do it, but at the same time, you can easily over-do it. This is most obvious when the poor remote engineer is lugging PA equipment that requires several trips and a dolly to haul the super-sized speakers into a small room. I have seen and set up remotes that once all the broadcast cases and PA equipment were set up there was no room for the talent in the broadcast area. So I have found a PA that not only takes up little space, but also can provide enough sound to cover the smaller areas (e.g. strip mall stores) and save the engineer's back.

The Behringer EPA150 is a convenient 75W-per-output channel PA that fits into a case the size of a medium suitcase (13.8" x 24.1" x 7.3"). It weighs just 26.4lbs. This portable unit contains two speakers, a mixing board, a zipper case for storing the included microphone, speaker cables and power cord. The case opens to pop out the speakers and then can be propped open to provide protected access to the mixer. The entire unit sets up in seconds. All sections on the mixer are well labeled so that set up is nearly obvious.

Performance at a glance

Portable, small size

Fast, easy setup

24-bit effects processor

Feedback detection system

Five inputs, four outputs

Added features

The mixer is unique in that it contains a studio-grade 24-bit effects processor with 100 presets including reverb, chorus, flanger, delay, pitch shifter and various multi-effects. This may not be a requirement for a remote broadcast PA, but this demonstrates the versatility of this system. Musicians would love this portable system for playing the local bar or coffee house and so will radio engineering professionals for filling a remote broadcast with sonic performance.

The mixer also contains the FBQ Feedback Detection system that instantly reveals frequencies for feedback removal. While this is not going to remove all feedback, it will remove those accidental occurrences on most occasions. This is great when using the PA for interviews or when the talent wanders too close to the speakers.

The microphone included is the Behringer XM1800S and also comes with a mic clip and cable. This is a nice mic with a two-stage pop-filter, presence lift in the mid-range, cardioid pattern with feedback suppression (added plus with the FBQ system built-in to mixer), and balanced XLR output.

Before I go into specifics about the inputs and outputs of this system I would like to point out that this also features the Planet Earth switching power supply for flexibility (100 - 240Vac). Providing noise-free audio, and low power consumption for energy savings (or maybe having to pull off a generator, this will not bog down the generator.)

As for the inputs, this mixer has five inputs including two "invisible" mic pre-amps with phantom power for condenser mics, one microphone/instrument channel and one stereo channel with separate CD input (via RCA jacks). Channels one and two are the mic inputs with XLR and 1/4" jack inputs; channel three is the microphone/instrument channel providing two 1/4" jacks one for microphone or instrument and the other for line-in. Channels four and five are the stereo inputs with 1/4" jack inputs or RCA inputs.

The EPA 150 snaps into a convenient carrying case.

Looking at the outputs there are four usable outputs: a left and right 1/4" speaker output jack, an RCA stereo output, a direct mono out 1/4" jack and a stereo headphone 1/4" jack.

On the mixer itself there are six sliders controlling the inputs and outputs. From left to right, channels one through three each contain pots for bass, mid range, and treble controls and an effects pot for adjusting the level of effects desired. Channels four and five are the stereo channels and ganged together in one slider and contain the same pots as one through three. The last two sliders are for the main level output control. There is also a pot for headphone volume. Across the top of the mixer is an equalizer with the FBQ feedback detection. This is operated with the typical sliders of an equalizer with seven bands for frequency controls. The EQ and FBQ each have a button for turning them off and on. Then an LED readout appears for selecting the effects.

Housed within the speakers are a 4" woofer and a 1" tweeter. The speakers also have a 17mm stand insert for use with standard microphone stands and 12' cables.

This system is perfect for use when you need just enough sound and fast setup. The EPA150 also has versatility in providing the perfect PA for a small band and I even used the system to provide a PA and mixing board for a production studio with just my laptop and the Behringer USB adapter (not included).

Behringer

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Wilson is an announcer, producer, webmaster and promotions guy at WAKO-AM/FM, Lawrenceville, IL.

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Contributor Pro-file

Meet the professionals who write for *Radio* magazine.

This month: Facility Showcase, page 22

Conrad Traumann, CPBE
EVP Technology
Dial Global
New York

Traumann oversees engineering, IT and technical operations for Dial Global. He has worked in radio for 30 years, beginning his career as chief engineer for his college radio station and working for 20 years in local radio. In 2000, he made the jump to network radio and has managed engineering, IT and production departments. His accomplishments include overseeing the successful execution of five national remote broadcasts of the Olympic games from Sydney to Beijing and numerous studio relocation and construction projects. Trautmann sits on the Society of Broadcast Engineers national board of directors, is the treasurer and past chairman of the New York City Chapter 15 of the SBE and participates in various committees of the SBE, NRSC and the IAB. Trautmann holds a Professional Broadcast Engineer certification from the SBE.

Eric Wiler
SVP of Broadcast Engineering and Operations
Dial Global
Denver

Wiler oversees all technical and operational aspects of the studio and transmission facilities. A 20+ year veteran of network radio, he began his career as director of affiliate engineering for Transtar/Unistar Radio Networks. He later worked for Jones Radio Networks as director of engineering. From Jones he moved to Clear Channel Satellite as chief technology officer before returning to Jones in 2001. Wiler's industry experience includes the upgrade and deployment of many delivery platforms including the Starguide III platform for Clear Channel, JDAR digital receiver for Jones, dozens of Comstream Regional Networks and Dial Global's current Digital Media Server platform. His background also includes extensive history in audio for cinema, digital audio engineering, software and hardware development, IP networking and local radio engineering.

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by Erin Shipps, senior associate editor, with special guest Joseph Kreiss

Do you remember?

Vintage Radios

It was called the "Golden Age of Radio" in the 1940s and 1950s. Although thoughts recall the radio programing of the day when we hear the term, the equipment itself was also "golden," so to speak.

Fairmont, MN-based Woodward Broadcasting Company owner Charles "Woody" Woodward has assembled an impressive collection of vintage radios and broadcast equipment on display at the offices of the two-station cluster (KSUM 1370 AM and KFMC 106.5 FM).

A far cry from the present day high-tech miniature ipods and satellite radio receivers, the radios and broadcast equipment of the "Golden Age" were American-made works of art. Fine-crafted wooden radio cabinets hid an assortment of tubes and transistors that cast a golden glow of their own when the power was switched on. Many of the vintage radios featured dials printed with the call letters of powerhouse Midwestern broadcast stations of the day, such as WGN, WCCO, KROC, WHO, WTCN and KSTF. Some models could allow listeners to tune in the local police frequencies as well.

"I started the collection at the station a number of years ago," Woodward explains. "Over the years my ex-father-in-law would go to estate sales, find old radios and restore them. I built-up the collection mainly for when school kids come to the stations for tours."

Woodward jokes, "The kids always ask what the wood boxes with the knobs are. And when I tell them they're radios, they're surprised and a bit baffled."

Kreiss is a photographer based in Minnesota. See more of his work at www.josephkreissphotography.zoomshare.com.

1. Philco Model 60: This Superheterodyne radio was made in Philadelphia in the 1940s and features the classic cathedral-style peaked top wooden cabinet and a small brass-framed dial window. **2. GE AM radio:** AM radio at its best. Though its age is unknown to the owner, its wood cabinet and modern-designed dial possibly place it in the early 1950s. **3. KSUM mic:** How many golden-toned KSUM announcers talked to listeners through this compact RCA 88 Aeropressure dynamic microphone? **4. Motorola shortwave:** This modern designed vintage table-top receiver featured AM waveband as well as shortwave. **5. AM/FM floor radio:** Crafted in beautiful wood, this is a 1946 Coronado floor cabinet radio. Originally sold at Gamble stores, it features 60W of power in both AM band as well as the up-start FM frequency band. **6. Arvin Industries Model 51:** An early example of a tombstone style, all-wood construction cabinet table radio. The radio dates to the mid-late 1930s and featured both AM and shortwave frequencies. Arvin manufactured radios for automobiles as well. **7. Philco Model 38-7:** A radio could also be a piece of furniture in the homes of the early 1950s. Families could have gathered around this Philco Model 38-7 floor standing cabinet radio. The dial features early station presets printed on the dial face to aid in tuning in the favorite show.

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ACCENT is a contemporary blend of brushed metals, pleasing colors, and interesting textures The metal structure is artfully integrated into the visible design decor of the cabinetry. Cabinetry and electronic equipment complement each other to create a bold visual environment for talent, guests, and clients alike.

www.arrakis-systems.com

all prices are msrp

The Secret To Great, Clean On-Air Sound Is Using Less Processing. The Trick Is Knowing How To Do It...

MEET THE RADIO CLEAN MACHINE

AIRAURA IS THE BEST ON-AIR PROCESSOR YOU CAN BUY

Programmers and engineers everywhere are telling us that CLEAN is just as important as LOUD. That their on-air signal needs to be able to handle multiple formats with the cleanest possible sound - without sacrificing loudness. It's been Vorsis' mission from day one to put CLEAN both before and after LOUD to give you the BEST possible signal. And we do it by giving you less.

How do we do it? We've developed several technologies that are radical departures from conventional on-air processing. The big surprise is that all of them hit your program material with less processing rather than more.

Using one-step Smart Control AGC processing rather than two, we eliminate the need for using a broadband AGC and can skip an entire processing step. This results in significantly less processing and distortion.

Comparison Between Conventional & Vorsis SST Multiband Systems

Conventional Multiband System
Four step process

Broadband AGC → Multiband AGC Compressor → Multiband Limiter → Clipper

Vorsis SST Multiband System with Feed Forward
Three step process

Multiband AGC Managed by our SST → 31-Band Limiter → Clipper

Feed-Forward signal control instead of feedback eliminates processing errors by adjusting the signal before it enters a processing step, not correcting it afterwards. When the smart control of the AirAura AGC and clipper are combined with the real time information provided by feed-forward technology, true anticipatory processing results.

Add up the differences and you can see that AirAura is a very different broadcast audio processor, built with a unique philosophy to process less and process smarter. But don't take our word for it. We've got tons of testimonials available. Call or email us at the contact info below to arrange to hear the cleaner sound of the AirAura with your own ears.

CLEANUP
YOUR ON-AIR SOUND IN THE RATINGS

Put the Vorsis CleanUp Crew to Work In YOUR Studio. You Won't Believe The Difference In Your On-Air Sound Or Listenership.

Download a FREE whitepaper or watch video about the AirAura at RadioCleanMachine.com

To set up a demo call Mike Erickson at 252-638-7000 X127 or email us at CleanMachine@wheatstone.com

WHEATSTONE VORSIS

AIRAURA
THE RADIO CLEAN MACHINE

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