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THE RADIO TECHNOLOGY LEADER

June 2010  
RadioMagOnline.com



## WJFK-FM's HD Radio Quadcast

Washington gets a quadruple dose of sports.

### 2010 NAB REVIEW

Pick Hits, new products and photos

### FIELD REPORTS

Potomac FIM-4100 and 25-Seven Systems PLM

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Complex Mix Minus setups are made simple thanks to per channel Mix Minus outputs with selectable reference mix and talkback interrupt.

You also get auto switching between off line Mix and on line Mix Minus per channel. The E-1 features 99 show presets and a programmable per-channel A-B Source/Select switch which emulates traditional broadcast consoles.

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- Streamlined user interface with password protected access to complex functions via LCD display and touchpad
- 4 Main Mix Busses
- Control Room and Studio Monitor Outputs with selectable sources from Audio Network
- Per Channel Mix Minus Output with Selectable Reference Mix and Talkback Interrupt. Complex Mix Minus setups made simple.
- Auto Switching between Off Line Mix and On Line Mix Minus per channel
- 99 Show Presets
- Incredible new price!



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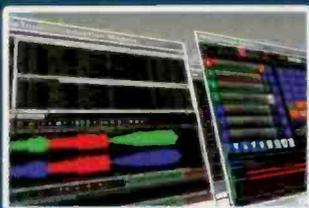


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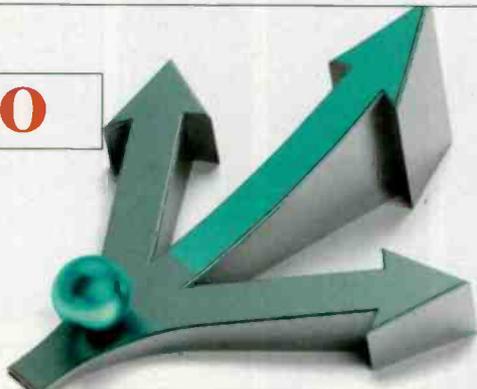
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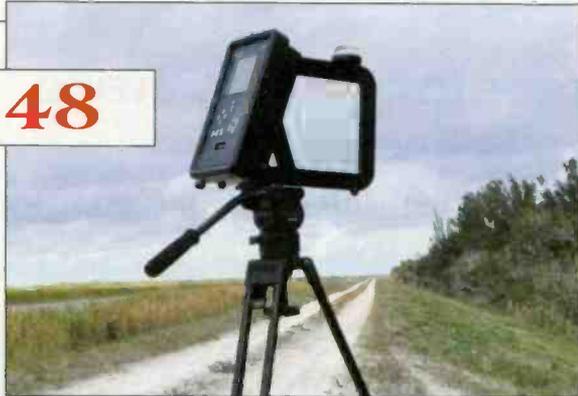
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## STL and Audio Distribution

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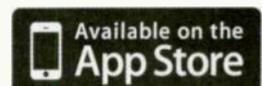
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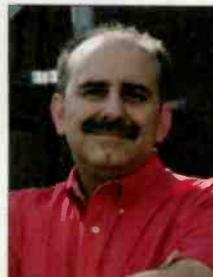
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# Currents Online

Selected headlines from the past month.

## SBE Announces National Candidate Slate for 2010 ➔

Vinny Lopez seeks a second term as president. Ballots will be mailed to SBE members and tallied on Aug. 26, 2010.



Lopez

## FCC, FEMA Plan Workshop on Emergency Alerting

The workshop will highlight the status of and relevant details related to the Integrated Public Alert and Warning System, including the next generation Emergency Alert System (EAS) and the Commercial Mobile Alert System.

## Comrex ARC for Android Now Available

The free app can be downloaded from the Android Market.

## SBE Updates CertPreview Certification Exam Preparation Software

The new version of the practice test software is easier to use, and it runs on Windows and Mac.

## RTDNA, Hofstra Survey: Radio News Use of Digital Increases

The use of digital audio recordings and digital mixing and editing has increased for radio news reporting.

## SBE Creates Affiliation with Pakistan Engineers

The SBE now has affiliation agreements with nine broadcast engineering groups in countries outside the United States.

## Clayborn Joins RF Specialties of California

Kevin Clayborn previously worked for Orban/CRL for many years.

## 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 prize courtesy of Hosa.

We'll award a different prize from Hosa each month during 2010.



This month, enter to win a 3-pack of Hosa MCL-125 mic cables.

Enter by July 10. Send your entry to

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Include your name, job title, company name, mailing address and phone number.

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For complete rules, go to RadioMagOnline.com.

## FCC Offers Guidelines on Making HD Radio Power Increase

For FM stations to increase their digital power they must notify the FCC. An FCC notice provides the details on what stations must do.

# Site Features

## 2010 NAB Show Photo Blog

See the convention through the lenses of the *Radio* magazine staff.



## Digital Radio Update Twice a Month

Stay up to date with the source of digital audio broadcasting news and information. The coverage extends to DRM, satellite radio and more. Subscribe today.

## Advertiser Links

Web links to the advertisers in the June issue.

## Facebook, Twitter, and RSS

All the content at RadioMagOnline.com is available through Facebook, Twitter or as an RSS feed.

- facebook.com/RadioMagazine
- twitter.com/RadioMagazine
- RadioMagOnline.com/rssfeeds





# This Phone Makes Other Hybrids Go Running Home To Their Mommies.

**NEW!** Universal Host handles VoIP, PBX and EVERY other phone!

More and more stations are turning to VoIP for their phone systems. And rightfully so. Cost savings as well as increased feature sets make them a natural. One problem, though, is finding a hybrid that can work with your new system. Leave it to JK Audio to deliver a hybrid that integrates flawlessly with your VoIP phone system (or any other)! Universal Host Digital Hybrid connects your VoIP phone to your computer via its USB audio CODEC, giving you immediate talk-show quality for interviews right from your desktop with no fuss!

Whether it's VoIP, PBX or any other phone system, Universal Host Digital Hybrid with its USB audio CODEC makes it fast and easy to get your callers on the air!



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## A good show? Indeed it was.

**I**t was a new year, a new show, a new location and a new attitude. The 2010 NAB Show had a refreshed feeling this year, and the upbeat attitude was obvious in the exhibit hall and sessions.

The exhibitors were optimistic. After an extended period of restricted capital budgets, many exhibitors said they were seeing signs of light showing through.

Some exhibitors even reported on major projects that were in the works. While the economy has not seen a full recovery, there are signs that matters are returning to a more normal state.

In general, the overall attitude around the convention was positive. Exhibitors were pleased with the attendance, and many told me they were seeing enough of the right people to justify exhibiting. Likewise, attendees were also in good spirits, some telling me they were looking forward to the convention as it got underway.

It seemed like there were more radio engineers at the convention this year than compared to previous

## Your Story Is Out There. Grab It LIVE with ACCESS!

In Chile, it was business as usual for the BIO-BIO LA Radio team. They'd been using ACCESS to cover the presidential elections as well as international broadcasts of the Libertadores Cup from Argentina, Brazil and Venezuela. Then tragedy struck in the form of a devastating earthquake. The team was there, with journalist Maria Carrasco reporting live as well as working with the police to help enable communications using a Comrex ACCESS.

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years. This is not a statistical fact, but an observation. I also noticed that many engineers shortened their Las Vegas visits by a day or two, leaving the convention on Wednesday or Thursday.

The biggest change for radio was the move of the radio exhibits to the front of the Central Hall. I found the new location easier to access when arriving by the Monorail or shuttle buses. This location was also closer to the South Hall session rooms, which I found to be more convenient.

There were also plenty of exhibitors outside the radio hall, and it's always a challenge to find the time and in some cases actually locate those booths. It's worth it to move beyond the confines of the radio hall if you can.

I looked at a few trends last month, and we highlight some in this issue with our convention review, but it seems the most visible technology highlight would have to be IP. Whether it's audio routing, signal transport, machine control or status signaling, it's hard to avoid contact with IP in some way. IP is in the field, the studios, the STL, the early stages of the transmitter, the remote control, and it's also part of the transmission scheme with Internet radio.

There was plenty more to see, and we have packed as much of it as we can in this issue. Between new product listings, the Technology Spotlight columns, the *Radio* magazine Photo Blog (now an annual tradition), and of course



**Editor Chris Scherer with Stan Lee at the 2010 NAB Show.**

the original technology recognition, the *Radio* magazine Pick Hits, you should get a true taste of what was to be seen at the NAB Show. We'll have more products in coming issues and in the annual Product Source in August.

Overall, it was a good show. And while April 2011 seems like it's so far away, planning for the 2011 NAB Show will begin at the end of the summer.

*Chris Scherer*

What's your opinion? Send it to [radio@RadioMagOnline.com](mailto:radio@RadioMagOnline.com)

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## Next-level career planning

By Kevin McNamara

**I**s it time to start thinking about taking your career to the next level? According to the Bureau of Labor Statistics (BLS), men and women in this country hold an average of 14 different jobs in their lifetime. The government doesn't keep statistics on job satisfaction, but research from Kelly Services, a major temporary staffing firm indicates about one half of all workers have dissatisfaction from their job. The primary reasons cited? Compensation and flexibility.

Most likely career change has entered into your thoughts. How do I move up the ladder? What other industry would be a good fit for my skills? Do I want to continue working for some else or start working for myself? These are all questions to consider. Even if you are satisfied with your job, are you sure it will be there in the coming years? There are several reasons that might drive a change in career:

- Prospects for earning more money are unlikely. If your annual raises are not commensurate with your contribution, you will be resentful.
- Work is too stressful, perhaps causing family or health issues. Or you are working too many hours.
- Work is becoming routine and boring. One of the things that attracted us to broadcast engineering was the variety of projects we deal with on a daily basis. With budgets reduced, perhaps you are now having fewer projects.
- You are experiencing job burnout.

Along with budget reductions come reductions in staffing. Perhaps you are now doing the work of several people out of necessity.

- Your life has changed: Marriage, kids,

health problems, family issues, etc. may make this choice necessary.

- Job outlook in the field has worsened. This appears to be the case in broadcasting, particularly on the technical side. Statistics from the BLS indicate that broadcast jobs, including technical positions, are expected to decline by 12 percent over the next eight years. The data further suggests that income for these positions will remain flat.

Your ability to grow in your current situation is largely dictated by the current economy. Fragmentation of advertising dollars will continue to push revenues down. While much of the industry-funded research shows steady but small revenue growth for radio over the next 10 years, it is hard to imagine that the universe of advertising dollars will continue to grow at the same pace in the current economy. It is especially difficult now that broadband providers have the ability to deliver a wider range of entertainment on personal mobile smart phones and vehicles.

### Skills are equal opportunities

The first step in reaching the next level is to identify your transferable skills and perform a self-analysis. Go ahead and write down your skills. Then, honestly assess those skills and rate your expertise. Be careful not to over-rate these skills: Let's say you have a professional certification such as a MCSE for example, but primarily use it to manage a news automation or audio storage server; this would probably not make you an expert on other types of more traditional server environments. On the other hand, don't play down skills you have mastered. Successful broadcast engineers generally have a valuable and extraordinary ability to solve problems quickly. Here are a few other great transferable skills:

- Communications – can you articulate thoughts in writing, speaking or through personal interaction?
- Teamwork – Do you complement group activities in a positive manner?
- Flexibility – Adapting to change is important in any organization.
- Creativity – Thinking out of the box, another trait of successful broadcast engineers.
- Leadership – Management experience, particularly if you have responsibility for a staff.
- Ability to self start – Do you need to be told what to do or do you take control without direction?

# MANAGING TECHNOLOGY

- Detail oriented – Do you take pride in the finished product? Are you able to plan/manage projects?
- Eagerness to learn new skills – You are never too old to learn new skills or get professional certifications. In some cases a change in career may also require additional college coursework or advanced degrees such as an MBA.

## Research opportunities

Investigate the options in different types of careers. Moving to a different industry might prove the most difficult since you have not established a track record. Research leading companies in a particular industry, establish a network of contacts, arrange informal telephone calls or lunch with people and recruiters working the industry and start networking.

Another option is to look for contract opportunities. Some businesses hire on a contract basis during hard economic periods. These opportunities are typically opened for specific short term projects, two years or less. In general, hourly rates can be higher than that of employees, but the rate assumes you will pay for taxes, insurance and travel-related expenses from the payment. This is the best way to gain exposure to a new industry that could lead to a more permanent position if

desired, or you could continue contracting with other companies on new projects.

Business networking websites like [LinkedIn.com](http://LinkedIn.com) are excellent sources of contacts for every type of industry. These sites also have discussion groups created specifically to address issues within an industry.

## Refresh resume and interview

Your resume should be professional and tailored to provide the best exposure to your chosen career. Posting the resume online will provide the greatest amount of visibility to potential employers. Remember to check the proper business categories you are targeting and provide keywords that will make the resume more visible to searches. Most hiring starts with screening from a third party recruitment firm.

## Assess your lifestyle

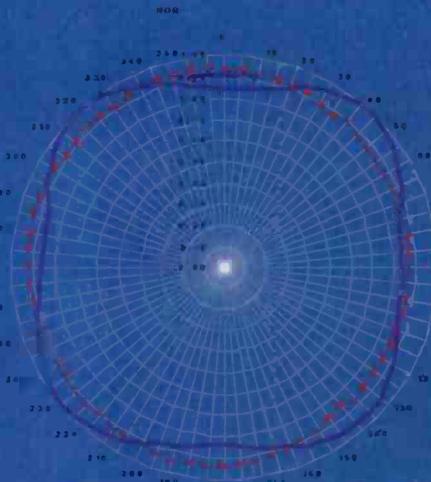
The most obvious impact of changing careers is the effect it has on your family, finances and lifestyle. Expect tradeoffs. This is a new beginning where you need to prove yourself again, but that is the reality of moving your career to the next level. 🗣️

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

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## Medical marijuana ads OK in some circumstances

By Harry Martin

**D**ue to changes in laws and enforcement policies at the state and federal levels, broadcasters may be able to legally carry ads for medical marijuana in states where medicinal use of the substance has been legalized.

Marijuana is a controlled substance and its sale or distribution is prohibited under Federal and state narcotics laws. However, last October the Department of Justice announced formal guidelines governing its enforcement policy with respect to medically-prescribed marijuana in those states where medical use of the drug is now legal. (About a dozen states have legalized medical marijuana so far.) In those states the DOJ has ceased prosecutions of legitimate growers and distributors of marijuana intended for medical use.

Legalizing marijuana sales has opened up possibilities for promoting such sales through advertising. And sure enough, a number of broadcasters have been asked to run spots for distributors of marijuana, including doctors' offices and retail outlets. Unlike cigarette advertising, there is no FCC rule or policy

However, anyone considering acceptance of medical marijuana ads should pay careful attention to factors such as the following:

- The distribution of marijuana for medical purposes must be permitted by state law in the area served by the station.
- Stations whose signals reach portions of states where medical marijuana has not been legalized may still be subject to Federal prosecution.
- A station accepting such ads must do a minimum of due diligence to make sure the advertiser is legitimate and not a drug trafficker masquerading as a medical dispensary.
- Advertising copy should be carefully screened to make sure it promotes use of marijuana to be dispensed under a doctor's prescription. Local counsel should be consulted if there is any question about whether the ad describes an activity that might be considered to violate a state's medical marijuana law.

There is risk involved in accepting medical marijuana ads even if these guidelines are followed. A mistake regarding the bona fide nature of an advertiser, or about interpretation of your state's medical marijuana law, could result in legal trouble. A drug conviction, even for an inadvertent violation, could have serious implications at FCC license renewal time. And remember, the FCC itself has not yet formally addressed this question – even though the DOJ has clearly signaled a disinclination against bringing the law to bear against medical users who have their state's blessing.

So the likelihood of being criminally prosecuted for advertising a product that is now legal, at least for medical uses, throughout your state and service area appears to be relatively small. But remember, applicable Federal anti-narcotics laws have *not* changed. All that's changed is the DOJ's enforcement policy. A violation of a state's medical marijuana law could still have adverse legal consequences at both state and Federal levels, and ultimately at the FCC.

### Dateline

July 8 is the new deadline for commercial licensees, including sole proprietors, to file biennial ownership reports on the FCC's revised Form 323.

For *noncommercial* radio stations in Illinois and Wisconsin, their biennial ownership report deadline is Aug. 2.

Aug. 2 is the deadline for radio stations licensed in the following states to place their Annual EEO Reports in their public files: California, Illinois, North Carolina, South Carolina and Wisconsin.

The radio station license renewal cycle begins again in 2011, with the first batch of renewals due on June 1, 2011, for stations in D.C., Maryland, Virginia and West Virginia.

that prohibits such advertising (although the Commission has long demonstrated a serious antipathy to drug use and distribution generally). In view of the DOJ enforcement policy, it appears that the current Administration is not likely to impose extra burdens on legitimate, state-sanctioned marijuana use – which suggests that advertising marijuana for such use should not cause problems – just as promotion of gambling in jurisdictions where it's legal has long been approved.

*Martin is a member of Fletcher, Heald & Hildreth, PLC, Arlington, Virginia. E-mail: martin@fhhlaw.com*



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# 2010 NAB SHOW

## Pick Hits, new products, photo blog

**W**hat's new? If you attended the 2010 NAB Show, you know the answer is "plenty." Over the past few years, the annual trek to Las Vegas had become routine. With restricted budgets and an overall tightening across the industry, convention attendance began to decline. But the 2010 convention had a different, more upbeat feeling than previous years. Was it the glimmer of improvements to the economy? Was it the projected improved radio revenue forecasts? Was it the new radio hall location? Regardless, it was a good show.

Our convention review is loaded with great information. We lead off with a rundown of the *Radio* magazine Pick Hits. This list of the top 15 new products from the convention is a tradition that started in 1985. The Pick Hits are the original technology recognition. They are chosen by working radio engineers just like you, so you know they

are truly representative of the interests of radio broadcasters. The judges also follow an established set of rules (as noted on page 22), which ensures that their picks are fair and unbiased, and not simply some "oh nifty" reaction. We even tell you who the judges are.

But the Pick Hits can only tell part of the story. There are lots of new products on display. We previewed many of them in the March and April issues, and round out that list here. Also look for our Technology Spotlight highlights of trends. And finally, peek at some of the sights from the convention with highlights from our daily photo blog.



— *Chris Scherer*, editor



### What the judges had to say

**Telos VX** >

Voice over IP is the new way to take phones.

This is a natural step in adopting VoIP for on-air radio.

### Multi-studio phone system Telos Systems

**VX:** Telos VX shares phone lines across a number of studios using standard IP technology.

It is a scalable system that is compatible with a variety of VoIP gateways and PBXs. Gateways are available for POTS, T1/E1, and both BRI and PRI ISDN. Units can be installed as rack-mount units for large numbers of connections or desktop boxes that interface a few POTS lines. The SIP interface transfers calls between the office and studio systems. The VX Engine is a 2RU device providing call control and audio processing. There is one hybrid per line, allowing multiple calls to be conferenced and aired simultaneously with excellent quality. The VX Director Phone has two large, high-contrast color LCD panels that provide line status, detailed caller information and fader assignments. Text can be written to the line fields to describe calls from the Telos Assistant Producer PC application.

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## Control surface console Wheatstone



**E-1:** The compact E-1 control surface console and associated ip88cb Console Audio Blade provide networked control, mixing and I/O for small to mid-sized studios. It features an integrated LCD monitor for metering and control, a streamlined user interface with password-protected access to the complex functions via LCD display and touchpad, and four main mix buses as well as control room and studio monitor outputs with selectable sources from the audio network. Complex mix-minus setups are made simple thanks to per-channel mix-minus outputs with selectable reference mix and talkback interrupt. Auto switching between off-line mix and online mix-minus is available per channel. The E-1 also features 99 show presets and a programmable per-channel A-B source/select switch, which emulates traditional broadcast consoles.

**252-638-7000; www.wheatstone.com  
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## Surge suppressor Henry Engineering

**Powerclamp Series 10:** Powerclamp Series 10 wire-in parallel TVSS devices are rated at 200,000 surge amps per phase, and will suppress lightning-induced transients, massive high energy surges, and power line spikes. Their surge suppression will greatly reduce equipment failures and computer lockups that are caused by power line disturbances. Operation is not affected by the power requirements of the load. Each line phase is fused, with a fuse status lamp. An unlikely failure will not interrupt



power to the load. The Series 10 offers optional remote failure detection to monitor the suppression integrity of the device from a remote location. A Series 10 unit should be installed at the main entry electrical panel in any environment where frequent and severe lightning occurs.

**626-355-3656; www.henryeng.com  
info@henryeng.com**

## What the judges had to say

### Wheatstone E1

The all-in-one system is an ideal entry point for an IP audio system.

The system provides many, many useful features.

### JK Audio > BlueDriver

JK Audio has again found a niche for Bluetooth use.

Ideal for remote broadcasts by pairing with a cell phone, and it keeps the reporter looking professional.

### < Henry Engineering Powerclamp Series 10

This is the natural evolution of the product family.

Really keeps the power clean.

### Tieline Technology > Report-it Live

A handy utility for field connections.

It puts a portable connection and remote recorder in a commonly used device.

## Wireless audio interfaces JK Audio



**BlueDriver Series:** The BlueDriver series of audio interface adapters uses Bluetooth wireless technology. BlueDriver-F3 plugs directly into a dynamic mic or the mic-level output from a mixing console. Pair it to a Bluetooth-equipped cell phone or headset. The 3.5mm stereo jack contains a mic-level output suitable for recording, with the clean mic signal on the left channel and the Bluetooth return on the right.

BlueDriver-M3 plugs into the mic input channel of a mixer. The 3.5mm jack will accept a signal from the headphone output of the mixer for transmission back to the cell phone or headset. A switch on either unit selects between connection to a third-party Bluetooth headset, or a cell phone.

**800-552-8346; www.jkaudio.com  
info@jkaudio.com**

## iPhone IP audio codec application Tieline Technology

**Report-IT Live:** This application allows reporters and announcers to send live broadcast-quality IP audio wirelessly from any remote location to a Tieline IP codec in the studio. Report-IT Live can broadcast live and record the broadcast on the iPhone at the same time, so a copy of the live report can be kept. Record an interview or report offline and then go live on the air later. Users can also report live and play grabs from any recorded interview while on the air. Audio files can be forwarded in

real-time to a Tieline codec in the studio for recording, or uploaded via FTP to a news server with no codec required in the studio. Tieline has designed and built the Report-IT Live hardware dock (sold separately).

**888-211-6989; www.tieline.com  
sales@tieline.com**

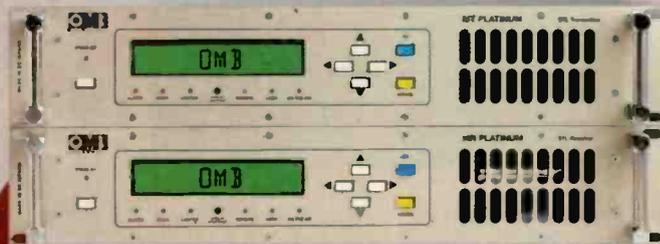




B R O A D C A S T

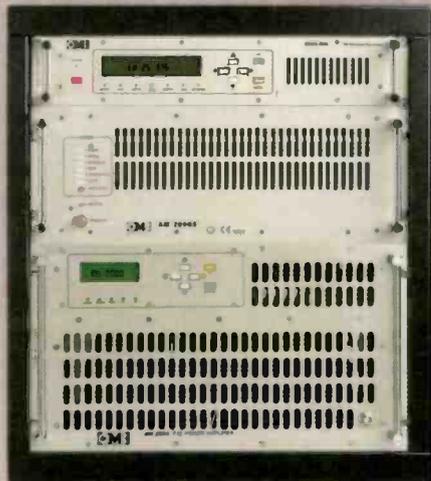
# FM TRANSMITTERS

All transmitter powers with the best quality price ratio



## MT/MR PLATINUM

**MT/MR PLATINUM**  $\geq 1\text{GHz}$  is a high-performance Studio-to-Transmitter Link. It is made up of the 5W MT transmitter externally synthesized in 10MHz sub-bands with a step of 100KHz, and the MR double conversion receiver, that is externally synthesized, too. The MT is microprocessor controlled, and includes LCD display for the visualization of the most relevant transmission parameters (frequency (6-digit), forward and reflected power, modulation level), balanced Mono, Stereo (MPX). The MR receiver has the same visualization system as the transmitter. It includes balanced Mono and Stereo (MPX) outputs. Furthermore, the MT/MR Platinum STL includes a jumper in order to get a proper operation with digital signals.



## EM 2000

**EM 2000** is a 2000W FM transmitter made up of the EM 25 DIG exciter (or EM 20/30 exciter) and the AM 2000 FM amplifier. AM 2000 includes eight 300W high-efficiency MOSFET technology amplifying modules, fed by 2 independent switching power supplies, which are made to withstand the working conditions. The amplifying modules work independently thanks to a power combining structure that provides high isolation between them.

## EM 10000

**EM 10000** is a 10000W FM transmitter made up of the EM 250 COMPACT DIG exciter and three control units which combine the power of six AM 2000 FM amplifiers. AM 2000 includes eight 300W high-efficiency MOSFET technology amplifying modules, fed by 2 independent switching power supplies, which are made to withstand the working conditions. The amplifying modules work independently thanks to a power combining structure that provides high isolation between them.

[www.omb.com](http://www.omb.com)



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fax. 902-187878  
Pol. Ind. Centrovía C/Paraguay, 6  
LA MUELA  
50196 Zaragoza, ESPAÑA

## Multi-format audio interface panel Henry Engineering



**MultiPort:** MultiPort is a utility interconnect panel that facilitates interface between a studio and external audio equipment. It provides convenient access to a studio's analog and digital audio inputs and outputs with professional and consumer connections. MultiPort's active circuitry performs all level, impedance and topology conversion necessary for correct interface. It connects to any studio via its analog and digital inputs and outputs. The analog I/O interfaces to any line- or mic-level audio source and input. The digital I/O is similar, connecting to any AES/EBU signal source and console input.

626-355-3656; [www.henryeng.com](http://www.henryeng.com)  
info@henryeng.com



## What the judges had to say

**Henry Engineering**  
Multiport

The mic-level output is ideal for radio stations when a TV crew shows up.

It has any connection you can imagine.

## Comrex ARC

Ideal functionality for field audio contribution.

Obviously the price can't be beat.

## Android app Comrex

### Access Reporter

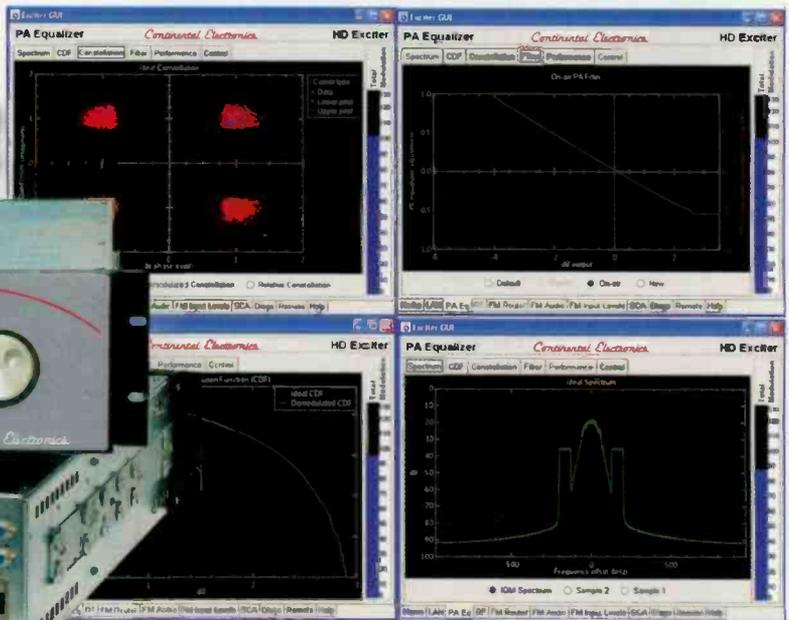
**Codec:** The Access Reporter Codec (ARC) is a simple utility that allows select Android-based mobile phones to make wideband audio calls to Comrex Access and Bric-Link codecs. Once installed on an approved phone, the app displays the familiar Access interface and outgoing call directory. ARC makes an IP call over the phone's 3G or Wi-Fi channel to the selected Access or Bric-Link codec in the studio using a high-quality wideband, full-duplex audio channel between the two devices.



ARC is free. Access and Bric-Link customers with a Comrex-approved Android phone can download the application and connect via the phone's 3G or Wi-Fi to their Access or Bric-Link codec.

800-237-1776; [www.comrex.com](http://www.comrex.com)  
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(214) 381-7161



## Voltage sampling unit Kintronic Labs

**VSU-1:** The Model VSU-1 precision voltage dividing transformers provide sample voltages for RF voltage phase and magnitude measurement on AM broadcast directional multi-tower arrays. The transformers are available for a maximum tower base peak voltage of 20kV RMS to enable use with low- to high-power antenna arrays and standard- to high-antenna base drive impedances. These voltage sampling transformers have been developed to facilitate the method of moments (MOM) proofing of an AM directional antenna with towers having electrical height between 120 and 190 electrical degrees. The VSU-1 is housed



in a painted aluminum weatherproof enclosure with a 7" ceramic bowl insulator and stud assembly for interconnection with the tower RF feedpipe.

**423-878-3141**

[www.kintronic.com](http://www.kintronic.com)  
[ktl@kintronic.com](mailto:ktl@kintronic.com)

## What the judges had to say

< **Kintronics VSU-1**

I can't wait to get rid of my sample loops.

Installing it at the tower base will eliminate many monitoring hassles.

## ERI PWR-100D >

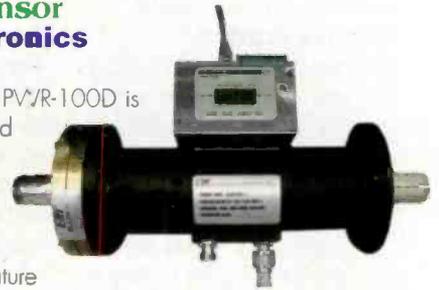
It reads analog and digital power and many more things.

Lots of potential for accurate transmission line monitoring.

## Power sensor ERI-Electronics Research

**PWR-100D:** PWR-100D is

a self-contained true RMS power meter/reflector-meter/line section featuring an internal temperature



sensor, line pressure and interlock inputs, Internet/intranet connectivity via LAN connection, serial and USB connectivity for local computer connection, 50-1000MHz frequency range, and optional on-board digital display of forward/reflected power, temperature, pressure and interlock status. It is compatible with the SWP-200 series power monitor and switch controller, VSWR protection systems or as a standalone power monitor. It easily expands for multiple power measurements with fault-tolerant CAN bus or RS-485 connectivity between sensors. It connects up to 256 sensors to a single system. Phantom power is provided over standard CAT-5 cables.

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South West	1.877.390.7267
North Central	1.513.376.8600
Pro Audio	1.877.640.8205
Latin America	1.760.650.1427
Bradley Division	1.800.732.7665



## What the judges had to say

### < Omnia 11

The IM distortion reduction is impressive.

Reducing the extraneous material on the MUX output makes a real difference.

## Remote monitoring WorldCast Systems Audemat

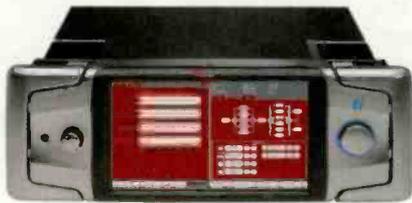


**Mini Control Silver:** The Audemat Mini Control Silver is a system for management and monitoring of remote equipment. It can be configured to connect with any equipment at a remote site through serial ports, status or metering inputs, commands (relays) or IP. All units linked to the Mini Control Silver can then be monitored and controlled locally and remotely via a variety of communications modes (ADSL, LAN, GSM, PSTN, etc.). It will send notifications via e-mail, SNMP and optional voice/DTMF interface, and features ScriptEasy software for automatic actions and remote control.

305-249-3110; [www.audemat.com](http://www.audemat.com)  
[contact@audemat.com](mailto:contact@audemat.com)

## Audio processor Omnia Audio

**Omnia.11:** With a redesigned firmware platform, GUI and adjustments to every algorithm in the system, Omnia.11 provides a solution to distorted audio processing, while still delivering a competitively loud signal. The Density Detector enables the system to properly handle hyper-compressed content. Its ultra-low JMD multiband limiter system, coupled with smart gain reduction algorithms, enables the limiters to sound transparent and natural. All AGC and limiting algorithms employ an auto-acceleration/deceleration mechanism, which tunes out perceptible inter-modulation distortion. Omnia.11 integrates a laboratory-grade stereo generator with dual MPX outputs, 19kHz reference output for external RDS/RBDS systems and >80dB pilot protection – with or without composite clipping functions activated.



216-241-3343; [www.omniaaudio.com](http://www.omniaaudio.com)  
[info@omniaaudio.com](mailto:info@omniaaudio.com)

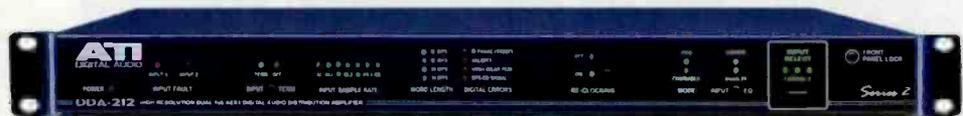
## Worldcast Systems > Audemat Mini Control Silver

It's very powerful for its tiny size.

A very effective control system that's easy to install and access.

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## Software defined audio transport

### Moseley Associates

**Rincon:** Rincon is a software-defined audio transport product optimized to deliver multi-channel digital audio over IP, T1/E1 and radio links, and networks simultaneously. Rincon carries up to eight stereo audio channels over the multiple network choices. Backup solutions such as failover inputs, redundant outputs, and automatic switchover in case of audio loss are included, and it even inserts a backup audio file to keep audio on the air in case of total link failures. Choose from linear uncompressed audio or any advanced audio compression algorithms. Management and configuration is handled via Web and SNMP interface and can even be accessed via smartphone.



805-968-9621; [www.moseleysb.com](http://www.moseleysb.com)  
[info@moseleysb.com](mailto:info@moseleysb.com)

## What the judges had to say

### < Moseley Rincon

There are other multi-connection devices available, but this adds even more than before.

The built-in backup audio function is useful.

### Denon > DN-F400

Reading files from an SD card lets every jock maintain his own clip list.

Very versatile and easy for anyone to use.

## Solid-state audio player

### Denon Professional

**DN-F400:** The DN-F400 solid-state audio player implements stable and reliable solid-state media technology as the source medium. It can read MP3 files and uncompressed WAV files from SD or SDHC cards. It is a 1RU, half-rackspace unit designed for any application requiring audio to be running continuously. The DN-F400 features balanced/unbalanced outputs and is also controllable via RS-232-C and GPIO. Additionally, the optional RC-F400 Remote Controller features a large LCD display and enhances the DN-F400's capability by providing an ergonomically designed, intuitive control unit for instant playback of audio or audio elements.



630-741-0330; [www.d-mpro.com](http://www.d-mpro.com)  
[info@d-mpro.com](mailto:info@d-mpro.com)

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## Low-power FM transmitters Nautel

**VS Series:** The VS Series of low-power FM transmitters – using only 2, 3 or 4RU including the exciter – brings Nautel performance to broadcasters operating on 300, 1000 or 2500W. In addition to the products' rugged engineering, the Nautel VS Series incorporates IP audio I/O, Axia Livewire support, Shoutcast and RTP support, Nautel's Advanced User Interface (AUI). The transmitters can be configured for analog, HD Radio or DRM operation.



207-947-8200; [www.nautel.com](http://www.nautel.com)  
[info@nautel.com](mailto:info@nautel.com)

## What the judges had to say

< **Nautel VS series**

The series has hit a new low price point.

A great option for repeater stations.

## Allen and Heath > XB14

It's a portable-style console with all the needed radio mixer functions.

It would work well in a voice-over or news booth.

## Radio broadcast mixer Allen & Heath



**XB14:** The XB14 is designed for a broad range of applications from small radio or Internet broadcast studios, to larger studios with multiple rooms. The XB14 features telephone communication modules for telephone callers, mic fader start sensing for external connection and internal automatic muting of the speaker outputs, stereo channel start/cue outputs for CD transport control, separate headphones mix and outputs for guests, and an audition bus.

800-431-2609; [www.allen-heath.com/US](http://www.allen-heath.com/US)

## Pick Hits Judges

### Bud Aiello

Dir. of Engineering Technology  
NPR  
Washington, DC

### Brad Hart

DOE Denver  
Lincoln Financial Media  
Denver

### Tom Atkins

VP/Director of Engineering  
Backyard Broadcasting  
Buffalo, NY

### Norm Phillips, CBNT

VP Engineering  
GAP Broadcasting  
Dallas

### Mike Cooney, CBRE

CTO  
Beasley Broadcasting  
Naples, FL

### Marshall Rice

Engineering Director  
Bonneville  
St. Louis

### Bill Croghan, CPBE

Chief Engineer  
Lotus Las Vegas  
Las Vegas

### Jeff Smith, CSRE CBNT

Supervisor Studio Engineering  
Clear Channel  
New York City

### Roz Clark, CSRE CBNT

DTO Tampa  
Cox Media Group  
Tampa, FL

### Tony Vitiello

Regional Dir. of Engineering  
Westwood One/Metro Traffic  
Los Angeles

## 2010 NAB Show Pick Hits Rules

1. Products must be new and not shown at a previous NAB spring convention. In some cases, distinguishing a new product from a modified older one is difficult. For "Pick Hits" purposes, a new product is one with a new model number or designation. Software, firmware and operating system updates are eligible, but the new revision must carry an obvious designation (1.0 to 2.0 for example) and the feature set must provide clearly identifiable changes or updates.
2. Products must have some positive impact on the intended user's every-day work. Judges search for equipment intended for use on a regular basis. Products should provide new solutions to common problems.
3. Products must offer substantial improvement over previous technology. Unique circuit architecture need not be included, but some new approach or application must be involved in the product's design.
4. The price of the product must be within reach of its intended users. The judges seek products appropriate to a wide range of facilities.
5. The products must be available for purchase within the 2010 calendar year. Equipment must be on display on the show floor, currently (or imminently) in production, and some type of product literature must be available. Judges take the exhibitor's word on availability dates. Products demonstrated in private showings do not qualify.
6. The Pick Hits Judges operate independently from one another and remain anonymous to everyone including other judges until the selection meeting. This ensures that the products chosen are truly representative of the industry, that the judges were not persuaded in any way, and that the entire selection process is as fair as possible. The judge's identities are published in the June 2010 issue.
7. The editorial staff of Radio magazine serves only as a moderator during the final selection process and has no influence or decision in determining the winners.

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## Technology Spotlight:

### Remote Control Systems

While the use of remote control systems has been around for many years, until recently, the systems were limited to providing or monitoring contact closures and taking voltage samples. While that level of control has been sufficient for many years, there were shortcomings, mainly that much of the interface effort between the device and remote control system required direct wiring or use of a custom interface.



#### Audemat Mini Control Silver

Newer remote control systems have added remote capabilities (that is remotely accessing the remote control via IP or some other means). The systems have also grown to be complete facility controllers. The transmitter, antenna and front door are the basics. Via SNMP, serial (via application programming interfaces) and other communications protocols, remote control systems – including those from Statmon, Audemat, Burk, Davicom and Broadcast Tools – are now full facility controllers with oversight of UPS systems, power generators, HVAC systems and more.



#### Broadcast Tools Site Sentinel 4

These established communication and interface standards have been used in equipment in other industries, but is now spreading to the broadcast environment. In addition to tighter integration, the remote control systems are smarter and have powerful automation trees, allowing the systems to make more decisions on their own with appropriate flexibility to ensure the proper course of action is taken.

### Instant audio playback package Enco Systems



**HotShot:** HotShot is an instant audio playback package with a full-screen interface. It can be used with a mouse, touchscreen or the custom-designed HotShot button pad, and has eight banks of 84 buttons. Its control surface is pre-labeled with color-coded letters making it easy to correlate buttons with audio. Bank buttons light up to show which bank is in use. It is capable of playing as many as four streams each from four outputs for a total of 16 audio files playing at the same time. Outputs are assignable by column and displayed on the screen. It supports dragging audio files directly from any folder of a PC: local drive, thumb drive, CD/DVD, portable hard drive or network drive. HotShot even supports an autodetect mode that can preload banks with audio files found on any inserted media.

800-362-6797; [www.enco.com](http://www.enco.com)  
sales@enco.com

### I/O Mix Engine Blade Wheatstone

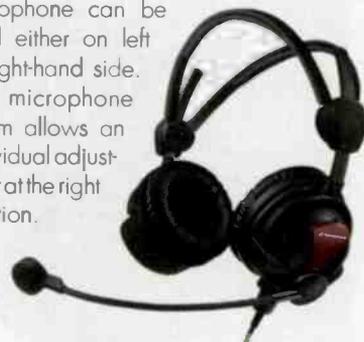
**Ip88 Console Blade:** Designed to work with Wheatstone's WheatNet-IP IP-based networking system, the ip88cb provides audio I/O with appropriate connections and DSP Mix Engine functions for Wheatstone Control Surfaces. It has a feature list that provides interface options including AES inputs, four stereo analog inputs, four AES outputs, and four stereo analog outputs on RJ-45s, control room and studio stereo analog outputs on XLRs, two mic level inputs with gain trim and switchable phantom power on XLRs, cue and headphone outputs on both RJ-45 and 1/4" TRS and 12 GPI logic ports on RJ-45 ports.



252-638-7000; [www.wheatstone.com](http://www.wheatstone.com)  
sales@wheatstone.com

### Headset Sennheiser Electronic

**HMD 26:** The closed and supra-aural headsets HMD 26 are lightweight and dimensioned for high maximum SPL. They provide high wearing comfort in combination with good noise attenuation. All variants of HMD 26 are equipped with ActiveGard which protects the user from volume peaks. The dynamic microphone with hyper-cardioid characteristic satisfies with broadcast sound up to 16kHz. It is mainly designed for applications in noisy environments. Another important feature is the less sensitivity against structure-borne sound. The gooseneck microphone can be used either on left or right-hand side. The microphone boom allows an individual adjustment at the right position.



860-434-9190  
[www.sennheiserusa.com](http://www.sennheiserusa.com)  
lit@sennheiserusa.com

### Extender Gefen

**Wireless RS-232 Extension:** The Wireless RS-232 Extension allows long-distance control of audio/video content using RS-232 protocol. Audio/video signals can travel up to 100' with no extension cables required. It is also an ideal plug-and-play add-on to already implemented systems using the RS-232 protocol. Small sender and receiver units are equipped with miniature antenna to propel the signal while remaining immune to extraneous noise in the operating environment. Two baud rates are available, 19200 and 9600, offering flexibility in performance. Although equipped with power supplies on both sender and receiver units, extra power is not always needed if the source device and display are equipped to handle the RS-232 protocol. If more than one source needs to be accessed from afar, multiple units can be grouped to offer a greater signal transmission to the desired location.

800-545-6900; [www.gefen.com](http://www.gefen.com)  
gsinfo@gefen.com

## Side-address microphone Shure

**Beta 27:** The Beta 27 side-address condenser microphone features flat frequency response, low self-noise, and a tight supercardioid pattern that specifically targets the sound source consistently with greatly minimized bleed from off-axis sound sources. Transient response comes from a low-mass, 1" externally biased, ultra-thin 24K gold-layered Mylar diaphragm. A 3-position switchable low-frequency filter helps reduce unwanted background noise or counteract proximity effect for consistent, extended low end.



800-25-SHURE; [www.shure.com](http://www.shure.com)  
sales@shure.com

## Exciter RVR

**TEX2000LCD:** The TEX2000LCD exciter accesses a digital user interface to diagnose and control all the parameters displayed (frequency, output power, measurement, etc.). It features adjustable power output from 0 to 2000W, a built-in stereo coder and is on-air under any VSWR conditions.

305-471-9091; [www.rvrusa.com](http://www.rvrusa.com)  
sales@rvrusa.com

## Label tool Brother

**P-touch Edge:** The Edge industrial labeling tools feature an intuitive user interface to quickly layout and print labels designed for cables/wires, patch panels, face plates and other studio equipment. They can also print durable bar code labels for marking studio property or assets, including outdoors in harsh conditions. Each tool has a large LCD display and bright backlight for easy viewing. The PT-7600 adds software for creating custom label designs that can be downloaded into nonvolatile memory and later printed without a computer. Use the software library to store and manage label templates for different projects, to be later transferred to the PT-7600.

908-704-1700; [www.brother.com](http://www.brother.com)

## Microphone preamps Glensound Electronics

**Atomic Voiceover 08 and 08+:** The Atomic Voiceover 08 and 08+ are high quality microphone preamps for dynamic, condenser or ribbon mics. The automatic gain adjust (AGA) system takes a snapshot of the audio levels over a 7-second sample period. The user presses the "Take Level/Mic Gain" button and reads a sample passage for level. The AGA system is able to set the input gain level over this period while allowing a suitable headroom for any louder passages. The level is constant and does not increase background noise during quiet passages. For monitoring, there is an audio input that is only fed into the users headphones, allowing them to monitor context audio for their voiceover.

+44 1622 753662; [www.glensound.co.uk](http://www.glensound.co.uk); sales@glensound.co.uk

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## Technology Spotlight

### Handheld Apps

Smartphones are everywhere, and the number of apps available for them continues to skyrocket. Professional apps for radio are no exception.



**Enco iDAD**



**RCS iPush**

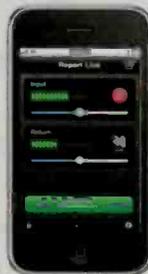
Once the iPhone was released, there were apps to turn it into a portable recorder. The same is true for the Droid now as well. With Web browsing capability in the phones and Web access on much broadcast equipment, basic control is easily possible.

But specific apps for broadcast equipment access made their debut this year.

Two significant areas stood out: codecs and automation.

On the automation side, Enco showed iDAD and RCS showed iPush. Both allow iPhone users to deliver material directly into those companies' content systems. It's an idea that may be ahead of its time for some, but it provides yet another bridge into the station audio system.

Along the same lines, the codec manufacturers are providing remote access capability. Tieline showed the ReportIT Live for iPhone and Comrex debuted the ARC for Droid. Both allow users to connect to the companies' IP codecs to contribute material for use on-air.

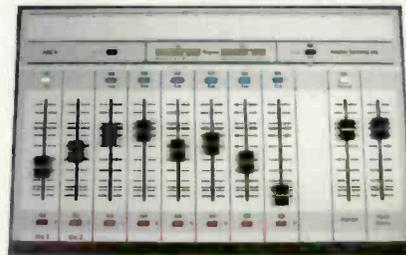


**Tieline  
Report-IT  
Live**



**Comrex  
ARC**

### Radio console Arrakis



**ARC-8:** With a single stereo mixing bus, the ARC-8 is for fast-paced live on air, production and remote applications. Two mics support a host and guest talk format. The mix-minus bus supports telephone talk formats or call-ins. The talk button on mic channel one feeds the mic to the caller and the caller to the console cue system. The ARC-8 has a built-in PC USB sound card on channel 8B to play in digital directly from PC audio software. At the same time, the program output from the console records in digital over the USB directly to PC recording software.

**970-461-0730; www.arrakis-systems.com  
sales@arrakis-systems.com**

### Radio console Audioarts Engineering



**Air-3:** The table-mount Air-3 provides 12 stereo input fader channels (with both A and B inputs on each channel), 13th phone caller fader w/TB and auto MXM to caller, remote start logic for each fader, two premium mic preamps, two program buses with balanced outputs (switchable stereo or mono mode), a control room monitor, split cue, a built-in cue speaker, studio output with independent source selection and CR to studio TB button and an external input that feeds the monitor section (for live air or pre-delay air monitoring). Its USB connection is patchable to any input faders and internally dip-switchable to pick up program 1 or program 2 output mixes. This lets the Air-3 interface with a desktop computer for news and music sweetening functions, or to stream audio mixes from and to the console. RJ-45 connectors keep wiring simple and inexpensive.

**252-638-7000; www.wheatstone.com  
sales@wheatstone.com**

# NEW PRODUCTS

## Sales, traffic and billing software **Wide Orbit**

**WO Traffic 5.2:** Feature enhancements to WO Traffic software include bi-directional integration with dominant agency systems provider Donovan Data Systems via WO Central and support for cable network operations. WO Traffic, allows companies to manage multiple stations, channels and networks, as well as multiple mediums, including radio, digital display and mobile, all on a single system and database. Its new integration streamlines buy and sell transactions between agencies and stations. Additional enhancements are focused on functionality to improve client station's day-to-day workflow, such as delivering access to full revision history of orders and providing the ability to transfer booked orders among account executives using effective dates.

415-675-6700; [www.wideorbit.com](http://www.wideorbit.com)  
[mzinsmeister@wideorbit.com](mailto:mzinsmeister@wideorbit.com)

## Automation system **OMT Technologies**



**iMediaTouch v4.0:** iMediaTouch Version 4.0 includes more than 25 enhancements including a new GUI providing greater user-defined flexibility and feature access; multi-blade design with a more dynamic segue editor and enhanced air studio recorder; ability to drag-and-drop onto a showlog page for instant changes to the hot key pages; ability to include a radio station logo on the main on-air screen; enhanced keyboard functions to allow the user better control of the voice-track module; back-time feature in voice tracking to better calculate time remaining; voice tracking and Log Tools to allow for multiple user attachments; and enhanced on-air library word search using a "contains" methodology.

888-665-0501; [www.omt.net](http://www.omt.net)  
[omt@omt.net](mailto:omt@omt.net)

## Interview mics **Audio-Technica**



**BP4001 and BP4002:** The BP4001 cardioid dynamic interview microphone and BP4002 omnidirectional dynamic interview microphone feature extended-length handles. The BP4001's cardioid polar pattern reduces pickup of sounds from the mic's sides and rear, improving isolation of the desired sound source, and the BP4002's omnidirectional pattern provides a natural reproduction of surrounding ambience. With both mics, frequency response is tailored for natural, clear, articulate reproduction of spoken words. Also, both microphones provide exceptional isolation from handling noise.

330-686-2600; [www.audio-technica.com](http://www.audio-technica.com)  
[sales@atus.com](mailto:sales@atus.com)

## Audio networking **Harris**

**VistaMax Network Interfaces:** VMConnect makes VistaMax digital studio networks an option for operations of all sizes. It offers an additional means for adding distributed network connectivity to existing networks with VistaMox or VistaMax Envoy frames. The standard configuration VMConnect typically supports up to four studios with PR&E networked consoles, managing up to 192 bidirectional stereo audio and associated logic channels. A cascade connection on the VMXpress and VMQuadra offer further installation convenience - any combination of the two can be daisy-chained on one CAT-5 network connection. Adding sources and destinations or networking a previously isolated studio is accomplished with the VMXpress. Eight different models offer numerous analog and digital audio I/O and logic configurations.

800-622-0022  
[www.broadcast.harris.com](http://www.broadcast.harris.com)  
[broadcast@harris.com](mailto:broadcast@harris.com)

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## CD player Tascam



**CD-200:** This player uses a brand new transport, the TEAC CD-5020A. The new transport is custom designed for audio playback with a smooth loading drawer and low clamping noise. The internal clock has been improved for a smoother sound and decreased jitter. Like the CD-160, the CD-200 has unbalanced phono outputs and S/PDIF digital out on coaxial and optical jacks. MP3 and WAV file playback is supported, and front-panel folder navigation buttons are provided. A wireless remote control with numerical track select buttons is also included.

323-726-0303; [www.tascam.com](http://www.tascam.com)  
tascamlit@tascam.com

## Tactical CAT-5e cable Clark Wire and Cable

**CAT5-FLEX-SH:** The CAT5-FLEX-SH flexible and shielded CAT-5e cable for tactical applications is designed specifically for applications that require TIA/EIA or ISO CAT-5e interconnects able to withstand abuse and repeated flexing. With a flexible, rugged and abrasion resistant jacket, the CAT5-FLEX-SH delivers enhanced ruggedness and durability in remote or portable applications. For simplified assembly and termination, it is compatible with industry standard RJ-45 tooling and connectors. At its core are four, stranded 26 AWG pairs insulated with a precision impedance, polyolefin dielectric. Through use of precision wire processing, twisting and verification, it meets or exceeds TIA/EIA 568-B.2 standards to ensure reliable network performance.

800-222-5348; [www.clarkwc.com](http://www.clarkwc.com)  
sales@clarkwc.com

## V-mixer Roland

### RSS M-380:

The M-380 V-Mixer is a 48-channel console that possesses all the features of the M-400 V-Mixer in a compact rack-mount footprint.

It features rapid recall of setups, 100mm motorized and touch sensitive faders, an 800x480 color screen, and dedicated knobs for EQ, pan and gain. It has digital patch-bays, built-in effects processors, 16 aux/mon sends, 8 matrices, 8 DCAs, 8 mute groups, built-in stereo recording/playback and support for LCR configurations.

800-542-2307; [www.rolandus.com](http://www.rolandus.com)



## Mobile advertising platform Jetcast

**ReplaceAds:** With more than 2,000 radio stations available on mobile handsets, ReplaceAds generates more than 250 million mobile advertising impressions per month. These impressions can be filled with video, audio, or display ads on smart phones, or standard banner, text, SMS or MMS ads on legacy phones. Stations with mobile streaming applications can join the ReplaceAds network and start earning advertising revenue immediately with little or no integration necessary. The network is made up of thousands of professional, branded Internet radio and television broadcasts consumed by millions of people each day and by about 20 million unique visitors per month in the United States.

917-338-1487; [www.jetcast.com](http://www.jetcast.com); [team@jetcast.com](mailto:team@jetcast.com)

## Terminating power sensors

### Bird Technologies Group

#### 5011, 5011-EF, 5015, 5015-EF:

TPS Series terminating power sensors one port measurement device will provide true average power for forward power or reflected power if attached to a directional coupler or total power in the line if connected to a non-directional coupler. The TPS is a plug-and-play solution with no front panel calibration required at any time.

866-695-4569

[www.bird-technologies.com](http://www.bird-technologies.com)  
sales@bird-technologies.com



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- Ethernet interface for long-term logging and email alerts via remote PC
- Also includes proprietary DTS Neural Loudness Measure (NLM) algorithm



## DaySequerra

[www.daysequerra.com](http://www.daysequerra.com)

DTS and the Symbol are registered trademarks & the DTS logo are trademarks of DTS, Inc.

## Audio mic/line mixer RDL (Radio Design Labs)

**RU-MX5ML:** The RU-MX5ML is for applications where a combination of balanced mic and/or balanced or unbalanced line-level signals needs to be mixed with the ability for additional expansion. All connections are made using detachable terminal blocks on the rear panel. Four of the inputs can accept either mic or line inputs. The fifth input is for line level sources. 24V phantom is individually switch selectable for each mic input. The output from one RU-MX5ML may connect to the mix input of another RU-MX5ML. Up to three mixers may be rack mounted in a single rack unit using an RDL RU-RA3HD rack adapter.

800-281-2683; [www.rdlnet.com](http://www.rdlnet.com); [sales@rdlnet.com](mailto:sales@rdlnet.com)

## Mobile podcasting VeriCorder Technology

**ShowCase:** Unite imagery and sound



with ShowCase, a podcasting tool that combines still photography with audio. This smartphone software allows the user to capture newsworthy moments, pair them with narration or music, and share them instantly over Wi-Fi or a cellular connection. ShowCase slideshows can be created in seconds and posted to podcasts, websites, blogs and social media sites. The option of white labeling ShowCase is available for podcast hosting websites that require a fully customized product.

250-448-4954; [vericorder.com](http://vericorder.com)  
[info@vericorder.com](mailto:info@vericorder.com)

## Digital automation RCS

**Zetta:** The RCS team of developers combined NexGen Digital and Master Control to create Zetta. It is designed for durability: If the program is accidentally closed, audio keeps playing. It features a comfortable interface, and floating module options give complete control of the look, feel, and functionality to the user. Zetta was developed on C+, WPF, WCF and SQL Server.



914-428-4600; [www.rcsworks.com](http://www.rcsworks.com)  
[info@rcsworks.com](mailto:info@rcsworks.com)

## Integrated command relay unit Burk Technology



**Plus-X ICRU:** The Plus-X Integrated Command Relay Unit (Plus-X ICRU) provides command channels for the ARC Plus. It facilitates the connection of 16 relays. Relays can be used individually, or in raise/lower pairs, and can be configured as momentary or latching. Connect up to 32 units to one ARC Plus for 256 channels.

800-255-8090; [www.burk.com](http://www.burk.com)  
[sales@burk.com](mailto:sales@burk.com)

## Headphone boxes Whirlwind

**HAUC, HATT, HAUCx1:** The Whirlwind HAUC, HAUCXL and HATT headphone amplifiers are designed to work with any type of headphone or ear buds, at any desired volume. The circuits were developed specifically to work with all impedances of all headphones, with low distortion to avoid ear fatigue, and wide frequency response for reproduction of audio. Furthermore, the circuits are designed to run indefinitely and without failure, even into a shorted load.

800-733-9473  
[www.whirlwindusa.com](http://www.whirlwindusa.com)  
[sales@whirlwindusa.com](mailto:sales@whirlwindusa.com)

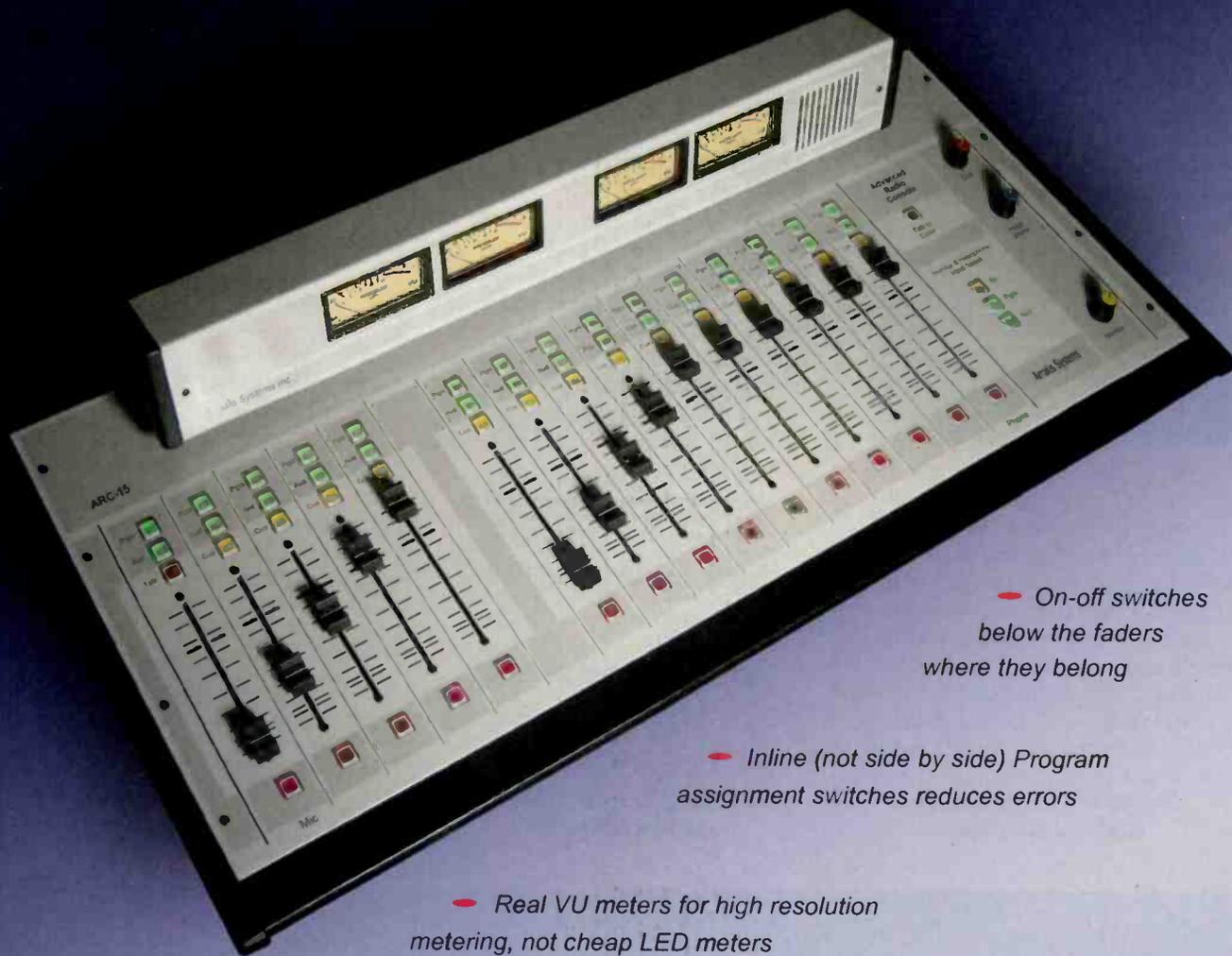
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*Attractive, ultra low profile  
tabletop design*



— On-off switches  
below the faders  
where they belong

— Inline (not side by side) Program  
assignment switches reduces errors

— Real VU meters for high resolution  
metering, not cheap LED meters

## ***NO compromise, take no prisoners design ...***

Our ARC-15 (Advanced.Radio.Console) is called advanced for many reasons: 15 input channels, 5 assignable mic preamps with optional phantom power, Telco interface, PC USB sound card built in with free Radio software, analog VU meters for high resolution and ease on the eyes, socketed ICs for ease of repair, RJ45 connectors with cables included for fast wiring, electronic switching of all audio for crystal clear performance, LED lamps for highest reliability, and so much more.

## ARRAKIS SYSTEMS INC.

As Arrakis has done repeatedly for more than 30 years, our ARC series consoles have created an entirely NEW CLASS of Radio consoles with a unique new set of features to meet the needs of our ever changing marketplace. Imitated down through the years but never equaled, Arrakis has once again set a new standard for others to follow.

In the ARC-15 model, channel one is a high performance mic channel while channels 2-5 are selectable as mic or line inputs with optional phantom power. Channel 15 is an advanced telephone interface with logic to an external hybrid for Live callers or an Off-line contest call. Seven stereo line input channels easily handle the other audio source inputs. Channel fourteen is selectable as either a Windows PC USB interface or an unbalanced stereo consumer level input. Windows software for Live On Air, Automation, & Production is provided standard. With multimillion operation LED lighted switches; long life conductive plastic faders; and electronic switching of all audio signal paths; the ARC-15 is a rugged, reliable, and versatile console for 'today's' professional Radio studio applications.

— Easy access connectors  
for Fast installation...

— BOTH balanced and unbalanced Outputs

— RJ45 balanced inputs WITH cables supplied

— XLR connectors for ALL mic inputs



# ARC-15

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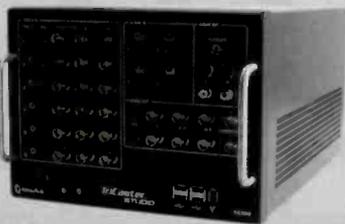
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## Technology Spotlight

### Video Production for Radio

Given the skyrocketing use of webcasting and streaming and the relentless industry-wide effort to connect with radio listeners, a new-found focus has been given to offering video in addition to the traditional audio component of radio.



#### NewTek Tricaster

Several varieties of small video production systems were shown. The Newtek Tricaster offers a condensed video production system in one unit. Some syndicated radio shows are already using this system to produce video. Need more portability? Speedstream has developed a backpack system that stream live video via Wi-fi or 3G/4G.



#### Netia Radio-Assist 8 CamDirector

Netia has added an automatic video production element to Radio-Assist 8 called CamDirector. By integrating the mic feeds in the automatic video switcher, cameras can automatically switch to focus on the person speaking.

But if on-the-spot video is still your station's choice for using video, Samson showed the Q3 video recorder. While consumer flip cameras offer portable video capture, Samson adds higher quality audio recording as well. And radio is all about good audio. ■



Samson Zoom Q3

### Field-installable connectors Belden



**Fiber Express Brilliance:** These fiber optic connectors enable fast, fool-proof and easy termination of a fiber. Terminations can typically be made in 5 seconds, with no termination tools required. Insert the prepared fiber into the connector, slide the connector's switch-like activator toward the fiber to be terminated to bring about the splice/crimp, and slide the boot on the connector body. This fiber installation procedure is accomplished without using any specific or proprietary installation tools. The built-in activator tab performs the fiber splicing and crimping action in one simple motion, thus reducing the number of steps involved by 50 percent.

800-BELDEN1; [www.belden.com](http://www.belden.com)  
[info@belden.com](mailto:info@belden.com)

### Pro Tools plug-in DTS



**Neural UpMix:** Neural UpMix by DTS is a Pro Tools plug-in designed to upmix content to 5.1 and 7.1 channels. This plug-in can output 5.1 or 7.1 multi-channel audio tracks from stereo or 5.1 source material while preserving the spectral and timbral balance of the original mix. It is intended for projects where the original source elements for a conventional upmix are not available. Audio stems processed with the Neural UpMix properly downmix in the consumer environment. This preserves the intent and quality of the original mix. It provides creative controls for soundfield width and depth, channel layout, output levels, LFE filtering and a final limiter.

818-436-1000; [www.dts.com](http://www.dts.com)

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## STL application Barix Technology

**Reflector Service:** Reflector Service eliminates firewall poking and static IP addresses that are difficult to configure. It even eliminates basic router forwarding configuration, as devices are automatically partnered following connection to the Reflector Service via the Web. Reflector Service is part of a STL out-of-the-box package featuring the new Exstreamer 500. Barix will offer the Reflector Service free of charge to Exstreamer 500 and 1000 customers for several months before charging a nominal annual fee. Hot standby/backup service and 24/7 monitoring of the stream will be made available at a later date.

866-815-0866; [www.barix.com](http://www.barix.com)  
[info@barix.com](mailto:info@barix.com)

## IP broadcast switcher Audio Science



**ASI2416-1147:** The ASI2416-1147 IP broadcast switcher contains GPIO, four AES/EBU and eight analog inputs and outputs, all controllable over the network using Broadcast Tools commands. It is 1RU and features built-in 90-260Vac power supply, 16 relays configurable as either 16 open collector outputs or eight relays and eight open collector outputs, and 16 opto-isolated inputs. Connector options include terminal block, StudioHub RJ-45 or 50-pin Centronics connector with XLR breakout cables. It is Ethernet network controllable.

302-324-5333; [www.audioscience.com](http://www.audioscience.com)  
[sales@audioscience.com](mailto:sales@audioscience.com)

## Whisper Room options Whisper Room

**Audio Jack Panel:** The Audio Jack Panel (AJP) is a 40" wall component with a prewired, flush-mounted (interior or exterior) insert available with six or 10 jacks. The six-jack panel insert has four, 1/4" stereo phono jacks and two RCA connectors; the 10-jack panel insert has eight, 1/4" stereo phono jacks and two RCA connectors. There is a 26" x 36" wall window above the panel. There is also a 2" cable passage below for those situations where additional cables need to be utilized.

800-200-8168  
[www.whisperroom.com](http://www.whisperroom.com)  
[whisper@lcs.net](mailto:whisper@lcs.net)

## Sage Digital ENDEC - Emergency Alert System Great Upgrade - CAP Ready



The gold standard in EAS since 1996, the Sage ENDEC, has been surpassed by the Sage Digital ENDEC. Even as FEMA and the FCC prepare the new EAS and CAP regulations, broadcasters and public safety agencies across the country are already taking advantage of the new features of the Sage Digital ENDEC, including:

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ESE, 142 Sierra Street, El Segundo, CA 90245 USA, Tel: (310) 322-2136

# NABSHOW

### IP audio route selector/monitor for Livewire Paravel Systems



**iRoute:** iRoute is a completely self-contained appliance that communicates directly with the Axia Livewire network. No external computers or software applications are required to instantly change one or more audio routes. It is also a diagnostic tool providing monitoring of any Livewire audio sources. It displays a full array of stream statistics, allowing users to keep tabs on the health of the Livewire network. Monitor any audio on a Livewire network via the built-in speaker, headphones or analog and digital outputs. Instantly change multiple routes via the front panel, Web browser, GPI, TCP/IP or serial port. View source stream statistics including audio level, stream type, packet under runs, sequencing errors and more.

877-44-PARAVEL

[www.paravelsystems.com](http://www.paravelsystems.com)

[info@paravelsystems.com](mailto:info@paravelsystems.com)

### Portable PA system Samson Technologies



**Expedition XP510:** The XP510i is a comprehensive, all-in-one portable PA system with dual two-way speakers and a 500W Class D powered mixer built right in. The whole system packs into a single unit that weighs just over 50 pounds. The speakers employ 10" woofers in two-way vented enclosures. The woofers are complemented by a 1" titanium tweeter in a custom 60 degree x 90 degree horn for complete room coverage. You can even tilt the enclosures back to use as floor monitors or use the integrated 1-3/8" speaker stand mounts to elevate the speakers to ear level. The built-in 10-channel mixer provides four mic/line inputs, three stereo inputs and phantom power for use with condenser microphones. There's even an integrated iPod dock.

631-784-2200; [www.samsontech.com](http://www.samsontech.com)

[info@samsontech.com](mailto:info@samsontech.com)

# NEW PRODUCTS

## Broadcast console Radio Systems



**The Platform:** The Platform, for mixing, routing and producing audio, enables remote access and control via a studio's Ethernet LAN, WAN or public Internet for network audio transfer. It's 100 percent StudioHub+ compatible with built-in direct dc power for plug-and-play connectivity.

856-467-8000; [www.radiosystems.com](http://www.radiosystems.com)  
[sales@radiosystems.com](mailto:sales@radiosystems.com)

## Synchronous Audio Network plus Ethernet Optocore

**SANE:** SANE (Synchronous Audio Networking plus Ethernet) allows the synchronous transfer of digital audio over standard, CAT-5 cable while still maintaining ultra low latency, guaranteed audio delivery, dual redundant ring topology, transparent transport of open audio standards such as AES/EBU and MADI as well as the distribution of extremely low jitter word clock. It supports up to 24 nodes per network and transports up to 64 audio channels at full 24-bit, 48kHz sample rate. The network is fully synchronous and the hardware will sync to either external clock sources or its own high quality internal word clock. The word clock will then be distributed across the network for use as an output at any node with less than 50ps jitter.

416-287-5723; [www.optocore.com](http://www.optocore.com)  
[t.helmle@optocore.com](mailto:t.helmle@optocore.com)

## FM+HD audio processor Vorsis

**AirAura:** The AirAura provides extensive measurement of pre- and post-processed audio, allowing the user to visualize in real time exactly what the processor is doing. Details such as when and how the AirAura clipper's distortion management system is operating, and the dynamic range in each part of the audio spectrum are viewed via dual front panel widescreen displays that show detail about the processor's operation. In addition to real-time measurement of input, output and RMS output levels, its comprehensive metering also shows all gain reduction activity. The AirAura also offers extensive remote control via wired 10-100BaseT Ethernet and on-board 802.11G wireless.

252-638-7000; [www.vorsis.com](http://www.vorsis.com); [sales@vorsis.com](mailto:sales@vorsis.com)

## 4-bay broadband FM antenna ERI-Electronics Research

**Axiom:** The four-bay Axiom master FM antenna is a light-weight option as a main or auxiliary FM antenna for multiple FM stations. It has been used to provide backup FM transmission facilities for multiple FM stations in a single market area and as an emergency standby that can be deployed to restore service following a facility disaster. ERI can also provide complete auxiliary systems that include towers, channel combiners and transmission line.



812-925-6000; [www.ERInc.com](http://www.ERInc.com)  
[sales@ERInc.com](mailto:sales@ERInc.com)

## Audio recording software Sadie

**Sadie 6:** Sadie 6 gives the freedom to work on any Windows computer using a sound card or to use the low-latency Sadie Series 5 hardware solutions. It is now available in specific product configurations tailored to certain roles. The new editions are Radio Producer, Post Suite, Mastering Suite, and Sound Suite. It allows a choice between proprietary audio I/O and DSP processing, or standard soundcard I/O and DSP functions running on the host computer. The software starts by inspecting the resources available on a Windows computer and then allows selection of the desired interface. Sadie 6 is compatible with Prism Sound computer audio interfaces as well as a wide range of third-party Windows compatible sound card devices with ASIO or WDM drivers.

973-983 9577; [www.sadie.com](http://www.sadie.com)  
[sales@sadie.com](mailto:sales@sadie.com)



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- \* LEFT and RIGHT demodulated audio level meters
- \* RDS and RBDS decoder with BER meter
- \* Alarm dispatch via E-mail and/or SMS
- \* Complete status reporting via SMS
- \* Accurate RF and RDS Measurements

## Stereo volume control Genelec



**9000A:** Visually designed to appear as a miniature version of Genelec's 5040A active subwoofer, the 9000A provides volume control for all Genelec monitors/loudspeakers. The volume control input and output have 3.5mm stereo male and female connectors, providing immediate connectivity with most computers and laptops and MP3 players. The connecting cable is Y-shaped. Past 1m (3'3") from the control knob, the single cable splits into two 1m cables, one for audio input, one for audio output. A converter cable converting 2 x RCA to 3.5mm stereo (female) is necessary for audio equipment with RCA outputs. A converter cable converting 3.5mm stereo (male) to 2 x XLR (male) is necessary to use the 9000A with Genelec monitors having XLR output.

508-652-0900; [www.genelecusa.com](http://www.genelecusa.com)  
genelec.usa@genelec.com

## iQ telco gateway Telos Systems



**iQ6:** The Telos iQ6 telco gateway adds a multi-line broadcast phone system to Axia's iQ broadcast console with one cable connection. Telos iQ6 isn't a standalone hybrid; it's a phone interface that plugs into a Livewire network. iQ6 works directly with any Axia iQ console equipped with the Telco Expansion Frame, which adds six faders plus two hybrid controls with Status Symbols to the iQ main frame. Once connected to the iQ Core, iQ6 sends its six lines of caller audio, hybrid control and mix-minus audio to the network on a single CAT-5 cable. A built-in Web server enables easy administration via Web browser from anywhere in the facility.

216-241-7225; [www.telos-systems.com](http://www.telos-systems.com)  
telos-info@telos-systems.com

## Broadcast digital mixer Axel Technology

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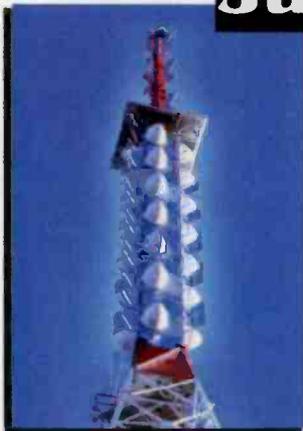
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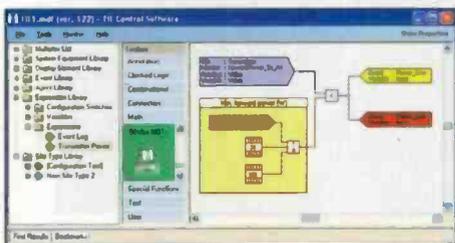


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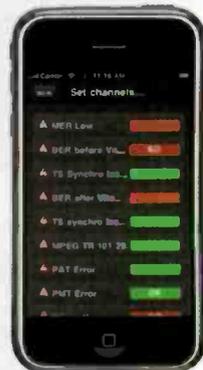
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## Scripteasy app WorldCast Systems

**Audemat iMasterView:** iMasterView is an application for Scripteasy software. The interface consists of the ScriptEasy Designer, which supports easy development and the MasterView module, which allows real-time status display and management. iMasterView enables the user to have access to the MasterView application on an iPhone or 3G-enabled device to see at a glance the status and performance of a network.



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1 The NAB Store in the Grand Lobby was always busy with activity.



2 Broadcasters General Store hosted its usual wide compliment of manufacturers.



3 Talking automation at the iMediaTouch booth.



4 NAB President Gordon Smith prepares to cut the ribbon for the Build 2010 House Project for Habitat for Humanity.



5 Radio magazine, Broadcast Engineering and their sister Penton publications shared a booth in the South Hall.



6 The SBE Ennes Workshop was held on Saturday.



7 The fabulous Las Vegas Strip.



8 Las Vegas is suited well to host an enormous convention, and the Monorail greatly simplifies transportation.



9 Radio Systems unveiled its latest efforts in a suite at the Hilton. The Platform router and control surface will be released later this year.



10 No crowds at the Las Vegas Convention Center – yet. This photo was taken Sunday morning.



1

1 DaySequerra demonstrated DTS Neural Surround with this in-vehicle playback in its booth.



3

2 Inovonics knows RBDS.

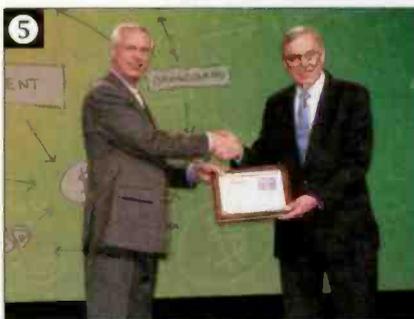
3 Continental shipped its first elevated sidebands transmitter to KACU in Abilene, TX.



4

4 Terry Baun, CPBE CBNT (right) is presented with the SBE's Lifetime Achievement Award by SBE President Vinny Lopez, CEV CBNT.

5 BEC Committee Chairman Joe Snelson (left) presents the NAB Best Paper Award to Geoff Mendenhall of Harris.



5

6 Steve Church (left) received the NAB Engineering Achievement Award for radio from Lynn Claudy of the NAB.



6

More NAB Show photos are posted in the Radio magazine Photo Blog at RadioMagOnline.com.



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# WJFK-FM LAUNCHES HD RADIO QUADCAST

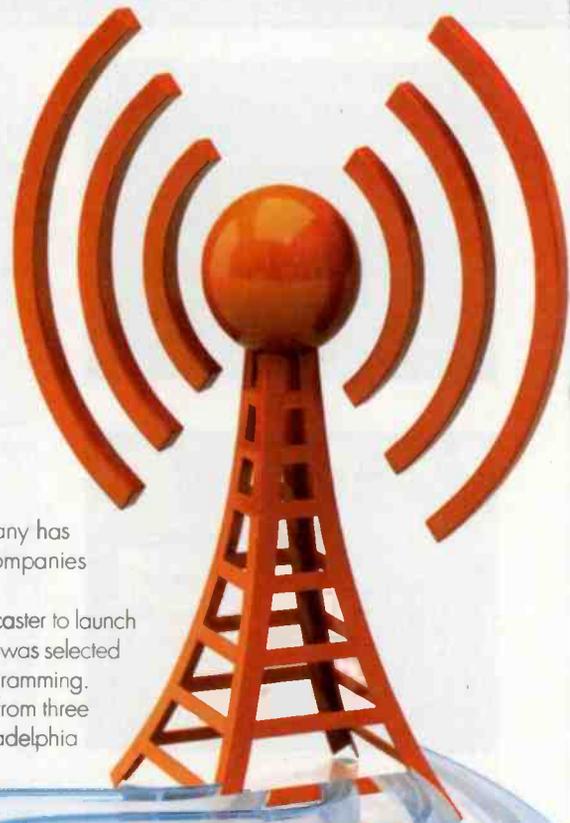
By Glynn Walden and Jeff Loughridge

**C**BS Radio has a long history of HD Radio development and support. The company has been committed to digital radio since the early 1990s as one of three founding companies behind USA Digital Radio, the predecessor to iBiquity.

It makes perfect sense from this perspective that CBS Radio recently became the first broadcaster to launch an HD Radio quadcast—a four-channel HD Radio broadcast. WJFK-FM in Washington, DC, was selected as the station and is currently live with four HD Radio channels of mostly live sports talk programming.

The FAN Sports Network offers DC-area sports fans free access to WJFK-FM and signals from three other markets: WJZ-FM Baltimore (HD2), WFAN-AM New York (HD3) and WIP-AM Philadelphia (HD4). Dan Mason, president and CEO of CBS Radio, originated the concept of broadcasting the company's best sports talk programming from around the east coast in the DC market.

To make the concept a reality, WJFK established an IP-based distribution system to push signals from the three remote stations to its studios.





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# WJFK Quadcast

WJFK also upgraded its transmission and STL systems to support four HD Radio channels, with a Harris HPX30 transmitter at the core. The overall system enables WJFK to broadcast a sports talk quadcast within the new FCC-approved power level of -14dB, expanding the reach of the HD Radio signals closer to the outer edges of the market.

## Remote signal delivery

WJFK studios were initially picking up the three remote signals via each station's online radio stream. The station is implementing an IP-based distribution system to send

fully packaged audio programs from the remote stations direct to WJFK studios.

The point-to-point configuration for each remote station includes Barix Instreamer and Extstreamer devices. The Instreamers encode the live signals at the remote stations for streaming over the corporate CBS WAN. The Extstreamers receive and decode the signals at WJFK, and an SAS 32KD audio router picks up the signal for delivery to a Harris FlexStar HDI-100 Importer.

While this configuration is active for all live sports talk programming, the stations occasionally have to switch to alternative programming featuring familiar station talent and shows, as WJFK does not retain rights to broadcast most out-of-market sports games.

## Multicast generation

The WJFK system is a somewhat typical HD Radio common amplification transmission configuration. The Harris FlexStar Importer is the first step in generating the HD Radio quadcast. The Importer receives the three HD Radio multicast programs, HD2, HD3 and HD4, as AES audio, where they are compressed, encoded and multiplexed along with the PSD (program service data), into a single IP stream for transport over a T1 link to the Exporter.

WJFK installed FlexStar Importer version 4.3, which integrates core code from iBiquity. This new software code adds a third HD Radio codec to provide HD4 channel capability. An additional configuration was added through the Importer's Administrator application to provide an HD4 channel configuration onto the P3 carrier partition using the MP3 Extended Hybrid mode. An additional Audio Capture Client was also added to the Importer suite to intake the third audio channel.

The Importer also provides three channels of DTS Neural Audio pre-codec conditioning to optimize the multicast audio for the HD Radio codecs. WJFK uses the extended hybrid mode's P3 partition for an additional 24kb/s of capacity. The station divides its channel bandwidth among the four program streams within the total 120kb/s throughput of the MP3 mode.

WJFK had been using a Moseley Starlink fixed microwave STL system to transport the

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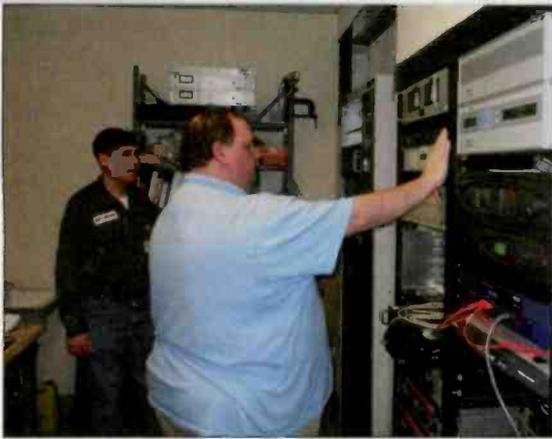
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Moseley Starlink, Lanlink  
SAS 32KD  
Burk remote control



**Harris Field Service Engineer Walter Freeman (left) and WJFK Chief Engineer Jeff Loughridge turn on the transmitter for the first HD4 multicast transmitter tests.**

analog FM channel, main channel HD Radio and HD2 program audio to the transmitter site, along with a Moseley LANLink to transmit data. The StarLink remains in place to transport the main program channel as AES audio.

The station opted for a T1 system to transport the remaining quadcast signals. T1 offered a robust platform to transport multiple HD Radio channels. WJFK purchased and installed Ethernet-to-T1 extenders, which essentially extend the CBS corporate WAN to the transmitter site.

The previous multicast setup had both the Importer and Exporter at the transmitter site. WJFK upgraded and moved the Importer back to the studio to accommodate the quadcast but left the Exporter by the transmitter. To maintain Importer-

to-Exporter synchronization (critical to preventing multicast dropouts), a GPS-referenced word clock was connected to the Importer's audio card word-clock input.

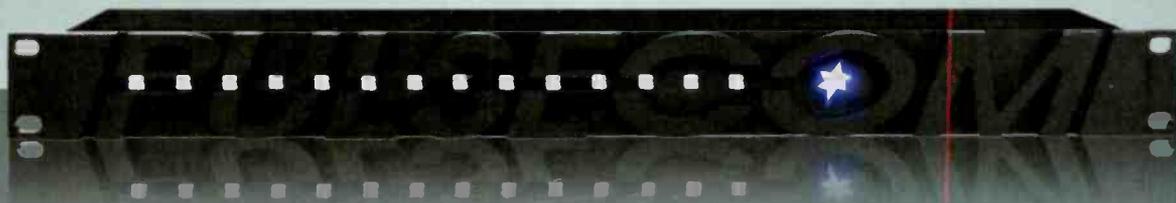
The newer FlexStar-200 Embedded Exporter replaced the previous PC-based HDE-100 Exporter. The Exporter takes the incoming audio stream and creates a delayed output for the analog audio input to the Exciter. It also encodes the Main Program Service for the HD Radio main channel, HD1, and multiplexes it with the Importer's incoming multicast IP stream from the Black Box LAN extender.

The HDE-200 Exporter provides an integrated GPS receiver with remote setup and monitoring capabilities, as well as a simpler and more flexible user interface. Its compact size and easier setup process helped to enable a fairly quick installation. WJFK was on the air with the quadcast within days of the transmitter's arrival.

At the transmitter, the main program from the StarLink feeds an Omnia audio processor. There, the main program is split into analog FM audio and MPS digital audio and processed separately. The analog and digital outputs of the Omnia are fed to the analog and digital inputs of the Embedded Exporter.

The Embedded Exporter and the quadcast data stream coming out of the T1 system from the Importer at the studio are connected to an Ethernet data switch along with the FlexStar HDx exciter. From the switch, all four HD Radio program channels flow into the exciter's Engine where the analog and digital signals are converted into

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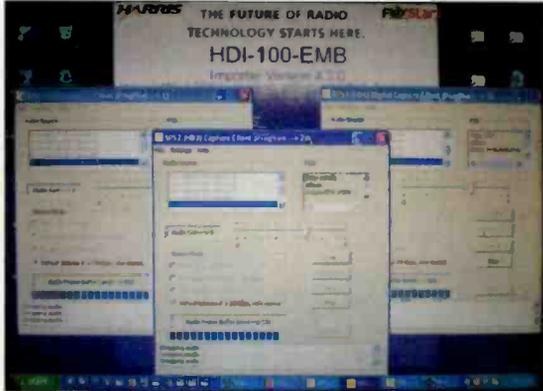
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# WJFK Quadcast

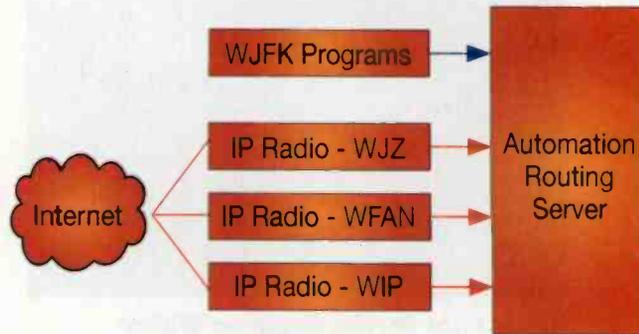
on-channel RF. The RF is then sent to the RF input of the HPX30 transmitter for final amplification.

## Transmitter installation and setup

WJFK took advantage of a simultaneous power increase to coincide with the quadcast launch based on the new FCC guidelines that allow HD Radio broadcasters to raise power to -1.4dB. The station's existing transmitter was incapable of supporting the power increase, and software was not yet available for the existing Importer/Exporter to support four HD Radio channels.



The Embedded Importer control screen to access the HD2, HD3 and HD4 streams



Signal flow diagram of the WJFK quadcast

The HPX30 transmitter was chosen as it was capable of generating the analog and digital power level needed for WJFK to operate at -1.4dBc while meeting the 6dB tighter out-of-band emissions requirements established for stations operating at elevated HD Radio power.

Setting up for the -1.4dB elevated sideband level was relatively easy and straightforward. The level was set up over the GUI screen of the exciter, and the integrated RTAC pre-distortion circuitry automatically made the necessary linearity corrections.

In sizing the output power requirements for the transmitter, it was necessary to account for the additional peak power requirements imposed by the additional Extended Hybrid (MP3 mode) P3 carriers. Using com-

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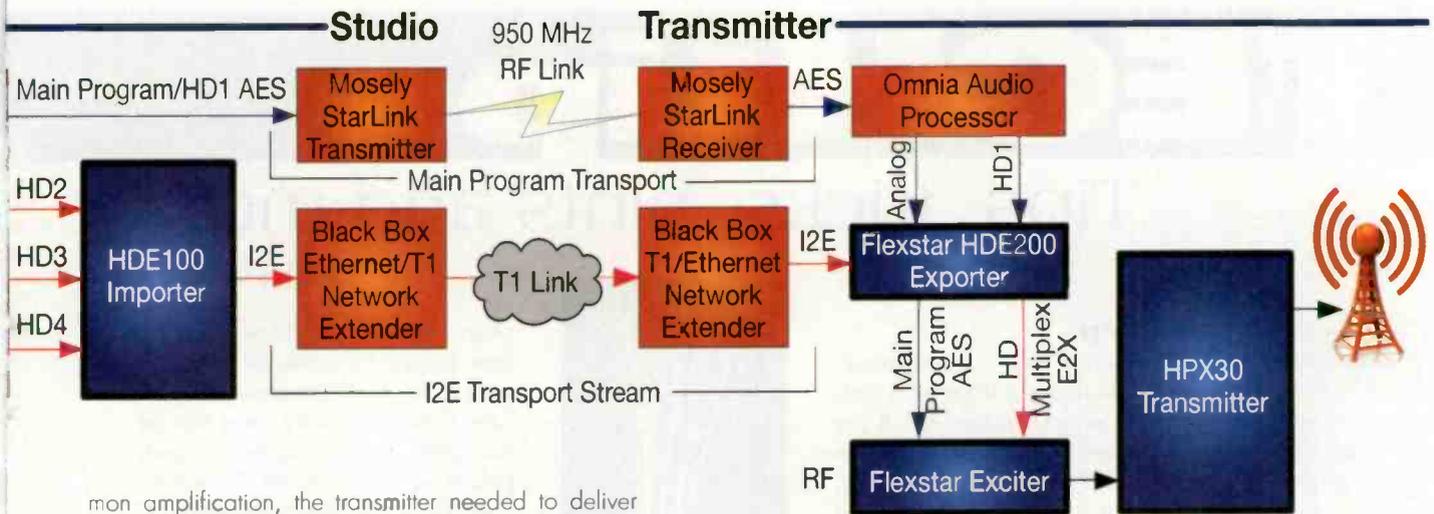
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mon amplification, the transmitter needed to deliver 13kW of analog power and 621W of digital power to the antenna (which needed no adjustments). That is about 6 percent more digital power than would be required by MP1 mode – well within the capabilities of the HPX30 transmitter. There is also plenty of headroom to raise the HD Radio injection to as high as -10dB if needed in the future.

The entire installation project took less than a week. The transmitter was delivered on a Monday morning to the rigger and to the site on Tuesday morning. The electrical work was performed Tuesday night, and on Wednesday the team connected the Burk remote control and finalized the RF plumbing. The dummy load tests

were performed Thursday morning, and the quadcast went on the air that afternoon.

After a weekend of monitoring the system and a brief dark period, the official launch was announced the following week. Harris Field Service Engineer Walter Freeman and Transmission Product Development Manager Tim Anderson were on site to provide assistance throughout the installation and launch. At press time the HD Radio quadcast and supporting technology are both operating flawlessly.

Walden is SVP engineering, CBS Radio. Loughridge is market director of engineering, CBS Radio, Washington DC.

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[in-ti-grey'-shuhn] – noun

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photo by Chriss Scherer

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BROADCAST BIONICS

## Tips, tricks, hints and more

By Chriss Scherer

### Plug before you crimp

**I**nstalling RJ-45 connectors used to be a pain, especially with CAT-5e stranded cable. Those individual strands wanted to twist out of position more times than not. If you didn't notice until after you crimped the connector, you either had to cut the connector off and re-do, or, unfortunately, discover the trouble only after installing a run and having the connection fail.

Michael Bradford, CPBE, Broadcast/Audio Services, Jackson, MI, discovered the Platinum Tools EZ RJ-45 plugs some time ago during a studio installation at WHMI in Howell, MI. These



plugs permit the individual strands to pass through the connector to confirm proper alignment before being crimped. Even if there's a twisty wires can be re-aligned and re-inserted properly before the crimp is made. No wasted connectors, no failed connections and the cable insulation can be tucked into the base of the connector for a secure fit. The Platinum crimping tool will also shear off the extended strands... or you can use your present crimping tool and cut off the excess with side-cutters.



### Cell phone remotes

**M**ike Jax of WYPW, Mishawaka, IN, sent a picture of this home-brew interface for remote call-ins. Quite often, a cell phone is all that is needed for a live drop-in. But talking into a phone has limitations, and if someone is interviewed, it looks very strange to push the phone in someone's

face. Jax's contract engineer created this interface that splits the mini jack from the phone into an XLR connector for a mic and a headphone jack.

Adding a short XLR extension allows Jax to keep the phone on his belt while he uses the mic. The added benefit is that it looks more professional to observers at the remote site.

### Wall-wart plugs

**M**ichael Bradford also wrote that one of his clients called late one Sunday night to inform him that "sometime during the past few days..." the Sine Systems remote control had refused to answer calls at the transmitter site. He climbed into his trusty 4WD pickup and headed for the site.

Upon arrival, he found the wall-wart power supply for the Sine Systems unit had simply fallen out of the outlet on the rear of the UPS system. He noticed that the little power supply actually tilted backward because there was no support to keep it in place.

That is when he obtained a Furman PlugLock five-outlet

plug-strip from BSW. This plug strip has metal brackets that are adjustable for various size wall-warts and allows them to be securely clamped in place. The cord is grounded and heavy-duty and the mounting holes permit several mounting configurations. He chose to mount his on the side-rails of the Middle Atlantic rack at the transmitter site.

Now the various wall-warts are secure and don't take up two outlet spaces because the outlets on the PlugLock plug-strip are rotated 90 degrees so the supplies mount side-by-side. He recommends the PlugLock for any location, remote or not, that uses now-famous wall-wart power supplies.



### Taking pictures

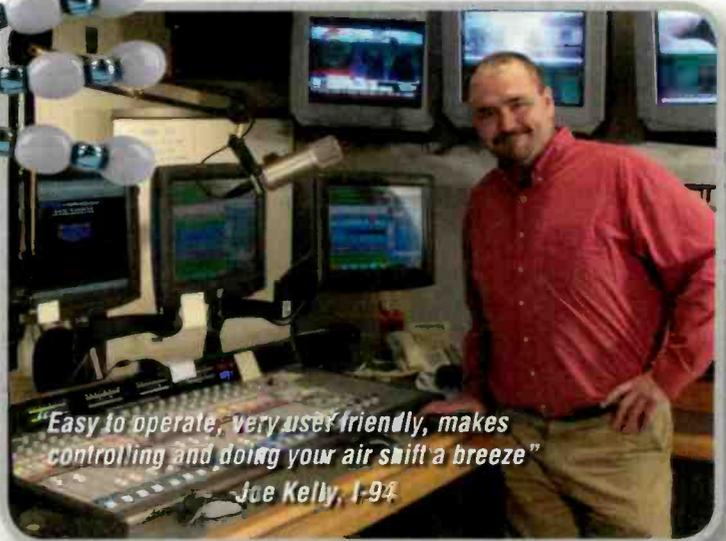
**E**d Treese, a contract engineer in Kansas City, notes that a digital camera can also be a very useful tool. Even the camera on a cell phone is better than nothing, but higher resolution cameras can be helpful as well. Treese uses his camera to document

damaged parts, make notes of an assembly before it is taken apart, and even as a way to see something obscured from view, such as the inside of a transmitter tube chimney or in Treese's recent case, the information from an air conditioner air compressor that was inaccessible for his eyes.

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## Potomac FIM-4100

By James Yelton

**T**he Potomac FIM-4100 is a computerized instrument to take RF field strength measurements for medium-wave radio stations. It replaces the Potomac FIM-41, a bulky box with a lot of setup per measurement. There are so many improvements

over the 4100's predecessor, but the greatest is that there are no knobs to twist. Calibration is automatic, which makes the FIM-4100 a point-and-shoot device. With a hold and save function there is no need to write the readings on paper. There are 29 parameters measured and stored in memory. Measuring points are easy to locate in radial degree and GPS location.

We received our FIM-4100 late in January 2010 at Beasley South Florida, and my first step

that included the GPS location and stored this in memory. By pressing the delete key the unit displayed the GPS information of that reading, which I then entered into the Tx data. Now I was ready to take field readings for WWSR. I repeated this for the other three stations. Switching between the four stations is three keystrokes away and almost instantaneous.

I should note that this is a thumb-operated device. Hold it in two hands and operate the push buttons with your thumbs. It's a nice layout and comfortable to operate.

### Taking a reading

Remember how you had to hold the FIM-41 sideways to the station, twist three knobs, set the scale switch or tune it to be less than 10mV? No more. Face the station watch the bar graph for the highest reading, press either hold or save. Hold keeps the readings on the screen. The word hold is written over the GPS data (I hope Potomac changes that). Save goes immediately to a second screen where entries can be made for pattern and other information. These entries are not too important and are difficult to change in the field. Pressing save again stores a complete reading and returns the unit back to the field strength screen. Up to 100 readings can be saved in the unit.

Because most of my monitor points are in the marsh land levees, there are no markers to be placed (or allowed) and obviously no address locations. The unit's display shows the radial in degrees (to the tenth of a degree) and GPS location. I can much more accurately and repeatedly find a monitor point position than ever before.

Potomac provides software to access the unit. Data is transferred via a USB cable. When the transfer to the PC is complete the file must be named. I created a folder in my documents called Potomac. I usually name them with the date, station call and the word unedited. If several stations were measured the data can be divided in Excel.

## Performance at a glance

Self calibrating

Digital tuning, digital field strength display and spectrum display

Digital data capture and storage

SBAS augmented GPS positioning

Harmonics measured to 5.2MHz

Antenna orientation compass

Hand-held or tripod use

Shielded modular construction

was to check with Guy Berry at Potomac to be sure we had the latest software. The setup was intuitive. Settings for UTC offset (-5 hours in my case), GPS Datum (in my case NAD 27), units of strength measurements and the harmonic of the selected frequency were finished in less than five minutes. Next I programmed the frequencies I was to check in the field, which was easy as well. I put all four of our AM stations (listed by call sign and frequency) of this cluster into memory. Up to 20 stations can be entered into memory.

To enter the call, frequency, location of the station and variation from true north, select Tx add and enter the information from the station license. I chose an alternate method by going to the center of the array, placing the unit input to RF input (to reduce level in), taking a reading

## Added functions

The unit includes a spectrum analyzer, which is accessed by pressing the mode switch. I have yet to really use this function except to check for second and third harmonic intensity graphically.

I can now take readings in less than half the time, and more importantly, they are more accurate. I am able to come back to the shop and edit the readings to a presentable form. One shortcoming is that I still must know the typical and maximum reading

established in the license of any particular point or null. Having these stored with the station preset would help save some time.

I had a small problem with the two rubber covers on the back of the meter that cover the external antenna and USB, headphone and external power connectors. They do not stay in place.

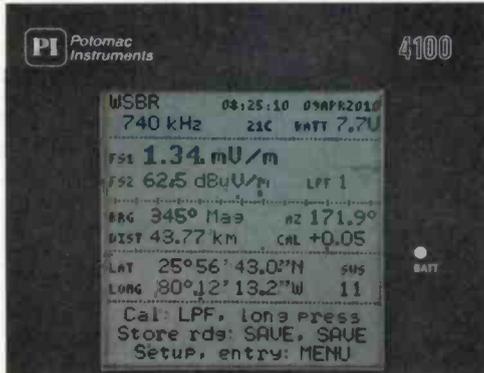
The rechargeable battery lasts all day, and Potomac supplies a car power cord for backup power if needed. The unit will also mount on a tripod. All in all, this is a sweet dream instrument.

*Yelton is a senior engineer with Beasley Southeast, Miami.*

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The display clearly shows instrument status and signal information.

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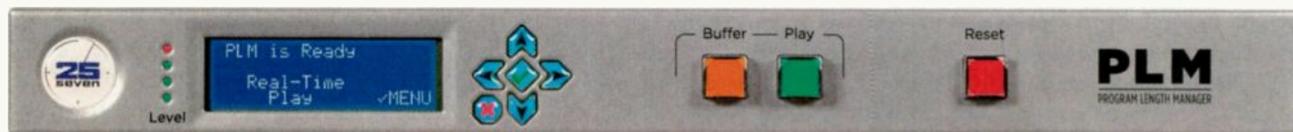
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## 25-Seven Systems PLM

By Brian Powell

**T**he Program Length Manager (PLM) from 25-Seven Systems is a TRU time compression/expansion processor that can stretch or shrink audio programs in real time. It can be used to shorten the duration of programs, allowing additional material to be inserted with no loss of content, or stretch short programs so they precisely fill their allotted time slot. The PLM does this without pitch change, artifacts or glitches at various speed changes.

Out of the box the unit is easy to set up, and the front panel is easy to read and understand. Viewing the front from left to right you find the input level

meter, consisting of four LEDs. Next is the LCD display to show information on the current stretch or shrink session and menu displays. To the right of the LCD are the cursor buttons to navigate around the LCD, the red X (cancel) button, which exits a current menu without making any changes, and the enter button displayed as a green checkmark in the center of the cursor buttons. To the right of these buttons are the buffer, play and reset buttons used for the shrink and stretch sessions.

On the rear panel is the IEC power input (universal input 100-240Vac). There is an Ethernet port used for remote control via Web browser, serial remote control over IP, and synchronization to a network time server. There is a serial control output and GPIO (parallel) control output; however, I do not use these. Next are the digital and analog ins

and ratios, to determine the amount of stretch and shrink that could be performed. The results, along with the control audio, were given to a representative from each service to listen to and grade. The listeners were not told what they were listening too, they were simply told to listen and rate the file to let us know if it was broadcast quality. Using the most critical examinations we discovered that in our languages we cannot push the PLM past a 7.5 percent shrink or expand. This allows us to stretch or shrink a 60-minute show by up to 4.5 minutes without the listener being able to audibly tell anything was done to the show. Out of curiosity, we also did our own tests in English and discovered that we could go up to 10 percent with no ill effects.

Stretching and expanding a file in the PLM can be set up very quickly. To stretch a file simply set the input time or the length of the original file, the output time or the desired length, and the rate at which to perform the stretch or shrink. Once everything is set up the play button flashes. Start the source audio and hit the play button on the box at the same time and you are on your way.

To expand a file, again set the input and output time as well as the percentage rate of the stretch. Instead of the play button flashing, the buffer button flashes. The source needs to be started before the actual broadcast time. If the program is being stretched by 3 minutes, the audio source needs to be started at least 3 minutes before going to air. When the source audio is started, the user also engages the buffer button. No audio will come out of the PLM until the buffer for the stretch has been met. When this happens the green play button will flash. Once play is pressed, the PLM will play the audio and begin to shrink the program to fit into the set time.

The PLM can be used on the fly in a broadcast to squeeze in a news brief or a promo. To do this, route the live show through the PLM. When the news brief or promo needs to be inserted, press the buffer button. Now input audio is held (recorded) in the PLM buffer, and the inserted audio can be

### Performance at a glance

Stretch or shrink program times

Maintains natural sound during time shift

Analog and digital I/O

GPIO, Ethernet and serial remote control

Built-in Web server for access

and outs via XLR connectors, which can be set to AES3 or S/PDIF. The analog and digital XLR inputs and outputs are wired to bypass relays, so if the power fails, incoming audio is connected directly to the outputs via passive bypass.

#### Surviving translation

At Radio Free Asia we needed to test the PLM with programs in our nine broadcast languages. We broadcast in Burmese, Cantonese, Khmer, Korean, Lao, Mandarin, Tibetan, Uyghur and Vietnamese. Because these languages all have different tone, pitch and vernacular qualities they needed to be tested separately, at different stretch and shrink times

aired. Once the inserted audio is finished, press play and the show resumes from where it left off. The remainder of the show will now be shrunk to fit the allotted show time. You can adjust the rate at which the show will be shrunk with the up and down arrows.

The PLM will enable our show producers to focus more on the content of the show.

The PLM will enable our show producers to not have to worry as much about hitting an exact time on their pre-recorded shows and focus more on the content of the show. In its short time here at Radio Free Asia we have had the opportunity to use it on air for two different language services

shows. In one case, we were asked to insert a three-minute music piece into a program that was already 60 minutes, its allotted time. We were able to shrink the program in real-time so that the 63-minute source program was able to fit in the allotted time slot. In the other case, a 60-minute program was almost 3 minutes short. We expanded it in real-time to a full 60 minutes as it was being broadcast.

*Powell is a production engineer at Radio Free Asia, Washington, DC.*

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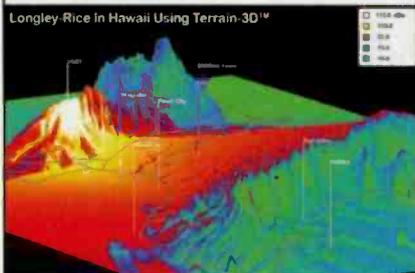


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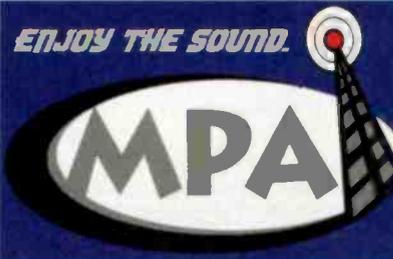
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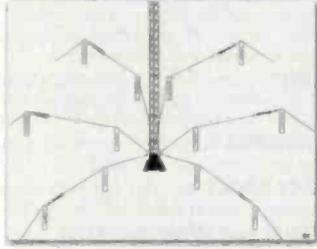
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# Contributor Pro-file

Meet the professionals who write  
for *Radio* magazine.  
This month:  
Field Report, page 50



## Brian Powell Production Engineer Level 2 Radio Free Asia Washington, DC

Powell was a night-club DJ in Fairmont and Clarksburg, WV, before graduating from Full Sail in March 2004 with

an associate's degree in recording arts. He then moved to Washington where he interned at several recording studios including Cue Recordings and Foundation Studios. At Foundation Studios he worked with Brooksie Wells on her album "Been There," which was released in 2005. He also worked for Sound Resolution as a live sound engineer. He joined Radio Free Asia in 2006.



Written by radio professionals  
Written for radio professionals

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by Erin Shipp, associate editor

## Do you remember?

In April, Sony said sayonara to floppy, announcing that it would cease production of 1.44MB, 3.5" floppy disks in March 2011. The 1.44MB format disk was introduced in 1981. In 1998, Apple sold the iMac with no floppy drive at all, which raised many eyebrows at the time. In July 1993, Editor Chriss Scherer wrote a Field Report (at right) for *Broadcast Engineering* on the Fidelipac Dynamax DCR1000, a digital cart machine that used 3.5" floppy disks as carts. It supported standard high-density 2MB and triple density 13MB diskettes. There were several floppy-based cart machines offered at one time. Do you remember these types of machines?

As homage to a once-great storage technology, we've decided to have some floppy fun.

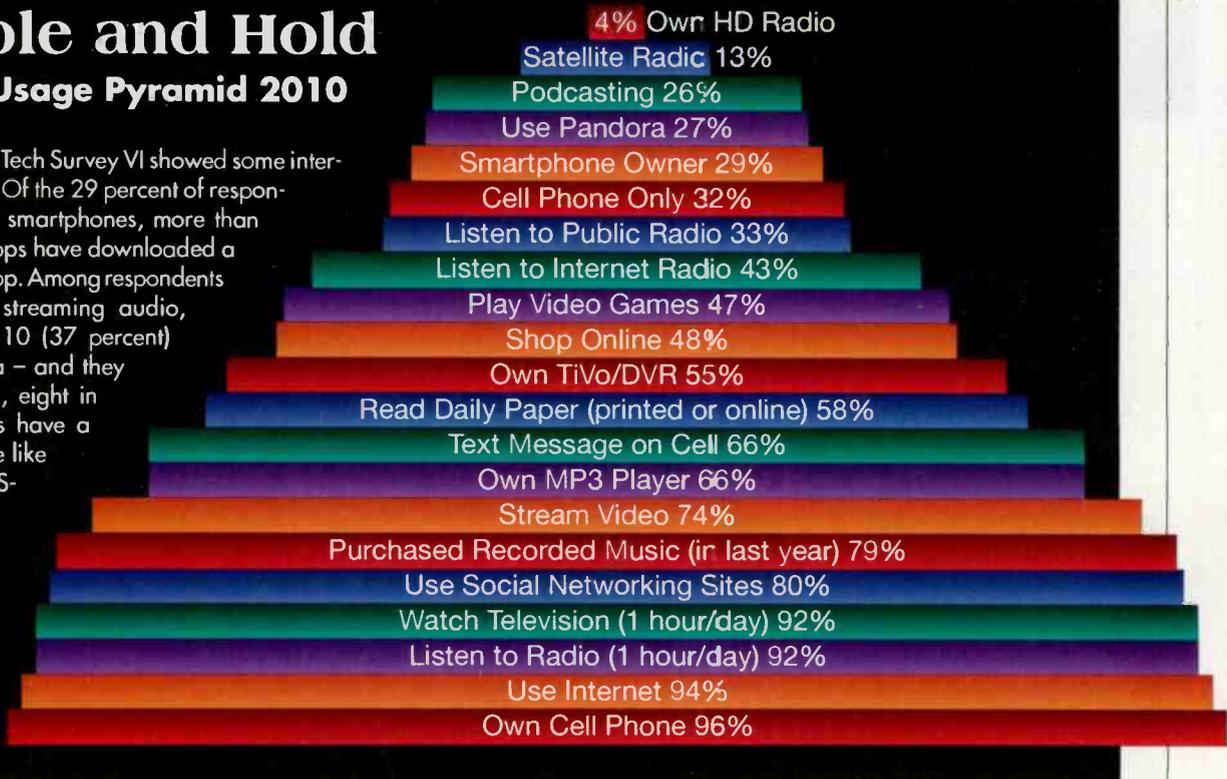
- It would take more than 4.32 billion 3.5" floppy disks placed end-to-end to reach the moon.

- With 1/8" thickness, more than 2.78 million floppy disks would need to be stacked to equal the height of Mount Everest.
- Robert Pershing Wadlow, the tallest man in medical history had an arm span of 9' 5.75", that's 32.5 floppy disks, end-to-end. The average 5'9" man could hold 19.7.
- A fully loaded space shuttle including shuttle, tanks, boosters and fuel weighs 4.4 million pounds. That's 117,348,000 floppies.



## Sample and Hold Media Usage Pyramid 2010

Jacobs Media's Tech Survey VI showed some interesting findings. Of the 29 percent of respondents who had smartphones, more than half who use apps have downloaded a radio-related app. Among respondents who listen to streaming audio, nearly four in 10 (37 percent) access Pandora – and they love it. Overall, eight in 10 respondents have a profile on a site like Facebook, MySpace, or LinkedIn. This sector experienced a 58 percent jump from last year's survey, led by Facebook.



Source: Jacobs Media, Tech Survey VI.

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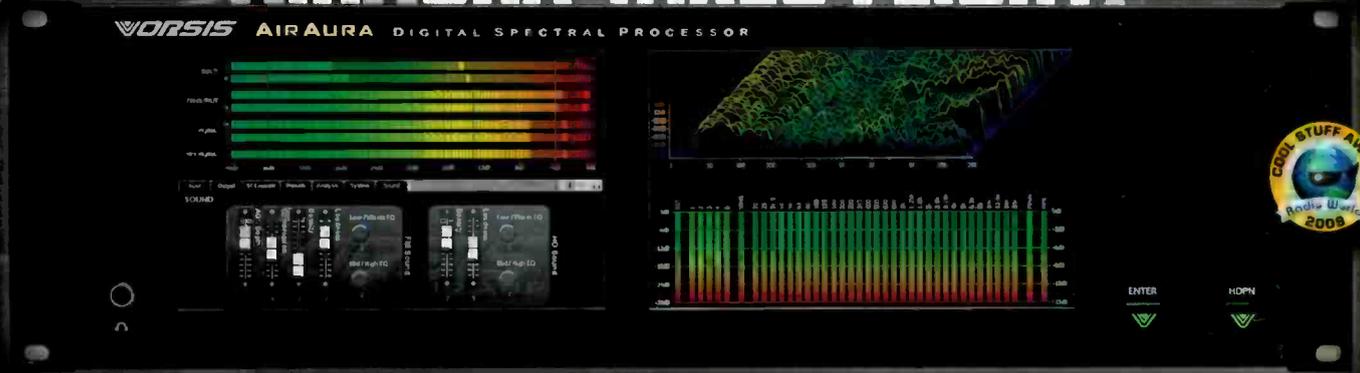
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- New proprietary "AirAura" final clipper technology
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