



# RADIO WORLD

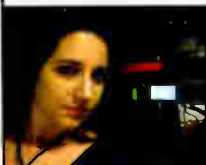
APRIL 21, 2010 | The News Source for Radio Managers and Engineers | \$2.50 | RADIOWORLD.COM

## INSIDE

### NEWS & ENGINEERING

• What's the business outlook for radio equipment suppliers? One expert offers a cautiously optimistic forecast. — Page 4

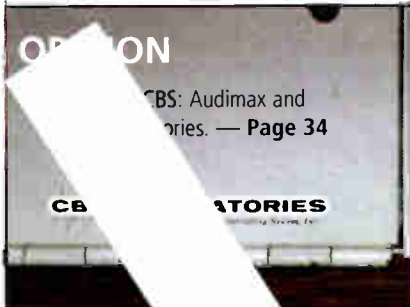
### STUDIO SESSIONS



• Laura Mir gets connected with the diminutive Mayah C1141. — Page 24

### GM JOURNAL

• WSPS, the 200-watt FM of St. Paul's School in Concord, N.H., maximizes the budget. — Page 28



## Monster Mash May Be Ending

'Franken FMs' Have Limited Shelf Life; Backdoor Stations Still Concern Non-Coms

BY RANDY J. STINE

WASHINGTON — The staff of the Federal Communications Commission is aware of "Franken FMs," those low-power Channel 6 TV licensees that program their audio carriers as radio stations.

But how the commission feels about them remains unclear, causing lingering concern for some broadcasters. Meanwhile, one of the frequencies that first drew attention to the trend has seen several format changes in the past year. That operation's struggles, plus a recent FCC action regarding TV's digital transition, have led some observers to speculate that the time of LPTVs

(continued on page 8)



## Radio Gets Ready to Hit the Button on Next-Generation EAS

What's ahead? A special report and advertising feature, Page 12.

Stockphoto/Roydee

## For AM DXers, the Romance Lives On

QSLs Might Be Via E-Mail and Audio Clips, But Their Hobby Survives

BY JAMES CARELESS

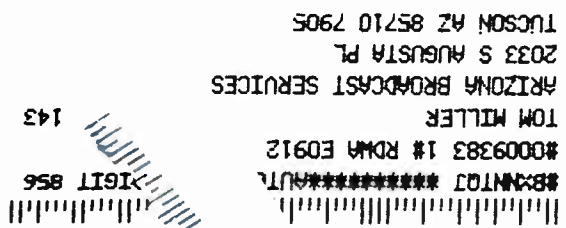
I do a lot of driving in my 2006 Mazda MPV minivan in Ottawa, two hours' drive west of Montreal. Being a long-time radio reporter/broadcaster, I pass the time by tuning across the AM dial. For some odd reason, it gives me a great deal of satisfaction to hear the New York City traffic reports on WCBS-880 — perhaps because I'm far away from Manhattan gridlock.

A few months ago, I decided to check out the AM band methodically, to find out which U.S. AM stations I could hear in Canada.

My best tuning typically was at night, when WCBS booms in as clearly as my local news station, CFRA-580 Ottawa. But it didn't take long for me to find other distant U.S. stations breaking through.

Over the next few weeks, I heard WGN-720 Chicago; KMOX-1120 St. Louis; WCCO-830 Minneapolis; WFED-1500 Washington; WRVA-1140 Richmond, Va.; WHAS-840 Louisville, Ky.; WLW-700 Cincinnati; WBT-1110 Charlotte, N.C.; WWVA-1170 Wheeling, W.Va.; and my most distant catch, WSB-750 Atlanta. As the radio crow flies, Atlanta is 935 miles from Ottawa.

(continued on page 20)



## Live Audio Broadcasts from your iPhone

Download the **Report-IT Live** App and connect to all Tieline IP codecs now!



Live bi-directional 15kHz audio



Report-IT

Watch the video [www.tieline.com/videos](http://www.tieline.com/videos)

\*iPhone and App Store are trademarks and/or registered trademarks of Apple Inc., registered in the U.S. and other countries.

World Radio History

# "WOW, I COULDA HAD A VP-8!"



## VORSIS VP-8 IS THE BEST AUDIO PROCESSOR FOR UNDER \$3K. PERIOD.

The VORSIS VP-8 Digital Audio Processor delivers clean detailed sound at a great price. In fact, you can easily spend two to three times more and still not match the VP-8's performance.

Installation and setup takes only minutes. The VP-8 is loaded and ready to go for FM, AM, FM-HD, AM-HD, streaming, and studio processing. It's great sounding presets are carefully tailored for your format and media. No need to spend endless hours tweaking, the VP-8 will make your station sound great, right out of the box.

For FM stations, expect a sound that easily holds its own with your high-power major market competitors. Listeners comment that with the VP-8 they now hear the rest of the music! AM stations often experience a dramatic increase in coverage area along with greatly improved intelligibility and sound quality.

The VP-8 is also ideal for streaming audio, studio processing, as a versatile backup processor or as an STL protection limiter.

Of course, if tweaking is your thing, VP-8 lets you under the hood with a complete toolset – in the VP-8, nothing is hidden. With its 4-band AGC/compressor and 8-band limiter, the VP-8 boasts more bands than any other processor in its price range to give you a very clean, loud, competitive sound that doesn't destroy the music.

It also includes features rarely found even on top-of-the-line processors: a reference-grade stereo encoder for FM, built-in test oscillator, diversity delay, multi-point headphone monitoring, and extensive metering.

The bottom line? The VORSIS VP-8 gives more bang per buck than any other audio processor in its class (and then some). And since VORSIS is designed and built by Wheatstone here in the US, you know it'll hold up and be supported 24/7 for years and years.

Intrigued? Call us or visit us on the web to learn more or set up a demo. You'll be happy you did. VORSIS—more listeners listening more.

W H E A T S T O N E  
**VORSIS**

Radio has evolved. Your sound should too.™

phone 1.252.638-7000 | [www.vorsis.com](http://www.vorsis.com) | [sales@wheatstone.com](mailto:sales@wheatstone.com)

World Radio History





Selected content from Radio World's "The Leslie Report" by News Editor/Washington Bureau Chief Leslie Stimson. To receive the free, bimonthly e-mail newsletter, subscribe at [www.radioworld.com/subscribe](http://www.radioworld.com/subscribe).

## HD RADIO COULD BE IN CELLPHONES SOON, IBIQUITY SAYS

While iBiquity has sent some of its executives to CTIA wireless conventions in the past, this year it sent a larger group of staff who could have less theoretical, more concrete business conversations with carriers, cellphone manufacturers and chip-makers about including HD Radio in mobile phones.

"We're talking to handset manufacturers and smartphone carriers as we look to put HD Radio on next-generation products," iBiquity's Jeff Jury told me from the show, held



This image is from an iBiquity brochure handed out at CTIA. It demonstrates integration of HD Radio technology into a mobile handset.

digital power increase gives them another way to stress to the cellphone industry that HD Radio is on solid footing and has a future among broadcasters.

## IBIQUITY POINTS TO DEMAND

HD Radio developer iBiquity Digital released the results of a comScore study that it says validates consumer demand and willingness to pay a premium for HD Radio as a cellphone feature.

According to the technology developer, 68 percent of consumers surveyed are "interested" or "extremely interested" in mobile phones that include HD Radio tech-

broadcast gear from people you trust



Lowest Prices and Largest Inventory on EVERYTHING For Broadcast

**BSWUSA.COM 800-426-8434**

in Las Vegas in late March. "We're looking at other MP3 players, where people get their entertainment. HD Radio needs to be there."

Now that smaller, more power-efficient HD Radio chips are available, the ones found in HD Radio portables like the Insignia HD and Zune HD, iBiquity is telling wireless executives those chips will work in cellphones too. iBiquity mentioned the SiPort SP1010, available now, and the SP2021/31, to be available in Q3.

When I asked when we could see HD Radio in cellphones, Jury estimated 2012 but said the company is trying to accelerate that to 2011. And to be clear, we'd get FM HD Radio in cell phones first, before AM.

We told you iBiquity released the results of a survey at the wireless convention showing that a majority of people would listen to or are interested in hearing HD Radio broadcasts over their cellphones.

A brochure iBiquity executives handed out promotes HD Radio's cost-effectiveness. It emphasized that the infrastructure costs for wireless carriers of supporting HD Radio are lower than those associated with Internet radio services such as Slacker or Pandora.

An AT&T wireless executive key-note said data use is outpacing bandwidth capacity for wireless carriers; iBiquity says this trend boosts its argument that HD Radio is complimentary to cellphones and becomes an easy way to deliver music on a mobile device.

Jury says the company heard interest from wireless executives but that penetration of the cellphone market won't happen overnight. Just as we've seen automakers adopt the digital radio technology over time, that's how this will play out, he said.

You've got to start the conversation sometime, and I sense the recent FM

technology, while 75 percent of those who own a cell phone would listen to HD Radio broadcasts on it.

The value premium consumers attribute to HD in a phone is \$42. More than 1,000 people filled out the online survey in February.

President/CEO Bob Struble said, "With social media and other bandwidth-intensive applications proliferating over mobile phones, the strain on the mobile network is enormous, causing slower download rates and a frustrating consumer experience. Adding HD Radio Technology into mobile handsets helps reduce the usage overload on the network, which enables consumers to do more — faster — with their mobile devices."

HD Radio technology entered the mobile phone arena in November with an iPhone accessory and application from RadioShack's Gigaware brand.

29,002 products in stock at press time!

# HUGE NAB SALE!

**Audioarts R-55E FREEBIES! A BSW Exclusive!**



Buy a selected R55E and get either a FREE Talent panel or a FREE phone module! Your choice! About \$675 value!

## Radio Systems PROMO!

Get free wiring kits/talent packages or up to \$1500 off the price of the console!



## Telos 1x6 Pack \$1,895! A BSW Exclusive!

A 1X6 plus a Switch Console for an exceptionally low price! A \$2588 value! Gotta love it!



## RadioTag Plus! Song Tagging for Analog FM! A BSW Exclusive!

The Jump2Go solution for enabling Song Tagging on standard, analog FM. And BSW is the only place to get it!



## Audio-Technica Wireless 3000 Series Lavalier Rig ONLY \$349! A BSW Exclusive!

We bought all of AT's inventory of "original" 3000 series receiver and bodypack inventory just so we can save you a small fortune!



broadcast gear from people you trust



**Broadcast Supply Worldwide Knowledgeable Sales Staff**

BSW's sales professionals have decades of real-world broadcast and recording experience to offer expert help with your purchase.

# For Equipment Sellers, a Cautious Tone

Researcher Says an Improving Economy Should Help, But Challenges Remain

How much money is spent globally each year on radio broadcast equipment?

One observer, consultant Douglas I. Sheer, takes a stab and estimates that product-related spending worldwide in radio in 2009 was the equivalent of about \$1.2 billion in U.S. dollars, down from about \$1.5 billion the year before.

His company D.I.S. Consulting makes the estimate in a book published by The NAB Show, "The 2010 Broadcasting, Audio & Video Global Industry Trends Report." The book, which is now in its second year, aims to give exhibitors and associate members some insight into the outlook for spending. It sells for \$450 through the NAB Store, [www.nabstore.com](http://www.nabstore.com).

The global spending estimate is an aside. D.I.S. took an average survey response of \$35,000 product spending in 2008 per site and multiplied that by 44,000 radio stations in the world; but the report doesn't pretend to give a statistically reliable number. There's probably no way to know with certainty; and I've learned during many years of working in and around the equipment marketplace to treat estimates with caution.

More to the point are the report's conclusions about the outlook for the gear market. A robust hardware industry matters — not only to keep your favorite publications in business, but as a barometer of radio's fundamental health.

The company based its findings on what equipment users and buyers say about their plans. The report is heavy on TV, exploring such topics as 3D, HD and online



alternatives to traditional video distribution; but it includes discussion of relevant general trends as well as radio specifics.

It suggests 2010 should be a somewhat better year for the radio equipment marketplace, but that manufacturers and sellers continue to face significant challenges.

"You would have to have been on another planet to not know that our

industry has been confronted by its most challenging economic environment in history," Sheer writes in his introduction. He notes elsewhere that U.S. television and radio equipment manufacturers "had an increasingly tough time as the recession proceeded, and 2009 was truly harrowing for many," with layoffs, hiring freezes and marketing cutbacks.

But he thinks the economy will improve and that the broadcast hardware marketplace as a result will see

**Sheer's report** suggests 2010 should be a somewhat better year for equipment sellers but that competitive pressures will remain.

"genuine recovery," though this will be unpredictable, even "confounding."

"D.I.S. feels that the worst of the recession for our industry is behind us. And, in fact, as far back as The NAB Show last year, we were speaking of the depth that the decline would sink by — about 14 percent — in 2009 and the growth in 2010, and we predicted — roughly 4.8 percent — overall in recovery.

"Our optimism last year ... drew some derision," he said, "but has proven to be fairly solid. While 2010 is still young at this writing, the early indications are that the industry will see a continued recovery."

**FROM THE EDITOR**



Paul McLane

In radio specifically, D.I.S. described the "radical" technological changes that have moved through the business over two decades, including the shift to digital systems, expansion of automation and increased reliance on "packaged and formula-oriented programming." In recent times, the company finds, the hardware biz has seemed lackluster — "even Google, who had been excited about it, pulled out in 2009" —

and while ownership consolidation has slowed, its impact remains powerful.

"Radio as a marketplace has been both a labor-intensive and mature industry," D.I.S. continued. "But today it is listening to renewed demand and has been getting more creative with its technological mediums; delivering broadcasts across the Internet has been a major growth area, along with satellite delivery and digital radio broadcasts."

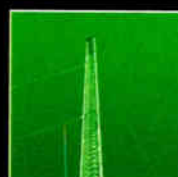
Recent mild improvement in the radio revenue picture probably will translate to a boost in purchases; D.I.S. expects a spending increase of about 5 percent globally.

*(continued on page 23)*



**Around the World,  
Across the Spectrum,  
Your Single Source  
For Broadcast Solutions**

Electronics Research, Inc. delivers innovative, high-quality, integrated solutions for broadcasters around the world and across the spectrum. When planning your next broadcast system call us toll-free at 877 ERI-LINE or visit us online at [www.eriinc.com](http://www.eriinc.com).



**ELECTRONICS RESEARCH, INC. ERI**

Antennas | Transmission Line | Filters/Combiners | Towers | Broadcast Services



**THIS ISSUE**

APRIL 21, 2010

**NEWS**

Monster Mash May Be Ending .....	1
For AM DXers, the Romance Lives On .....	1
HD Radio Could Be in Cellphones .....	3
Soon, iBiquity Says .....	3
Ibiquity Points to Demand .....	3
For Equipment Sellers, a Cautious Tone .....	4
Oh Well, on With the Experiment .....	5

**2010 EAS NATIONAL SUMMIT**

FEMA Edges Closer to Next-Gen EAS .....	12
CAP to EAS: What It Means for You .....	12

**FEATURES**

Working With Class 1 Speaker Cable .....	10
Workbench: Crash! Let an Ice Bridge Do Its Job .....	18
FNS London Memories .....	22

**STUDIO SESSIONS**

Getting Connected With Mayah .....	24
Marketplace .....	26

**GM JOURNAL**

Community Radio, St. Paul's Style .....	28
People News .....	29
Tweet This! .....	30

**OPINION**

Reader's Forum .....	33-34
----------------------	-------

**NEWS**

# Oh Well, on With the Experiment ...

## McLarnon Finds the FM IBOC Power Verdict to Be Flawed

**BY BARRY MCLARNON**

The saga continues. It's remarkable that the development of the IBOC system began well over 20 years ago, yet it still seems to be an ongoing experiment.

### COMMENTARY

On the AM side, the experiment seems to be pretty much concluded: The ship has sprung a leak and is listing badly.

The number of AM IBOC stations plateaued several years ago and now appears to be slowly declining. The system was torpedoed by poor nighttime performance, interference problems and the lack of any real selling point, like new audio services.

**Barry McLarnon**

And now we have the specter of an FM IBOC power increase. There are those who will claim that a power increase was always in the cards, but that is not the case.

Go back and look at all the system documentation put forward by iBiquity and the NRSC back in 2001, and you'll find no hint that a future digital power increase would be either feasible or desirable, except for the obvious increase that would occur in a transition from the hybrid system to an all-digital system.

In fact, the field trial data presented to the FCC at that time claimed very good digital coverage, out to the 45-50 dBu contours. A closer inspection of the data showed some dropouts in the mobile tests, but that was no problem, thanks to the blend-to-analog backup.

The question of optimum digital power level for FM IBOC was studied quite thoroughly back in the 1990s, and it was shown that levels higher than -20 dBc had considerable potential to cause serious interference — not just

to adjacent-channel stations, but to the host station itself. In fact, when iBiquity submitted the system description to the ITU, it was stated that the power level was -22 dBc; this was later tweaked upwards for the system that was evaluated and presented to the FCC.

The game-changer came several years after the system got FCC approval, when NPR, anxious to get more of

their programming onto the airwaves, demonstrated the feasibility of carving up the 96 kilobits-per-second digital payload into multiple audio streams. The commercial folks quickly jumped on this concept, as it represented a means of stimulating interest in a public that up to that point had greeted "HD" radio with a collective yawn.

*(continued on page 6)***MAYAH Audio Codec Trilogy from Germany.**

# Say goodbye to your remote van!

**sparty**  
Portable Reporter Codec**C11**  
Audio Codec**FLASHMAN II**  
Portable Recorder / Codec**MAYAH Trilogy: Sporty, Flashman II and C11 - connecting your world anywhere in real time!**

Live reporting Sports and News, with the MAYAH Trilogy family of audio 24/7/365 Codecs, Sporty and Flashman II provide real time transmission and storage in the field without any remote van needed. Along with the C11 ½ 19" 1RU, technical adaptability is insured with the MAYAH Trilogy: G.711/22, Layer 2/3, Eapt-X or AAC HE and ELD, even linear and AES/EBU transparent, all formats are available along with communications for IP/Ethernet, ISDN, ASI (C11), UMTS/3G and POTS, EBU/NACIP standard via IP by utilizing the MAYAH FlashCast™ technology for ISDN and IP. All MAYAH Codecs can automatically recognize any remote location giving your radio station the competitive edge. A variety of controlling software is available: Web Remote, Windows-Line-Management or SNMP network monitoring.

**MAYAH Communications –  
German engineering at its best!**

**MAYAH Communications**  
Daniel Loeffler  
North American Business  
Development  
Bellingham, WA 98225  
dloeffler@mayah.com  
DIRECT: (360) 618 1474  
CELL: (408) 429 5177  
www.mayah.com

**MAYAH**  
COMMUNICATIONS



## MCLARNON

(continued from page 5)

The advent of “HD2” and “HD3” audio streams represented a fundamental change in the system concept. It was certainly a step forward in terms of versatility, but a major shortcoming quickly became evident: Those dropouts that were easily smoothed over in the main audio channel became irritating muting events in the HD2/HD3 streams. Increasing digital power is the only way to reduce the incidence of these dropouts ... so, here we are.

### A ‘HANDS-OFF POLICY’

The FCC order regarding the power increase represents a bit of a departure for the commission. Up to this point, they at least paid lip service to protecting the public interest by requesting comments at key junctures in IBOC deployment.

This time, however, they based their decision almost entirely on the contents of a report submitted *after* the close of the comment and reply comment periods. What also raises eyebrows is the fact that the order discusses a couple of *ex parte* filings submitted after comments were no longer invited.

So, in essence, a few privileged parties had their say at that point, and everyone else was left out in the cold. Not that it would have made any difference had the commission extended the comment period.

Throughout this process, their stance could be summarized as: Let the industry do what it wants in the radio broadcast bands — just don’t come to us looking for any new spectrum.

Trouble is, the “industry” in this case was not all

radio broadcasters, but a few well-heeled players, many of whom have a vested interest in the sole source of the proprietary IBOC technology.

The commission has also, it seems, maintained a hands-off policy when it comes to IBOC interference complaints. They claim that there have been no formal complaints about FM IBOC, but there have been many interference situations disclosed in filings on Docket 99-325, as well as on various forums such as Internet mailing lists.

### This is not a ‘one size fits all’ situation.

The commission’s attitude can be clearly seen in their reaction to the formal complaint lodged by WYSL(AM), Rochester, N.Y., about AM IBOC interference, which was to ignore it completely. Going forward, one can expect this attitude to persist, and it will be up to the stations concerned to sort out the problems, if they can.

As always, it will be challenging to come up with well-documented interference complaints, since digital interference is indistinguishable from noise. And it will be doubly difficult if the offending stations are unwilling to conduct coordinated tests at different digital power levels.

In this latest episode in the continuing saga, the most surprising aspect has been the about-face by NPR.

In their 2008 report, they warned of dire consequences that would ensue from a blanket FM IBOC power increase. They had plenty of statistics to back this up, derived from studies of numerous stations, using sophisticated propagation prediction tools. According to these results, there were some significant interference problems even at the existing -20 dBc power level.

But then another study is hastily done, and now we’re told: Oops, our mistake, a blanket increase of 6 dB is actually just fine, and even a 10 dB increase will be okay in most cases.

So, what changed? In their 2008 report, NPR based their analysis on lab test results showing the impact of adjacent-channel IBOC interference on FM receivers. In their 2009 report, they disclosed new results gathered in field tests, with the significant departure that the subjective testing phase also took place in moving vehicles.

Were these results wildly different from the earlier findings? Not really. The key result from the new report is a formula for calculating a station’s permissible power increase, based on the D/U ratio that the station creates at the protected contour of its closest first adjacent neighbor.

### POWER CALCULATOR

The D/U ratio is a familiar concept to those involved in FM allocations: the “D” is the field strength (at 30 ft height) of the neighbor station at its protected contour (usually 60 dBu), as predicted by the FCC F(50,50)

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

It isn’t every day you can broadcast your morning commute. And as far as we know, it’s even more rare to broadcast from a bicycle. But that’s just what Radio 3FM DJ Giel Beelen did on his 48-kilometer morning commute from Harlem to Hilversum in the Netherlands. How did he do it AND provide audio that’s so good it sounds like he was right in the studio? He used ACCESS from Comrex.

Whether it’s traveling to work or traveling to cover breaking news, you can always be where the story is. And you don’t need a full crew to grab it. Wherever you are, you can be live on the air, creating pinpoint, relevant programming that keeps an ever-growing number of listeners glued to their radios.

ACCESS PORTABLE lets you send studio-quality live audio, real time to an ACCESS RACK at your studio over POTS, DSL, Cable, Wi-Fi, 3G cellular (EVDO/UMTS), 4G WiMax, satellite and more to make any remote broadcast really stand out.

There’s nothing more immediate than local— connect with your audience from anywhere with the easy to use, handheld ACCESS PORTABLE!



IP • 3G • Wi-Fi • 4G • BGAN / VSAT • PSTN • DSL

ACCESS  
STEREO BRIC IP CODEC

THE ULTIMATE TOOL FOR  
REMOTE BROADCAST

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

19 Pine Road, Devens, MA 01434 USA Tel: 978-784-1776 • Fax: 978-784-1717 • Toll Free: 800-237-1776 • e-mail: [info@comrex.com](mailto:info@comrex.com)



curves, and "U" is the field strength of the interfering station at the contour, in the direction of that station, calculated according to the FCC F(50,10) curves.

NPR came up with a similar formula after they published their 2008 report, and put a calculator for it online. If you tried it, you'll probably recall that it showed that the vast majority of stations would be permitted little or no power increase.

NPR has not provided an online calculator for the new formula, as they understandably do not want anyone relying on them for filing purposes. However, the new formula, now adopted by the FCC, is essentially the same as the old one. The only real difference is that the numerical coefficients have been altered, so that now nearly every station rates a substantial power increase when the formula is applied to their situation.

The reason for this change is revealed on page 30 of the 2009 report. Instead of using the interference level from the F(50,10) curves, which predicts the field strength that will only be exceeded 10 percent of the time, a correction factor is applied to estimate the median interfering field strength (i.e., that which will exist for 50 percent of the time).

The report says that a correction factor of 8 dB is "appropriate" for separations up to 68 miles, but the accompanying graphs (Fig. 27 in the report) show that is clearly not true — the correction factor should decrease monotonically towards zero as the spacing is reduced. This is not a "one size fits all" situation.

The larger issue is: Why make this correction at all? The 10 percent field strength value is the time-honored standard for ensuring that the regulatory D/U limits (6 dB for first adjacencies) are rarely exceeded, so why would it not also apply to digital interference? I've

thought about it long and hard, and I simply can't see the rationale for making this correction — except, of course, that it supplies 8 dB of headroom for a power increase. Without it, the power increase idea simply won't fly.

I also have to ask the question: Why base the interference analysis on the FCC curves at all? These curves are very long in the tooth, and there are far better tools for field strength prediction available today.

---

### The order discusses a couple of ex parte filings submitted after comments were no longer invited.

---

The curves attempt to predict field strength for any station, in any type of terrain and land cover, based upon only three parameters: transmitter effective radiated power, height above average terrain and distance. Anyone who has done FM field strength measurements in the real world can tell you that the figures generated by these curves are a crude approximation at best.

There is sophisticated software available, however, that can use detailed terrain elevation and land cover databases and provide very accurate field strength predictions. Such programs are routinely used for

allocation studies, and were used in the earlier NPR interference studies, so it seems bizarre to fall back to a much less accurate method when the important issue of a digital power increase is considered. Unless, of course, it is simply a means to a desired end.

Another shortcoming of the NPR study is that all of the field test results are dependent on the characteristics of a single automotive receiver — hardly a good sampling of the universe of FM receivers out there. To their credit, NPR did use a variety of receivers in their tests of the impact of increased digital power on fixed reception of the host station.

However, I fear that many will miss this important conclusion from these tests, buried in the bowels of the report (page 46):

"Station managers and engineers need to be conscious and informed of the effects of elevated IBOC, if they are considering adopting high-power digital transmission for their own stations. Although the listening experience of such a rise in power will vary greatly for listeners across the protected service area, all in-home analog listeners will experience some reduction in audio quality and most will experience a significant reduction in audio quality." Sounds like a pretty serious flaw to me.

Oh well, on with the experiment!

*McLarnon is a former research engineer with Communications Research Centre, a government research lab attached to Industry Canada. The latter handles technical aspects of broadcasting such as standards and allocations. Now semi-retired and an independent consultant, he performs occasional contract work for CRC. Contact him at [bdm@bdmcomm.ca](mailto:bdm@bdmcomm.ca).*

*Radio World welcomes other points of view.*

## LIVE & LOCAL



Put Comrex On The Line  
**COMREX**



## 'FRANKEN' FMS

(continued from page 1)

operating as FMs could be coming to a close soon.

The eventual outcome is known: Once the commission issues a rule for all analog low-power TV Channel 6 licensees to make the digital transition, it effectively will end their aural broadcasts of audio programming. Industry observers said the FCC has not issued such a deadline but legal analysts believe it could be as soon as 2012.

The FCC, which is accepting applications for new LPTV facilities, has said such facilities must be digital operations only. It issued a public notice in late March announcing that current applicants for new analog low-power television and TV translator stations must submit amendments to their applications specifying them as digital instead.

### 'UNFENCED, UNGUARDED'

Franken FM stations — the nickname was coined by broadcast engineers to describe the stitched-together nature of these creations, reminiscent of Frankenstein's monster — have popped up in major cities including Chicago,

New York, Los Angeles, Washington and Dallas, as Radio World has reported.

The audio carrier for TV Channel 6 is centered on 87.75 MHz. Many car and tabletop FM receivers are able to receive the adjacent TV audio, so some opportunistic low-power TV licensees choose to operate aural and visual transmitters independently.

Radio broadcasters call this a loophole in the rules. Owners of such stations reply that they simply are taking advantage of the unforeseen benefit of being adjacent to the FM band and are not doing anything contrary to technical regulations.

A group of attorneys who represent noncommercial broadcasters met with the FCC last fall to express their displeasure and concern. Stations in the reserved band, which runs from 88.1 to 91.9 MHz, in particular are sensitive to competition from commercial broadcasters via the "back door" at the lower end of the FM dial.

How the commission might react to the complaints remains unknown. A spokesman for the FCC said recently, "The issues surrounding the LPTVs in question are being reviewed. Thus the commission cannot give a more definitive answer at this time."

At least one noncommercial radio

station, WBEZ(FM) in Chicago, complained about WLFM(LP), a low-power TV outlet in the Windy City that is programming jazz on its aural service.

"We want a clarification and we still haven't received one from the FCC yet," said Torey Malatia, president and chief executive officer of Chicago Public Radio. "This company is misusing a television license for what in fact is a radio venture. Secondly, they are effectively expanding the reserved noncommercial educational FM band, violating its fundamental restriction by marketing the spectrum for profit and commercial gain. "The reserved band lies unfenced, unguarded and unregulated," Malatia said.

### 'IT'S ABOUT THE CONSUMER'

The TV station, co-owned by licensees Venture Technologies Group and Malibu Broadcasting, is not violating any FCC technical rule, its owners said.

"We are fully living up to the FCC's guidelines as a licensee. We are following the intent of the rules by providing a new and innovative voice to the community," said Paul Koplin, chief executive officer of Venture Technologies.

WLFM — which had a 1.2 share of the overall 12+ (Monday–Sunday, 6 a.m.–12 a.m.) audience, according to Arbitron's January PPM radio ratings — is "fulfilling the FCC's mission for low-power TV," Koplin said.

"We are a low-power TV station. We are also an audio source. We do so without interference to others. No one has ever complained to the FCC that we cause interference." The FCC met with WLFM officials and gave no indication that the station is doing anything wrong, he said.

"It's about the consumer. We are filling a void in Chicago and are being successful in the middle of a recession. We are viable."

Koplin, who describes himself as an entrepreneur, said WLFM broadcasts a mix of videos and graphics on its visual carrier.

Venture Technologies also owns KSFV (LP) in Los Angeles, another low-power Channel 6 TV station; it airs Spanish-language programming on its aural service. KSFV shows up in Arbitron's PPM radio ratings for Los Angeles with a 0.2 share overall of 12+ audience, according to ratings released in February.

Several analysts contacted for this story believe that Franken FMs are working within the rules of the commission, despite noncommercial broadcaster complaints.

"I think the FCC hasn't acted for two main reasons," said John Crigler, a communications attorney with Garvey, Schubert and Barer.

"First, no one has brought forth a convincing complaint of interference. Second, barring such a complaint, the [Franken FMs] seem to fall between jurisdictional cracks within the FCC."

Dane Ericksen, P.E., consulting engineer with Hammett & Edison Inc., said, "It doesn't appear that the commission is in any hurry to force LPTV stations to convert from analog to digital. It appears analog operation will be allowable for some time to come."

### RATINGS

Arbitron in 2008 began releasing Portable People Meter radio ratings for LPTVs on Channel 6 that either operate a different service on their aural carrier or only operate their aural carrier in 2008. Mega Media Group, which was leasing air time from Island Broadcasting on WNYZ(LP), paid for custom research for its Pulse 87 format and signed a multi-year agreement with Arbitron to participate in New York City's PPM ratings.

Mega Media CEO Alex Shvarts stated then that Arbitron ratings would help Pulse 87 reach the advertising community in a meaningful way and become a legitimate player in a top market.

Pulse 87 was perhaps the best known of the Franken FMs. Shvarts' dance channel had the nation's largest broadcast market to play in, but suffered a variety of financial ills, mostly lack of advertiser support, and ceased broadcast operations in late 2009.

It still streams its dance programming online. The TV station meanwhile now is broadcasting a mix of Caribbean and indie music on the aural carrier, according to licensee Island Broadcasting.

Shvarts told Radio World in 2008 that WNYZ was operating within the rules governing low-power TV. "The FCC's aware of what we are doing. I'm not aware of any concern on their part."

The legal argument he made was based on Sec. 73.653 of the FCC rules governing low-power television licensees, which states: "The aural and visual transmitters may be operated independently of each other or, if operated simultaneously, may be used with different and unrelated program material."

The rule section in question was created during the subscription TV days of the 1970s, said Hammett & Edison's Ericksen, "which clearly creates a loophole for aural carrier only operation of a Channel 6 LPTV."

He also theorizes that most Franken FM stations are overmodulating their aural carriers so as to be competitive with the loudness of other FM stations.

Mega Media Group at one time expected to export its Pulse 87 brand to KSFV(LP), Los Angeles, WDCN(LP) in Washington and WLFM(LP) in Chicago, but leasing deals with the owners of those LPTVs fell through.

Dennis Wharton, a spokesman for the National Association of Broadcasters, said the lobby group does not represent the interests of Franken FMs and has no opinion on the legality of their operations.

# MAKE WAVES

## EXPECT MORE FROM YOUR AM TRANSMITTER



MADE IN USA

**Presenting the Armstrong Transmitter X-1000B**

Bring major market sound to your radio station with the dual, hot-swappable 600 Watt RF modules capable of 150% modulation in Armstrong Transmitter's X-1000B, (1KW HD & DRM ready AM transmitter).

Engineered with the latest technology advances, X-1000B offers high reliability and built-in redundancy. Get ready to save money while improving your sound and reliability. Call us today!



Tel 315-673-1269 ▲ sales@armstrongtx.com ▲ www.armstrongtx.com





## In radio, talk is never cheap. We just made it **less expensive.**

**Introducing the new Nx6 Talkshow System from Telos.** It's got our most advanced digital hybrids ever, for great sound even with cell-phone callers. It handles up to six POTS or ISDN phone lines, and has four separate hybrids that you can use in single or dual-studio configurations. It provides Caller ID, of course, and the built-in mix-minus makes installation easy; no outboard boxes needed. Setup is even easier with a Livewire™ network — plug in a single CAT-5 cable and you're connected. The best part? You can get an Nx6 package with Assistant Producer call screening software and a Desktop Director for only \$3,995 MSRP.

**Telos Talkshow Systems. Give your listeners a voice. Give your talent a boost. Give your wallet a break.**



### **Nx12**

Need to control more phone lines? Check out Nx6's big brother, Nx12. Handles twice the number of phone lines, and can serve two independent studios simultaneously. An Nx12 package with a Desktop Director and Assistant Producer software is only \$4,995 MSRP.



### **ONE-x-Six**

A tight budget doesn't mean you should have to compromise. Get a ONE-x-Six package with switching for up to 6 POTS lines, a built-in Telos ONE hybrid for clear, clean calls, a Telos Switch Console, plus Assistant Producer software for only \$2,995 MSRP.

*Telos*  
AUDIO | NETWORKS

© 2010. Telos, and Livewire are trademarks of TLS Corp.



Radio Never Sleeps. Neither do we. We're here for you, anytime, with free round-the-clock, 24/7 technical support. Call +1-216-622-0247.



# Working With Class 1 Speaker Cable

Have You Looked at Your Cable? Is It the Appropriate Class?

BY STEVE LAMPEN

Remember when a Crown DC 300 was considered a "monster" power amplifier? And then came the Phase Linear 700. Now, today, a kilowatt of audio power is no big thing, and there are amps up to 10 kW.

## WIRED FOR SOUND

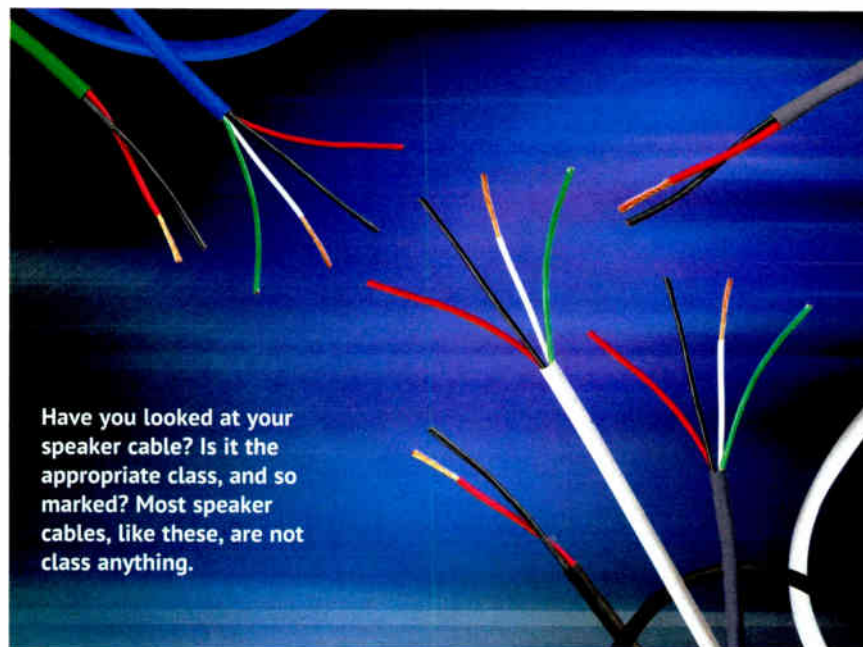
Read more Wired for Sound articles at [radioworld.com](http://radioworld.com)

This brings up an interesting question. If these plug into 120 VAC and a 20 amp breaker, that's a maximum of 2,400 watts. (And any electrician will tell you not to run 20 amps through a 20 amp breaker for too long.) These might not be RMS watts, but that's not the point of the story.

The point is that the speaker output terminals of the super-power amplifiers can now kill you. And what that means is that UL and other safety organizations have taken note of the potential for harm from what used to be a peanut-power output.

The proof is to look on the back of these super-power amps; you will see some odd writing. It will say "Class 2 Wiring Shall Be Used." Or it might say "Class 1 Wiring Shall Be Used" or similar words. What do those mean?

Class 1 and Class 2 wiring can be



Have you looked at your speaker cable? Is it the appropriate class, and so marked? Most speaker cables, like these, are not class anything.

found in the National Electrical Code in Article 725.

That section is titled "Class 1, Class 2 and Class 3 Remote Control, Signaling and Power-Limited Circuits." You can get a copy of the NEC at any technical bookstore, or order it from the National Fire Protection Association at (800) 344-3555.

I have a copy; after reading Article 725, I thought (naively) that I would summarize the requirements here.

Well, it's a lot more complicated than

that and would take up a few columns. If you want to know the details, buy the book. If you want to wire up your amplifier, see what is written over the speaker outputs and do what it says.

So, if you have a super-power amplifier, what does it say on the back? Class 1? Class 2? And have you looked at your speaker cable? Is it the appropriate class, and marked so on the cable?

Most speaker cables are not class anything, so it becomes a question of safety

and liability. This applies to permanently installed amplifiers as well as those on the road. If it says Class 1, then use Class 1.

Some power amp manufacturers are now suggesting much larger gauges for these huge amps. 10 AWG, 8 AWG, even as huge as 6 AWG (5 kW at more than 150 ft.). The question is, can you get 6 AWG Class 1? Sure you can! It's called "Industrial" cable. It's intended for wiring up factories. Just go buy some.

### BUYING

Now if you go to your local audio-video store, it is unlikely that they will even know what you are talking about (much less have some in stock).

Better to go to one of those "big" distributors and maybe even ask to talk to their industrial salesperson. Hopefully, they will cut by the foot because this stuff is expensive. In fact, a lot of industrial cable is sold only in huge quantities (5,000 or 10,000 ft.) and often isn't even manufactured until you order it, so an industrial distributor would be even more valuable.

And it probably would be a good idea to get a short sample before you order it just to see that the conductors will actually fit in the output connectors of your power amp. A 6 AWG wire is one hefty conductor.

If your amp has a special connector on it, like a Neutrik Speakon, you need to know if the cable you are buying will fit into the connector.

You're going to buy some plugs anyway, so you can find out from the Neutrik Web site how big a cable they will take. Those Speakons come in two, four or eight conductors, and go up to 10 AWG wire.

After that you'd better have a serious barrier strip or other termination method. And will those fit the cable? A cable sample would be a really good idea.

The other reason a sample is smart is if you're going to take this on the road. Then you want the cable to be reasonably flexible so you can pack it up and throw it in the truck. A pair of 6 AWG conductors weighs around 30 lbs. per 100 ft. So your speaker cables are going to be short. And you're going to need reliable high-current connectors to extend them. You might have a talk with that same industrial salesperson about connectors.

These cables are also going to have high-strand counts (lots of small wires in each conductor) to be flexible. That means even more expensive.

Steve Lampen has worked for Belden for 18 years and is multimedia technology manager and product line manager for entertainment products. His latest book "The Audio-Video Cable Installer's Pocket Guide" is published by McGraw-Hill.

## Pinching shouldn't be painful.

Our competition may have led you to believe that you know them, or that you can trust them. But the plain truth is that they just want your cash, and lots of it!

In a time when cash is scarce, a better concept in sales, perhaps a more progressive one, is to work for a smaller profit and pass the savings along to the customer.

Realize the savings you can put in your pocket.

Call, click, or stop by Progressive Concepts today!

THE BEST IN BROADCAST ELECTRONICS SINCE 1990



 **progressive concepts**  
305 South Bartlett Road • Streamwood, IL 60107

[www.progressive-concepts.com](http://www.progressive-concepts.com)  
(630) 736-9822



# SMART:



JetStream MINI IP Audio Networking System



Logitek Jetstream IP audio networking is smart and our lineup of surfaces gives you more choices. JetStream MINI covers all your console and routing options whether it's for a large standalone console, a smaller desktop control surface or a space-saving virtual controller. You decide what's best for your operation.

With JetStream IP audio networking, it's all about smart choices.

**Next generation 'smart' IP audio.** JetStream supports the latest IP and Ethernet protocols for affordable, easy and ultra-fast audio networking.

**More I/O choices for all sources and destinations.** Just one JetStream MINI handles 64 digital or analog inputs/outputs of your choice and up to four Logitek control surfaces or vScreen virtual controllers of your choice. **Choose what you need.** Everything you need is in one user-configurable, 64-channel node.

Your JetStream can have mic inputs, line-level and digital I/O, built-in EQ, dynamics and mic processing, profanity delay, GPI/O, Internet codecs, WAN support, automation interface, battery power and a whole lot more.

**No computer science degree needed.** JetStream IP audio networking is super easy to set up with built-in memory and automatic configuration. Just plug in and let JetStream do the rest.

**Affordable and flexible.** Regardless of studio size, Logitek's smart architecture allows you to get more done for less. Complete systems start at under \$6000.

# CHOICES:



Artisan



Mosaic



Remora



Pilot



vScreen





# FEMA Edges Closer to Next-Gen EAS

## 'Compliance Clock' Expected to Start in Summer; Chance of Federal Grants to Help Is Unclear

BY RANDY J. STINE

**WASHINGTON** — Only a few hurdles remain before the Federal Emergency Management Agency officially adopts Common Alerting Protocol version 1.2. That step will launch the 180-day countdown for broadcaster compliance and eventually the long-awaited EAS upgrade.

FEMA is still waiting for OASIS, a standards setting organization, to give the go-ahead on CAP v1.2 before it begins lab tests on a variety of field equipment, including EAS encoders and decoders, to measure compliance with CAP.

The vetting process could last several months before FEMA formally adopts CAP — possibly as soon as August — and a new public warning era dawns, according to public warning experts and government officials.

A nationwide test of the existing

EAS also is in the works; regulators are aiming for January 2011. The Federal Communications Commission has proposed a rulemaking to make that possible, as Radio World has reported.

### SPRING FORWARD

The OASIS Emergency Management Technical Committee presented modified specs for CAP to the full OASIS board in March. FEMA, which approved the CAP profile last fall, expects OASIS to finalize the alerting protocol standard before the end of May.

"Once we get the OASIS standard, FEMA will move forward to adopt CAP v1.2 by late August, we hope," said Damon Penn, assistant administrator for the National Continuity Programs Directorate at FEMA. "Then we'll have full vendor participation in the program and begin the 180-day conformance clock for broadcasters and other stakeholders."

Any delay by OASIS in the formal approval of the CAP profile likely would cause FEMA to delay starting the adoption clock until sometime in the fourth quarter of 2010, according to experts.

CAP v1.2 will become the standard for FEMA's Integrated Public Alert and Warnings System, which will be launched sometime after the broadcaster readiness deadline. Observers describe IPAWS as the integration vehicle designed to bring disparate warning systems under one protocol.

FEMA officials reiterated the new EAS will include more diverse warning capability to reach a wider population, including text messages, Internet warnings and multiple language messaging.

"Broadcast radio and TV and cable shall remain the backbone of EAS. But our population is changing and people don't necessarily spend their time listening to the radio or watching TV like they used to," Penn said.

Penn did confirm that FEMA no longer sees RBDS as "fitting into a national warning program," even though IPAWS architecture supports RBDS technology. "Certainly individual states can utilize the technology, and some have already. It just doesn't suit our needs at national."

He cited support of FEMA's efforts from EAS stakeholders at the National Alliance of State Broadcasters Associations 2010 EAS National Summit, which was held with backing from NAB in Washington in March. See the agenda at [www.nasbaonline.net](http://www.nasbaonline.net).

### FCC, FEMA IN LOCKSTEP

"Equipment vendors are eager to roll. They are very positive they can meet the compliance deadline to provide enough CAP-compliant EAS encoders and decoders and upgrades to existing equipment in the field," Penn said.

Harold Price, spokesman for Sage

*(continued on page 16)*

## CAP TO EAS: WHAT IT MEANS FOR YOU

Radio station operators will be affected when FEMA officially adopts the updated Common Alerting Protocol for use in an improved emergency alert system.

That adoption will begin a 180-day countdown clock for broadcasters to have equipment capable of receiving and decoding CAP messages installed.

Darryl Parker, senior vice president of manufacturer TFT Inc., said the FCC is just starting the process to make changes to Part 11 of the commission's rules, so broadcasters need to move slowly at this point. "Until the regulatory process is settled, it will be hard for radio stations to prepare for requirements that the FCC has yet to define."

The FCC's EAS rules will need to be revised in order to accommodate CAP; the commission is asking for informal comments on how Part 11 rules should change. For example, it suggested, commenters might address equipment requirements, organization, operations, testing and access for people with disabilities and non-English speakers, as well as how EAS participants should configure their networks to CAP-formatted alerts disseminated by new delivery systems like wireline, Internet or satellite.

"Stations should comment in regards to all manner of things that should be changed with EAS rules. Stations should consider their roles in EAS and suggest how changes in the rules would permit them to be more responsive in alerting their listeners to emergency situations," Parker said.

Since it is clear that some form of CAP distribution will be implemented, broadcasters eventually will need to purchase new CAP-capable EAS encoders/decoders or upgrade current equipment with a downloadable software update in some cases. Several EAS equipment manufacturers have been shipping CAP compliant gear for the past 18 months.

"Any new purchases now should be made with CAP in mind. Don't get an EAS-only solution at this late date," said Harold Price of Sage Alerting Systems.

Options may include purchasing a CAP converter that sends EAS alerts to an existing legacy EAS device, he said.

"If you need to buy right now, the best option is to purchase an integrated single device that can do both CAP and EAS," according to Price.

Broadcasters who are not CAP-compliant at the end of the 180 days will likely be able to apply to the FCC for a temporary compliance waiver.

— Randy J. Stine

**EAS  
CAP  
and  
BEYOND**

**Digital Alert  
Systems**

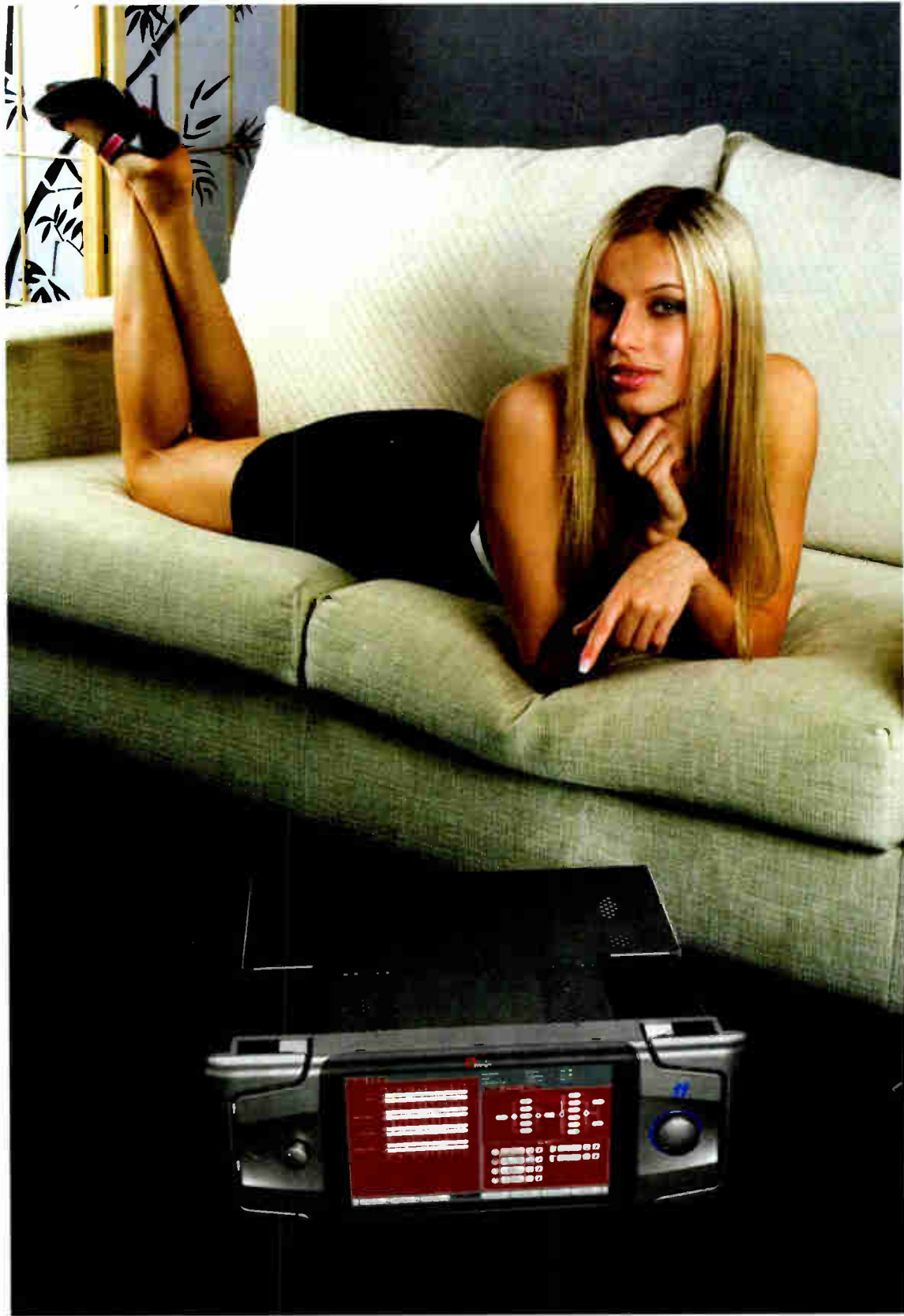
**YOUR PARTNER on the ROAD to COMPLIANCE**

the **PRODUCTS** the **PEOPLE** the **COMMITMENT**

[www.digitalalertsystems.com](http://www.digitalalertsystems.com) 585-765-1155

a division of **MONROE ELECTRONICS** est. 1954





**MORE REVEALING.**  
**OMNIA.11**



©2010 TLS Corp. Omnia is a trademark of TLS Corp. All rights reserved.

[OmniaAudio.com](http://OmniaAudio.com)

World Radio History



# A radio network needs affiliates. So does your audio network.



Imagine a radio network with only 3 or 4 affiliates. Not much value there. An audio network is like that, too: the more devices attached, the greater its value.

Nobody knows this better than Axia. We invented **Livewire™**, the technology that turns **standard Ethernet** into a powerful audio network. With our huge installed base of broadcast studios around the world, we've attracted **dozens of partner companies** who are now offering Livewire-compatible products too. A device with a Livewire port is instantly available to any other device on the network.

And more compatible equipment is likely on the way. The IEEE is working on a consumer electronics standard called "AVB" (802.1), which is similar to Livewire. When the standards-making process is eventually complete, CD players and other devices that can interoperate with Livewire studio equipment will probably appear.

Everyone agrees **IP-Audio is the future**. Networking technology gives us new capabilities, new ways to manage and distribute broadcast audio -- even as it reduces cost. It's an exciting time to be in broadcasting.

**Livewire**: connecting the future — today.



[AxiaAudio.com](http://AxiaAudio.com)

If money is no object, this console is for you.

(It's also for those who live in the real world.)



Introducing **iQ™**. The brilliant new IP-Audio console from Axia.

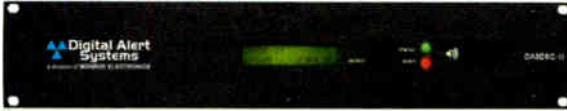


[AxiaAudio.com/iQ/](http://AxiaAudio.com/iQ/)



## DASDEC-II CAP-Based Next-Generation EAS Architecture

DASDEC-II, the most complete next-generation emergency messaging system available – now and for the future. A drop in replacement for any Encoder/Decoder, it will support your legacy operations and at the same time provide communication links for advanced station technologies. With our optional multicast software, one unit can support up to 5 streams with individual control and identification. Configured as an Intelligent Remote, the DASDEC-II system can support



EAS monitoring at locations thousands of miles away, reporting back to a central station for insertion. With such features as; web-based interface through any browser - no special

PC software, optional internal radios, internal AES switching, standard Ethernet port, optional internal MPEG encoder, cost of ownership, rack space and complexity are reduced.

With the DASDEC-II you are getting not only a piece of equipment, but the company behind it. Digital Alert Systems is a division of Monroe Electronics, in business since 1954. We design and build all our products here in the U.S. Many of our employees have been involved with EAS since its inception. We stay involved with industry groups and monitor regulatory developments. By doing so we can be your resource for compliance information and develop the tools you need to meet the upcoming mandates. Digital Alert Systems has the Products, the People and the Commitment for EAS – CAP and Beyond.

For information contact Digital Alert Systems at 585-765-1155 or visit [www.digitalalertsystems.com](http://www.digitalalertsystems.com).

PRODUCT SPOTLIGHT

Advertisement

## Sage Digital ENDEC Is Ready for CAP

The Sage Alerting Systems Sage Digital ENDEC provides compliance with the new Common Alerting Protocol (CAP). Now that FEMA has begun a pilot test of protocol conformance, and the FCC has started an informal comment period prior to an expected rule making action, CAP appears to be on the way in 2010.



Designed as a drop-in replacement for its original EAS product, the blue Digital ENDEC handles all of your Emergency Alert System needs, as well as the new CAP requirements. The Digital ENDEC adds digital AES audio support, LAN interface, Flash upgrade, e-mail reporting, enhanced logging and a free software update to CAP 1.2 once the protocol is approved.

Sage is able to leverage its years of experience in alert systems for broadcasters. The same engineers who designed the original ENDEC in 1994 are still on the team in 2010 for CAP. Sage has been active in CAP profile development, multi-vendor interoperability, filing comments with the FCC and in the CAP conformity pilot test. Sage systems are in use at the Federal, State and Local levels, as well as at broadcasters. The Sage team even includes a past radio station engineer and station owner.

For information, contact an ENDEC distributor, BGS, BSW, GBS, Harris or SCMS, or Sage directly at 914-872-4069 or [info@sagealertingsystems.com](mailto:info@sagealertingsystems.com).

PRODUCT SPOTLIGHT

Advertisement

## EAS

(continued from page 12)

Alerting Systems, cited estimates that at least 10 percent of the broadcast industry has already upgraded to devices that can take the updated CAP and place it directly on the air as an EAS alert. (See sidebar story on page 10 on broadcaster preparation.)

Broadcasters have known since 2007 that they must be able to receive CAP-

ed federal implementation of next-generation alerting systems," Barnett said. "We expect to take a more active role in implementation of next-generation EAS, in coordination with FEMA, via testing and technical guidance."

FEMA, FCC and the National Oceanic and Atmospheric Administration are federal partners in developing an enhanced EAS. FEMA was given the responsibility of leading the project by President George W. Bush.

**NAB**  
NATIONAL ASSOCIATION OF BROADCASTERS

### FM radio in cell phone

- Not just about EAS
- FM radio in cell phone is a complement to ALL alerting systems:
  - EAS
  - NOAA
  - CMAS
- It's broadcasters who provide the detailed, comprehensive disaster coverage that people need
  - BUT YOU NEED A RADIO!

NAB has emphasized the reliability of radio during emergencies. At the recent EAS Summit, the association stressed that FM radio in cell phones would be a complement to all alerting systems.

formatted messages 180 days after FEMA adopts CAP, Price said.

The conformance testing labs are in place at Eastern Kentucky University, where preliminary work with the CAP v1.2 protocol is taking place, Penn said. "CAP testing there cannot begin in earnest until OASIS approves the final protocol."

The FCC has been in lockstep with FEMA on planning a new EAS. The commission's recently released National Broadband Plan calls for the FCC to explore and develop a multi-platform, redundant, next-generation alert system that uses broadband capabilities, according to Jamie Barnett, chief of the FCC's Public Safety and Homeland Security Bureau.

"We are launching into the broadband world. It will be interesting to see how broadband will play into all of this," Barnett said.

The broadband plan also asks the president to clarify agency roles on the implementation and maintenance of a next-generation alert and warning system.

"This would be an important step toward improved, timely and coordinat-

The FCC is eager to implement nationwide testing of the enhanced EAS, experts note. It has a pending rulemaking proposal (EB docket 04-296) that calls for changing the commission's Part 11 rules governing EAS to provide for annual, national EAS testing and data collection from such trials. Comments are due 30 days after Federal Register publication, which had not occurred as of March 30.

### FEMA WILL PROVIDE ALERTS

"The Alaska statewide test of the EAS in January was a good starting point, but national tests will allow us and our federal partners to ascertain how well EAS would perform if there were a presidential activation," Barnett said.

The Alaska EAS test included an Emergency Alert Notification, which would allow the president to address the national during a national emergency; it was issued by FEMA at its headquarters in Washington (Radio World, Feb. 10).

The FCC is looking at outreach efforts to educate broadcasters and other stakeholders on the new protocol, but "we are not in position to offer training" on CAP implementation, Barnett said.

Meanwhile, NOAA continues to make incremental changes to conform to CAP, both online and in its weather radio alerts and broadcasts, said Herb White, dissemination services manager for NOAA's National Weather Service.

NWS continues to place markers within its messages to indicate the call to action using the original CAP 1.1 that allows CAP software to extract information, White said. The newer version of CAP will be implemented once the Weather Radio Improvement Project is initiated next year. The WRIP program is intended to consolidate communications infrastructure in NWS field offices.

FEMA also will boost the number of Primary Entry Point radio stations, from the current 40 up to 75, by the end of 2011. PEP radio stations are viewed as a "network of last resort" to air presidential messages in a post-event scenario, said Watt Hairston, project manager for the Primary Entry Point Advisory Committee. PEPAC helps FEMA and is responsible for managing program-related equipment at PEP stations.

Clay Freinwald, chair of the Washington State Emergency Communications Committee, said that while a few pieces of an enhanced EAS are yet to be fit together, the ball is rolling down the road.

"The existing EAS as we know it will continue for a while yet," Freinwald said. "All of these different elements will take some time to come on board and improvements made. Broadcasters will have to buy new EAS equipment or upgrade what they have. Then they'll

have some enhanced features and capabilities.

"It's very reassuring that FEMA has said it will have the ability to provide CAP alerts once the 180 days is up. At least broadcasters and cable operators will have something to plug into the mandated equipment."

#### FUNDING?

Might there possibly be government grant money to help stations pay for CAP-compliant EAS encoders/decoders? That's unclear.

Rep. Mike Rogers, R-Ala., ranking member of the Subcommittee on Emergency Communications, Preparedness and Response, said at the EAS Summit that if federal grant assistance were made available, it could help some broadcasters who have been unable to upgrade to comply.

Rogers' office told Radio World it is talking to the NAB to identify specific costs for CAP-compliance equipment.

"As the deadline for CAP compliance draws near, FEMA may need to assess the situation on a case-by-case basis, since the possibility remains that some assistance may be needed. But at this juncture," Rogers said, "the prospect that there would be some kind of federal financial support to most stations for their new EAS equipment is unknown."

Meanwhile, IPAWS is coordinating with other FEMA divisions to see if EAS language can be added to existing FEMA grant criteria, a source told Radio World.

## ON THE ALERT FOR RADIO

*The 2010 EAS National Summit was held in March in Washington, presented by the National Alliance of State Broadcasters Associations with support from the NAB.*

*The event's planning committee is a list of opinion leaders among broadcasters on the alerting issue.*

*Ann Arnold, President, Texas Assn. of Broadcasters, Co-Chair  
Whit Adamson, President, Tennessee Assn. of Broadcasters, Co-Chair*

*Mark Allen, President & CEO, Washington State Assn. of Broadcasters  
Ann Bobeck, Senior VP & Deputy General Counsel, NAB  
Art Brooks, President, Arizona Broadcasters Assn.  
Robert Fisher, President & CEO, Nevada Broadcasters Assn.  
Suzanne Goucher, President & CEO, Maine Assn. of Broadcasters  
David Layer, Senior Director, Advanced Engineering, Science & Technology, NAB  
Jackie Lett, President, Mississippi Assn. of Broadcasters  
Christine H. Merritt, President, Ohio Assn. of Broadcasters  
Louise "Lou" Munson, President & CEO, Louisiana Assn. of Broadcasters  
Robin Oxford, Director of State Assn. and Membership Outreach,  
Government Relations, NAB*

*C. Patrick Roberts, President, Florida Assn. of Broadcasters  
Paul Rotella, President & CEO, New Jersey Broadcasters Assn.  
Sharon Tinsley, President, Alabama Broadcasters Assn.  
Michelle Vetterkind, President, Wisconsin Broadcasters Assn.  
Larry Walke, Associate General Counsel, NAB  
Regina Sullivan, Principal, RSullivan & Associates, Summit Coordinator*

## Gorman-Redlich: CAP to EAS Converter

Built by the experts with 35 years of experience in the emergency alerting industry.



This is a standalone unit that will translate received CAP alerts into EAS headers and digital audio converted to analog audio which will then be transmitted into your current EAS equipment. It is intended to work not only with Gorman Redlich EAS but with all other brands of EAS equipment.

Features are:

- Compatible with existing IPAWS CAP Profile
- Built-in text-to-speech functionality
- Standalone CAP-to-EAS conversion does not require purchase of new encoder-decoder
- E-mail alert reports via built-in SMTP server
- Print alert reports to USB or network printer
- 500+ MB on-board storage for log files and message/audio archives
- Software can be updated via LAN
- May be configured via available VGA monitor, mouse and keyboard connections
- Automatically updates and synchronizes clock via preconfigured NTP servers
- RS232 serial port for data transfer
- Up to 8 USB ports for attaching printers, storage devices, network adapters
- 10/100/1000 Gigabit LAN connection for fast network connectivity
- Reads and processes RSS feeds to monitor lists of CAP alerts
- Codecs for decoding and playing MP3 or OGG Vorbis alert audio
- 1/8" TRS jacks for audio in, audio out, and microphone in
- Powerful 1.6GHz dual core Intel Atom 330 processor

For more information contact Gorman-Redlich Mfg. Co at 740-593-3150 or visit [www.gorman-redlich.com](http://www.gorman-redlich.com).

PRODUCT SPOTLIGHT

Advertisement

## viaRadio Offers Complete RBDS Emergency Warning Package

The ENVOY Emergency system provides a turnkey platform for disaster warning and communication outreach to citizens, government officials and emergency management teams. ENVOY Emergency Solutions platform uses high-quality encoders, decoders, FM radio receivers and software to give local FM stations the ability to provide an emergency warning platform that their local communities can afford.

viaRadio established the HEARO network with the support of local broadcasters who allow messages to be sent via RBDS, immediately notifying their local communities with important weather and emergency information.



Unlike other products, viaRadio uses less than 1% of the RBDS bandwidth in normal mode and messaging doesn't interfere with other uses of the RBDS. Partner broadcasters receive a free sophisticated, easy to use, DSP-based encoder with an unlimited lifetime warranty that supports all RBDS/RDS features including new enhanced scrolling PS for Title and Artist display on any RDS car radio and RT+ for mobile devices. Messages are generated by local officials and automatic CAP 1.1 messages can deliver relevant NOAA and FEMA information. ENVOY encoders can also be triggered from EAS boxes to enhance EAS notification and stations can also display severe weather messages in scrolling text as desired.

Warnings are delivered to HEARO receivers, which feature NOAA audio, alarm clock, battery backup and support for special needs.

For more information or to join the HEARO Network, visit [www.viaradio.com](http://www.viaradio.com) or call 877-445-0001.

PRODUCT SPOTLIGHT

Advertisement



# Crash! Let an Ice Bridge Do Its Job

And While You're at It, Keep the Top of Your Transmitter Clear of Stuff

Winter and spring have been rough seasons all over the country. Director of Engineering for Montpelier Broadcasting Jon Hosford just got back from a trouble call on top of Ricker Mountain, home of the WNCN(FM) transmitter plant.

The original trouble call was about the failure of his main STL. When Jon and Chad Brosseau finally got to the site, they were greeted with the scene

## WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

in Fig. 1. That's Chad in the picture, at the base of the tower, providing visual scale.

One heck of a piece of ice obviously had fallen off the tower (and the top is only about 80 feet high). Ah, winters in New England.

But the picture doesn't describe the whole story. As bad as this looks, none of the lines was damaged. The ice bridge did its job.

If your area is prone to ice, don't let management talk you out of an ice bridge.

The rest of the story, and another lesson to be learned, could be found inside the building. When the ice hit it yanked the 1-5/8 transmitter feed line all the way back to the transmitter, a Harris HT3.5. Sitting loose on top of the transmitter was a fairly heavy Sloane filter for the STL receiver. It promptly fell off, yanking the cables right out of three of the four connectors. Jon writes, "It's hard for an STL to work without an antenna connected to it."



Fig. 1: There's a reason they call it an 'ice bridge.'

He replaced the jumpers and the main STL was back in service. Problem solved.

The moral: Never assume your transmitter can't move enough to knock something off its top. I'm sure engineers from stations in earthquake zones understand that; but on a mountain in Vermont?

The Sloane filter now is securely tied so that it won't fall again. Yes, in a perfect world there would be nothing on top of a transmitter; but Jon doesn't live in that world.

Jon Hosford can be reached at [jhosford@pointfm.com](mailto:jhosford@pointfm.com).

While we're in Vermont, here's a tip from Hall Radio's Dennis Snyder for engineers who still enjoy troubleshooting down to the component level.

Rather than just relying on the trusty "solder sucker" to clear component holes, Dennis says, stop by your local welding dealer and purchase an oxygen/acetylene tip cleaner. They are under \$10; Dennis suggests you select the one with a longer cleaning wire.

The tip cleaners are made of stainless steel, therefore the melted solder will not adhere to the wire. In a tight location, this wire can reach the solder-filled

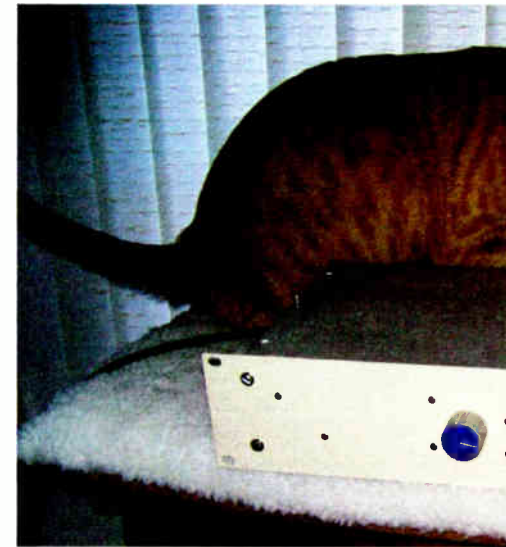


Fig. 2: A labor of love: Buc's home brew processor undergoes final inspection.

hole and clean it out much easier than a solder sucker. Be sure to select a size smaller than the component leads you are cleaning.

The tip cleaner wire can be aligned directly on the center of the lead hole on the component side of the board. Apply a little pressure. With the iron on the opposite side of the board, as soon as the solder melts the wire should pass through the hole.

There's another benefit: The tip cleaner wires have serrated edges. Therefore the tool can be used as a miniature rasp file to clear the remaining solder by enlarging the component hole. If the board uses plated-through holes, Dennis urges caution that you don't remove the plating as you clear the hole.

Thanks, Dennis, for a great idea — inexpensive, too.

Dennis Snyder is director of engineering for Hall Radio's Burlington, Vt., cluster. He can be reached at [dsnyder@hallradio.com](mailto:dsnyder@hallradio.com).

## Model 730 Inovonics' Flagship RDS/RBDS Encoder

Supports RT+  
Song Tagging

Featuring a front-panel LCD screen and jog wheel for instant on-site setup, the 730 may also be programmed easily through any of its data ports using the included Windows® software. USB, TCP(x2), UDP and serial ports can accept both ASCII and UECP command sets.

The 730 connects directly to, or can be networked with virtually any playout system and offers full support for RT+ 'tagging,' TMC traffic updates and other ad-

vanced applications. An Internet connection will assure accurate Clock Time and Date (CT) timekeeping.

Internal data diagnostics and transmission safeguards guarantee foolproof installation and operation, and field-upgradable firmware ensures compatibility with any forthcoming RDS/RBDS applications.

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



**Inovonics**  
1305 Fair Ave. • Santa Cruz, CA 95060  
TEL: (831) 458-0552 • FAX: (831) 458-0554  
[www.inovon.com](http://www.inovon.com) • e-mail: [info@inovon.com](mailto:info@inovon.com)





Here's a little nostalgia, especially for the more senior engineers reading this column.

There was a time — before an engineer might have to take care of 10 or more stations in multiple markets — when you had time to experiment and build things.

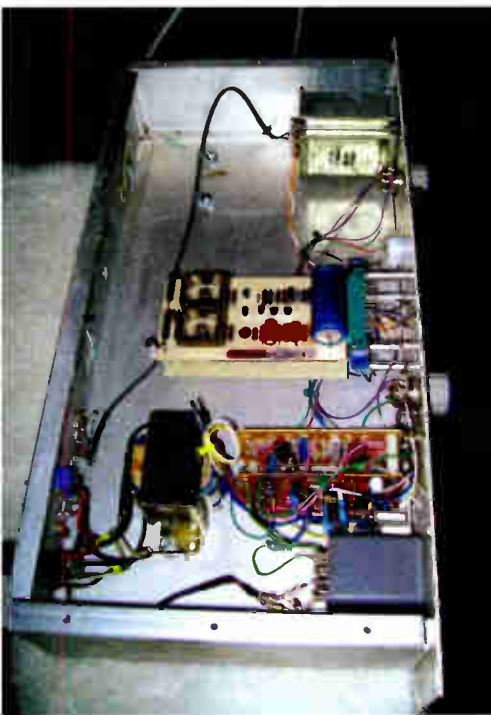


Fig. 3: Once upon a time, every engineer had time to build projects like this.

Fig. 2 shows a beauty shot of a "vanilla" broadband audio limiter, made using Spectra Sonics audio modules and built by Buc Fitch.

Buc is constructing these for stations in Honduras. In Fig. 3, you can see the hand-wired PCB power supply and meter amp. The latter uses a variation of the circuit discussed in his 2008 op amp article in Radio World Engineering Extra ([www.rwonline.com/article/69878](http://www.rwonline.com/article/69878)). The meter is at rest at 0 dB and deflects downward to show compression.

Ben the cat is Buc's QC inspector;

Ben was intrigued by the bands on the 2 watt 680 ohm load resistor on the back terminal strip during checkout.

By the way, Buc needs a schematic for the Spectra Sonic modules. If you have one, please let him know. Contact Charles "Buc" Fitch, P.E., at [fitchpe@comcast.net](mailto:fitchpe@comcast.net).

Talking about building things: Robert Richer, an engineer in Connecticut, sent in Fig. 4.

Hey, an engineer's got to keep his coffee warm. This coffee cup warmer is energy efficient.



Fig. 4: An ingenious way to keep your coffee warm.

Send me pix of your own good ideas, station catastrophes or visual humor. I'm at [johnbisset@myfairpoint.net](mailto:johnbisset@myfairpoint.net).

John Bisset marked his 40th year in broadcasting recently. He is international sales manager for Europe and Southern Africa for Nautel and a past recipient of the SBE's Educator of the Year Award. Reach him at [johnbisset@myfairpoint.net](mailto:johnbisset@myfairpoint.net). Faxed submissions can be sent to (603) 472-4944.

Submissions for this column are encouraged and qualify for SBE recertification credit.

# Ready Today. (and every day from here on out.)

## SAGE DIGITAL ENDEC

01/28/10 09132441  
MENU WEEB TCG

Enter

▲ ▼



Computer

Incoming Alert

Outgoing Alert

Attention Tone

Automatic

Digital Audio Lock

Mic



### Distributors

- Broadcasters General Store
- BSW
- Giesler Broadcasting Supply
- Harris Corporation
- SCMS

The next generation of the famous SAGE ENDEC has already shipped to hundreds of broadcasters and public safety agencies across the country. As FEMA and the FCC prepare for CAP1.2 compliance, broadcasters are already taking advantage of the many new features and functions of the SAGE Digital ENDEC including:

- AES/EBU Digital Audio
- 10/100 Base-T Network Connectivity
- Web-based control and monitoring
- Enhanced logging
- More printing, monitoring, and remote control options
- Easy software upgrading to comply with future changes

Of course, if there are any last minute changes to the CAP1.2 spec, or changes at any time in the future, an upgrade is literally minutes away via a simple software download.

The SAGE Digital ENDEC is the only EAS box you'll ever need.

SAGE Alerting Systems, Inc  
800 Westchester Avenue, Suite 641, North Rye Brook, NY 10573  
Phone 914 872 4069 • [Info@sagealertingsystems.com](mailto:Info@sagealertingsystems.com) • [www.sagealertingsystems.com](http://www.sagealertingsystems.com)



## AM DX

(continued from page 1)

Why is it possible for me to hear so many distant U.S. stations (and some Canadian) here in the Great White North? Moreover, does it matter to stations such as WSB and WGN that distant listeners can hear them?

### AM DXING

As most Radio World readers will know, what I was doing in tuning around the dial is AM DXing.

DX is a radio hobbyist acronym for

long distance. Since the earliest days of radio, AM DXers have "surfed" the AM band, trying to hear distant stations.

When they hear a distant station's call sign, DXers write it down along with details of what's being played on air, the time and date. They send that information to the station in hopes of having their "reception reports" verified by the station's engineer. Such requests and confirmations are known as QSLs. (Ham operators exchange them too.)

Even in the Internet Age, there are AM DXers who scan the band for "catches." At Tribune station WGN in

Chicago, for instance, "I receive 10 to 15 DX letters each year," says Director of Engineering James J. Carollo.

"It is quite normal during winter months to receive five or six letters from European countries, especially Denmark, Finland and Sweden. DXing is quite popular in those countries. They seem to enjoy taking vacations to remote cabins on the tundra specifically to capture remote signals from North America."

Today, it is common for DXers to send audio clips by e-mail to prove their reception, rather than handwritten logs by paper mail.

"I send each of them a QSL card and a small promotional item, usually a static sticker with our logo on it," Carollo said. "They delight in sending letters describing themselves and their families, and they take the time to explain quite a bit about their communities and lifestyle. I find it quite enjoyable to correspond with them."

### VESTIGIAL HABIT?

Medium-wave propagation characteristics make DXing an endeavor best done in the dark.

During daylight hours, a component

## FNS London

Back in the mid-1970s I was employed as chief engineer of Westinghouse Broadcasting's Foreign New Service/FNS, which comprised a number of overseas bureaus and correspondents working through a London-based headquarters.

### FIRST PERSON

Unfortunately, because of budget costs, the network was closed down in June 1976; at that time the London Correspondent was Charles Bierbauer, who went on to see great success as CNN's senior Washington correspondent, with Jack Pluntze, who returned to WBZ in Boston, as bureau chief. News and feature stories were passed to the main Washington bureau via twice-daily telephone feeds.

The photos bring back those memories. The main console is a heavily modified mono eight-channel Sparta Electronics A-Series, connected to a pair of Leever-Rich Series E 1/4-inch reel-to-reel, tube-based recorders, while at the other end we see a Shure M67 mixer in a custom cabinet that operated with the other pair of recorders — mainly used for editing and archiving functions.

There was also a small voice booth for bureau staff, together with a maintenance shop where I oversaw repair and fabrication of various Sony-brand cassette recorders and telephone feed-boxes. Halcyon days!

Reasons for the closure of Westinghouse's prestigious FNS were complex, but remember that in those years NBC's fledgling News and Information Service/NIS, together with AP's and UPI's audio focus, made the radio network's proprietary collection of bureaus

## Where Great Radio Begins Intraplex® — Convert T1 to IP



"You told us you're spoiled by the rock-solid reliability and outstanding quality of your Intraplex T1 full-time links and STLs. But you want to lower your recurring costs by converting from T1 to IP. Now, our CM-30 network card helps you easily make that switch."

Field-conversion of your Intraplex T1 rack to IP takes just minutes — and the CM-30 is fully compatible with your existing audio, voice and data interface cards. It's an upgrade that pays for itself by reducing your network services expenses — while retaining the superior operation of the Intraplex system you trust."

*Bob Band, Intraplex Broadcast Product Line Manager at Harris, has been helping radio stations worldwide choose the best "always on" audio links for nearly 20 years.*

Learn more at [www.intraplex.com](http://www.intraplex.com) or (800) 622-0022.

[harris.com](http://harris.com)

**HARRIS**  
assuredcommunications

Broadcast Communications • Government Communications Systems • RF Communications

of AM and shortwave radio signals called the ground wave travels from tower to receivers, in a generally predictable manner. A secondary component, the sky wave, travels off the planet into space.

At night (and occasionally during the day), things change. The layered ionosphere, which has been charged by the sun's rays, begins to act more like a mirror.

"When this happens, AM radio signals begin to bounce off the ionosphere, and the angle of their reflection causes them to land back on the planet at a considerable distance from the tower," says Wayne Heinen, chairman of the National Radio Club, a hobbyist

organization that includes AM DXers. "This is why you can hear WSB Atlanta in Ottawa, Canada." (FM and TV signals exhibit their own characteristic reflection qualities.)

In the early days of radio, engineers liked to receive DX reception reports, especially if they worked at high-powered "clear channel" AM stations whose frequencies were licensed to reach great distances, in part to serve rural areas reliably at night.

DX reports proved that these transmitters were operating properly and gave station salespeople anecdotal support in their efforts to attract national advertisers.

(continued on page 22)



Wayne Heinen is chairman of the National Radio Club.

# Memories

around the world a non-viable solution to newsgathering.

— Mel Lambert



Westinghouse Broadcasting's Foreign News Service London Bureau; 1975/76

Images by Mel Lambert|content-creators.com



Westinghouse Broadcasting's Foreign News Service London Bureau; 1975/76

## Where Great Radio Begins PR&E<sup>®</sup> VistaMax<sup>™</sup>



"VistaMax is at the forefront of the evolution from standalone consoles to networked control surfaces, centralized audio management and shared resources. Power, scalability and value assure that all PR&E products meet the needs of everyone at your station — on-air talent, producers, programmers and engineers.

There is no greater evidence of our flexibility and reliability than the number of stations — large and small — that benefit from PR&E innovations every day."

*Paul Barzizza, Manager of Business Development for Radio Studio Solutions at Harris, has been helping PR&E customers design, configure and equip great studio facilities for more than 10 years.*

Learn more at [www.pre.com](http://www.pre.com) or (800) 622-0022.

[harris.com](http://harris.com)

**HARRIS**  
assuredcommunications

Broadcast Communications • Government Communications Systems • RF Communications



## FEATURES

## AM DX

*(continued from page 21)*

Radio in the United States has now evolved into what is largely a locally-oriented medium. While some voices still press for AM regulation to protect their regional or national footprints, the business and regulatory emphasis in the 21st century tends to be about stations' local reach, even when those stations include syndicated content and national ads in their mix.

This begs the question: What are DX reception reports worth to today's AM engineers? Sadly, not much, according to Director of Engineering Charles Kinney at Cox station WSB.

"From an engineering standpoint, they have no importance," he tells Radio World. "But it is still nice to know that people are hearing us in Western Europe

**They delight**  
in sending letters  
describing themselves  
and their families.

— James J. Carollo

and even South Africa. Even today, I still get two or three reception reports a month, and we do send out QSLs to confirm them."

At CBS station KMOX in St. Louis, "We get reception reports from Europe, but not that many from the United States anymore," says Paul Grundhauser, station engineer.

"It is getting harder for people to hear us due to more stations being allowed on clear-channel frequencies. As well, HD Radio has not made things any easier, since these signals cause interference to the analog signals on the AM band.

"This said, reception reports really don't affect how we do things at KMOX, in terms of our transmitter and antenna. I don't think it has an effect on sales either."

## DXING ENDURES

Most of today's AM broadcasters may not care that their signals are reaching past their local coverage areas, but it appears that DXers will keep tuning in and telling them so.

"This hobby is alive and well," says NRC's Heinen. "Even with the Internet and satellite TV, there are still people who enjoy hearing AM stations hundreds and even thousands of miles away." The NRC encourages stations to broadcast "DX tests" during their overnight maintenance periods, when

it's possible fewer stations are on the air on their frequencies.

The most dedicated AM DXers use specialized radios and antennas to improve their catches. They might travel to "electronically quiet" rural sites for better reception. In Norway, some even venture out on the ice in winter, where

electrical noise is nil.

In my case, I tune in on my stock Mazda radio using my factory-installed antenna. Yet, as the Google Earth image included with this report shows, the number of AM stations I can receive is astounding.

Granted, many are buried in noise

and cross-talk from other stations. But when I need to feel better about living away from New York's bright lights, I can reliably tune to WCBS's traffic reports. That always helps.

*Does your station hear from DXers? Tell us about it. Write to radioworld@nbmedia.com.*



This map shows stations heard by the author on his Mazda's stock radio while driving in and around Ottawa.

## FROM FINLAND AND BACK

Marko Rossinen, who lives in the small community of Rautavaara in eastern Finland and has been DXing for more than 26 years, e-mailed KMOX in St. Louis in January seeking reception confirmation.

"In the winter it's quite usual that North American medium-wave stations can be heard here in Finland," he wrote to the station. "But this is not a daily phenomenon — reception varies usually in the cycles of one month and in the longer term in the cycles of 11 years because of [the] sun's activity and sunspots. The sunspot minimum was reached in April 2009 and the next minimum will be in 2018."

Rossinen provided a description of the geography and history of Finland — "maybe the best known Finnish product are Nokia's mobile phones. Nokia is also the biggest enterprise in Finland and its headquarters is situated in Espoo" — as well as a discussion of Finnish emigration to North America.

He then reported that he "had the pleasure of listening to your station KMOX broadcasting on 1120 kHz in the 267.86 meter band on the 29th of December 2009 at 10:10-10:36 p.m. Central Standard Time." He provided a description of the programming (a call-in show about hockey, plus spots), and he rated the signal strength, interference, noise, propagation disturbance and overall "merit" of the reception on his Japan Radio Corp. receiver and 100 meter wire antenna.

KMOX and Engineer Paul J. Grundhauser e-mailed back:

*Thank you for your letter to KMOX Radio. It's great to hear from our listeners all across the country and around the world. Your reception report has been checked, and has been found to be accurate; you may consider this letter your verification certificate.*

*Here is some technical information about KMOX Radio:*

*Frequency: 1120 kHz  
Power: 50,000 watts, unlimited hours of operation  
FCC Classification: 1A (Clear Channel)  
Transmitters: 2  
Main: Harris 3DX-50, 50,000 watts  
Alternate Main: Harris DX-50, 50,000 watts  
Antennas: 2  
Main: 476 feet, vertical guyed tower located in Pontoon Beach, Ill., on 45 acres  
Auxiliary: 190 feet, vertical guyed tower, co-located with the main tower in Pontoon Beach, Ill.*

*KMOX signed on the air on Dec. 24, 1925, and has been in its present transmitter location since 1945. KMOX is owned by CBS Inc., and consistently reaches into approximately 45 states, and around the globe.*

*Thanks again for writing us.*



# CAUTIOUS

(continued from page 4)

“With the exception of western Europe and the USA, there continues to be a strong market for radio (and TV) transmitters,” it found. “Outside the USA and Europe, the primary ‘dollar-per-dollar’ earners are radio transmitters, antennas and towers. That is likely to continue to be the case.” Improved purchasing also is expected in consoles, routing systems, servers, infrastructure products and other segments.

D.I.S. says several factors are driving the radio equipment market, here and abroad:

- Continuing upgrade of remaining analog facilities;
- Need for additional studios;
- Ongoing automation, including radio operations for the Web;
- Replacement of aging radio or audio equipment and broader infrastructure, “some of which is easily 50 years old”
- Expansion of Internet radio and other new media platforms
- “Massive increases” in storage and content archiving
- The buildout of server-based systems

Impediments include the condition of the economy; the absence this year of a presidential election or Olympics; ongoing consolidation of operations (thus reducing the number of buyers); saturation within some product genres; a glut of competitors; and the lowering of product prices for all of these reasons.

“To see a bubbling up of radio ad revenues — or at least the end of the period of decline — is certainly an encouraging sign,” the company states.

“But some product genres have seen better days and are not likely to be elevated much even with boosted revenues ... other genres will benefit, as the revenues return and the general economy lifts.” D.I.S. hopes for improvement in the short term and maybe stronger recovery beyond that.

“A good deal of further automation of stations is likely to be another strong

trend, with so much pressure to limit labor costs and repurpose and redeploy assets. Beyond that first year or two, we see a recovery and the meeting of a freshly stronger demand making the third, fourth and fifth years much more bullish.” But D.I.S. cautions manufacturers that prices will tend to remain lower and that some segments will continue to be saturated.

“Topping those concerns off is the added concern that with increasingly software-driven systems, more automation, less diversified ownership, some customers will abandon legacy systems

entirely for purely software-based solutions as the new decade arrives and the market advances.”

The overall tone of the report is cautiously optimistic. But unsurprisingly, an overarching trend for U.S. broadcast is that we’ll continue to do more with fewer people. Sheer concludes:

“Sites will be more and more automated. Crews will remain smaller. Equipment will remain lighter and more compact. There will be more compression in ownership, not only of the production world and distribution world but also in the manufacturing and

services side of the market.

“We would expect that some of the rules of ownership will have to change to allow small to mid-size stations to be owned by less owners, making the number of truly independent stations shrink. Perhaps this will encourage or allow groups to expand or networks to re-configure to better survive the adjusted USA reality of business. At this time we cannot say definitively. But although the USA market will rebound, it will not look entirely the same as it did. It will be leaner and meaner.”

**Moseley**

**WE WANT YOU TO GO APE OVER OUR DIGITAL STL CHOICES.**

**EVENT 5800**  
High Capacity Bidirectional STL  
Up to Nine Uncompressed Stereo Feeds

**STARLINK T1**  
Digital Linear Uncompressed STL/TSL  
for T1/E1 Circuits and Microwave Links

**LANLINK**  
LAN Extender — Data Link for Ethernet  
Networking at the Transmitter Site

**STARLINK**  
Digital Linear Uncompressed STL  
for 950 MHz and all Worldwide STL Bands

DESIGNED AND MANUFACTURED IN THE USA

**WORKBENCH**  
by John Bisset

**EVERY ISSUE**  
**RADIO**WORLD

Moseley has tamed the primitive STL jungle and become the world leader in the technology, design and manufacturing of digital studio transmitter links. Moseley, the first to bring a totally transparent digital uncompressed STL to the broadcast industry, continues that same innovative thinking today.

Don't monkey around with your on-air sound. Call the digital STL experts today.  
Bill Gould (978) 373-6303 | Dave Chancey (805) 968-9621 ext.213

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



# Getting Connected With Mayah

The Diminutive C1141 Squeezes High-End Features Into a Half-Rack

BY LAURA MIR

Looking farther into 2010, there is little doubt that audio over IP will continue to grow in playing a key role in remote broadcasting, studio-to-transmitter links and studio-to-studio audio distribution.

## PRODUCT EVALUATION

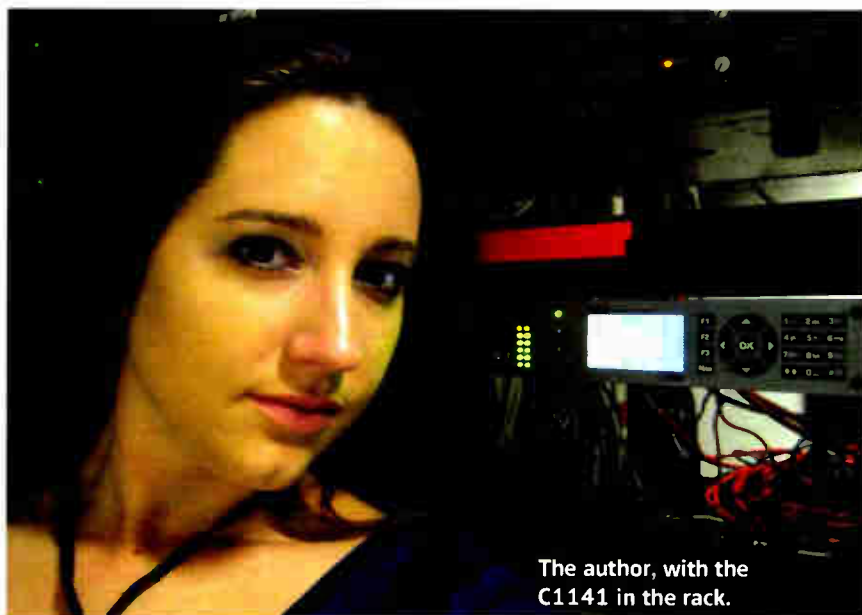
The Mayah Communications C1141 makes all three of these applications possible. The C1141 IP/ISDN codec offers the user the choice of an ISDN codec with IP remote control for management, or a codec for both ISDN and IP.

Out of the box, the first thing that users will notice is the small size, just 1RU half rack. You can add a lot of devices in a small footprint. Its size does not affect its ability to deliver quality audio and offers users a variety of I/O.

Looking at the front, the LCD display is bright and easy to read, and the four

LED meters make it easy to monitor send and receive levels. A simple keypad with function/menu buttons, number pad and arrow selection keys round

out the display. The C1141's sister, the C1140, is identical other than lacking front-panel controls; it is designed for remote use.



The author, with the C1141 in the rack.

### PRODUCT CAPSULE

**MAYAH C1141**  
IP/ISDN Codec

- Thumbs Up**
- + Compact 1 RU half-rack size
  - + Full-featured codec supporting both ISDN and IP audio (bidirectional)
  - + Full-color LED VU in/out meters
  - + Convenient front-panel connection status LEDs
  - + Simple Web GUI for remote access and monitoring

- Thumbs Down**
- A bit arduous to set up without Web GUI

Price: \$3,950

For information, contact Mayah Communications in Washington at (360) 618-1474 or visit [www.mayah.com](http://www.mayah.com).

The rear-panel audio interfaces include analog XLR in/out and AES/EBU in/out/sync along with Ethernet

*(continued on page 26)*

future

radio

antennas

DVB-T

television

ATSC

something has changed

**OMB**  
BROADCAST

broadcast **your** world

International Division  
3100 NW 72nd. Ave. Unit 112  
MIAMI, Florida 33122 USA

Phone: +1 (305) 477-0973  
+1 (305) 477-0974  
Fax: +1 (305) 477-0611

[www.omb.com](http://www.omb.com)  
[uso@omb.com](mailto:uso@omb.com)

# LIVE REMOTES VIA INTERNET? Z/IP MAKES IT POSSIBLE.



**GET A PAIR OF Z/IPs FOR JUST \$5,995. BUT HURRY – SUPPLIES ARE LIMITED.**

High-speed Internet connections are everywhere. Wouldn't it be great to use them for broadcast remotes? Telos Zephyr/IP makes it possible.

The heart and soul of Z/IP is the amazing Agile Connection Technology from FhG. ACT combines state-of-the-art loss detection and concealment with dynamic buffering and adaptive bitrates. Your Z/IP will intuitively use every digital trick in the book to ensure audio gets to your studio with the lowest possible delay.

Not only is the audio incredible, but using it couldn't be easier. Z/IPs can find each other, even behind firewalls and NATS, thanks to a network of distributed servers. Z/IP can even connect to calls from PBXs that use the SIP standard. And users love the big, color display that can even show their connection being routed around the world.

Unless you're broadcasting from the moon, you'll probably find Internet just about everywhere you'll want to do a remote. IP is everywhere. And Z/IP is the best way to hear from everywhere.

*Telos*  
AUDIO | NETWORKS

Radio Never Sleeps. Neither do we. We're here for you, anytime, with free round-the-clock, 24/7 technical support. Call +1-216-622-0247.

© 2010 TLS Corp. Telos, Zephyr, Z/IP are trademarks of TLS Corp. All rights reserved.  
Telos-Systems.com



# MAYAH

(continued from page 24)

(10/100 baseT). For communications the C1141 is equipped with optical in/relay out, USB Type A and USB mini (currently inactive).

## FEATURES

The C1141 (and C1140) also has a module with four ISDN BRI RJ-45 couplers occupying an expansion slot. (Note: other members of the C11 family include expansion slots for PC cards [e.g., Compact Flash and PCMCIA] and SD memory cards while modules for additional Ethernet or ASI are available for placement into the expansion slot holding the ISDN BRI module).

Algorithms supported are G.711, G.722, MPEG Layer II and Layer III, MPEG 4, AAC-ELD, HE-AAC v.2, PCM (16–24-bit), with apt-X/apt-X Enhanced and 4SB ADPCM as options.

Setup of the C1141 was fairly simple, but with any gear that employs an array of options, users are better off walking through the manual. Setup options can be found through the menu buttons on the front or via the Web remote control interface. I found the latter is significantly easier. After assigning the IP address components to the device and logging into the remote interface, configuration of the monitoring, transmission and play/record menus is effortless.

For testing purposes I chose to compare the ISDN connection vs. the IP connections. My first test case utilized ISDN for transmission. Audio was AES in/out and in both cases, IP was used for remote control via a Java applet. The far end of the connection was to another identical C1141. As with previous Mayah codecs, the ISDN interface is

robust, and the processed audio is crisp, clean and highly intelligible at both ends. Connections were made using most of the popular ISDN algorithms L2, L3, G.722, G.711, and there was no noticeable latency.

The second test case utilized the IP interface. This test was far more expansive than one might first think. There are many competing factors that affect the output such as connection rates, jitter, packet loss, etc. I chose to evaluate the following algorithms, L2 mono, L3 stereo, AAC mono, AAC stereo, HE-AAC and HE-AAC v.2.

I experimented with a studio-to-studio set up using the two C1141 connected across a local area network. As I expected, I had mixed results.



Front and Rear Panels of the C1141

At L2 mono 64 kbps, there was little audible latency or jitter, however as I sought to increase the bit rate to AAC stereo 128 kbps the latency and packet loss started to become apparent. Since this was a bidirectional signal, I really needed to be able to cut down on latency.

I was unable to determine if the delay was due to network congestion or latency due to the analog/digital conversions. If latency is not such a big issue, such as in the case of a studio-to-transmitter link, the user can increase the delay

setting in the Ethernet parameters. The delay can be set up to 5,000 mS, so that if the packets aren't received in the correct order, the buffer can delay the transmission so that correct ordering can be achieved. If possible for the user's application, the delay buffer on the receiving codec should be larger than the average network jitter. In my case, my average network jitter was between 23 and 40, so I could choose to set my delay to the same or higher value.

## JITTER TEST

For my testing purposes, however, I chose to disable AJC (automatic jitter compensation), and leave the delay set to 0.

For users unfamiliar with IP audio codecs, FEC (forward error correction)

the C1141 to make connections to other SIP-compatible codecs. This feature greatly simplifies remote broadcasting over IP, and enables users to add on SIP codecs without having to stick with the same brand to ensure connectivity.

For the purpose of this review I was unable to obtain another branded SIP codec to test this feature. I was however able to test the SIP functionality of my two C1141s. Mayah provides an SIP account for every SIP enabled codec. This is basically there to test and try out the SIP functionality for free.

The setup of the SIP account is just as simple as assigning the IP address. Again, accessing the codec from the online Java applet is the simplest method to set up this service. Found on the same menu as the Ethernet settings, users can assign a server, and register their accounts. Once authenticated, a convenient SIP status light appears on the connection status lights, and also on the main LCD screen of the codec itself. Placing a call to the SIP server is essentially no different than dialing



and AJC exist to help improve the transmission quality, but can also affect timing of the audio signal or packet. The AJC and FEC, when enabled, automatically adapt the stream to deliver continuous high-quality audio, despite a significant packet loss. So if you need IFB or a studio-to-studio bridge, you are better off reducing the IP overhead in favor of better communications, otherwise feel free to increase the delay, and send a higher bit rate stream.

Another nice feature that the C1141 employs is adaptive bit rates. Not only does this feature automatically configure the algorithms on each connection end, but it is constantly monitoring the stream to determine if a higher bit rate can be used.

For instance, in my testing I had the following bit rates established:

- HE-AAC stereo 24 kbps actually yielded between 32 to 47 kbps on average
- HE-AAC stereo 64 kbps actually yielded around 71 kbps
- L3 stereo 64 kbps actually yielded 78 kbps

Further exploring the IP capabilities of the C1141, I sought to test the SIP functionality.

The C1141 employs both real-time transport protocol (RTP) and session initiation protocol (SIP), the latter enables

an IP address. SIP connections were made popular by VoIP applications, and because of their success in voice over IP, they work well to transport audio over the public Internet. Instead of configuring the IP address of a remote codec each time it moves to a different network or remote location, the SIP allows the codec to move around, and yet send and receive calls from any other SIP codec using its unique ID.

The Mayah Communications C1141 ISDN/IP audio codec worked well in a variety of testing scenarios. The C1141 includes a lot of features, and a substantial list of algorithms to satisfy basically any audio application. The ISDN is reliable and proven, but this device shines by adding on the advanced IP capabilities and SIP functionality. If you are new to IP audio, this device couldn't be easier to configure.

It is important to remember, however, with any IP technology many of the characteristics of performance will weigh on the quality of the IP connection, bandwidth and quality of service settings. As I found, giving yourself adequate time to test, and try different combinations of settings will result in finding one or more setups that work well in your situation. Last, never be too prideful to ask your IT person for a little assistance.

*Laura Mir, CBNT, has been a radio broadcast engineer for more than 10 years. She's based in the Washington area.*

## MARKETPLACE

**LENGTH IS RELATIVE:** The 25-Seven Systems Program Length Manager promises to expand or shrink programs imperceptibly. The PLM uses algorithms to extend or shrink a program. Onboard solid-



state memory memory allows for building a buffer, which can then be run down as a program plays out. A buffer+play function allows insertion of content while a program spools and then is released. The algorithms compensate during payout, eventually bringing the program back onto the clock. The rackmountable PLM can be controlled via the Web or from its front panel. [www.25-seven.com](http://www.25-seven.com)

**BOSS PORTABLE:** The BR-800 is a digital multitrack recorder with onboard digital effects, a built-in stereo microphone array, AA battery operation and SD card compatibility.



The multitrack mixing capacity is four-channel making it a nice choice for more complicated remotes or recording bands in the field. The BR-800 can also operate as a USB audio interface when attached to a computer or a control surface for a DAW. It offers tape recorder-style controls, included are a VFD screen, jog/shuttle dial, 48 V phantom power, Hi-Z input and headphone input. The onboard effects are collected from Roland's COSM effects packages. [www.rolandconnect.com](http://www.rolandconnect.com)

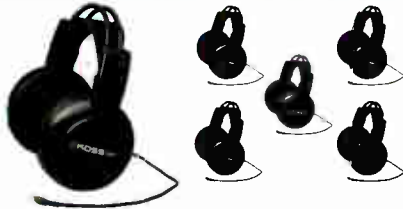
# Your Number One Source for Broadcast Equipment!

## Free Upgrade from **Omnia**



Buy an Omnia 5EX FM and get a Free upgrade to an Omnia 6EX

## **KOSS** UR-20 Six Pack!



Get a 6-Pack of KOSS UR-20's for only \$89!

## PowerStation from **AXIA**



The Indestructible Console Engine. Audio-over-IP has never been more affordable. Call for special pricing.

## Nx6 Bundle from **Telos**



The new Telos Nx6 Talkshow System now packaged with a Desktop Director and Assistant Producer call screening software. Call for package pricing.

## **Dixon Systems** NM-250 MKII



Designed Specifically for Newsroom/Workstation Operation with Optional USB interface. Priced at \$999.00

## **ESE** ES-102U NAB Special!



ES-102U: Low-cost yet accurate GPS Master Clock/Time Code Generator. Priced at \$1,199. Special pricing ends May 31st.

## **AirTools** Anywhere!



A Multiband Processor you can use everywhere! AirTools Multiband Processor 2M \$2199 MSRP



## Problem Solvers for Transmitters and Studios from **bdi**

**SWP-200:** Calibrated RF Power Meter & RF Switch Controller for Digital and Analog RF applications. Starting at \$1,795.

**ATB-300:** Analog & Digital synchronous audio switcher DA with programmable features. Starting at \$1,995.

**GPM-300:** Analog & Digital 8x8 synchronous cross point switcher with programmable features. Starting at \$2,195.

**DAB-300:** Dual path switch designed for use in digital audio IBOC routing. Allows for synchronous switching of analog and digital audio paths simultaneously. Starting at \$2,495



## **NEUTRIK**

We stock all your common connectors.

**Broadcasters General Store**  
**352-622-7700 • www.bgs.cc**  
**Visit our "Bargain Barn" on the web!**



Since 1979



# Community Radio, St. Paul's Style

Budget Software Package Helps WSPS Serve Small New Hampshire School

BY TOM VERNON

College and high school radio stations face unique challenges these days.

Where once students were lined up for air shifts, many time slots now remain unfilled, leaving faculty advisers with the dilemma of how to staff those slots or reducing operating hours and risk losing the station's license. In the face of these challenges, some have developed strategies to thrive in the Internet era, and engage students in broadcasting.

WSPS(FM), a 200-watt station licensed to St. Paul's School in Concord N.H., is one such operation. The station started in 1972 as a Class D 10-watt broadcaster. It airs at 90.5 MHz.

By day, the station broadcasts a seamless flow of world music, blues and jazz, filling a void in the programming offered by commercial stations in the Concord area.

At night, the students take over with a mix of more contemporary music.



John Hamilton, left, a student station coordinator, and Dr. Glenn Reider, faculty adviser, relax in the WSPS studios.

The station's expansive playlist largely is the work of Dr. Glenn Reider, the WSPS faculty adviser, who recounts his musical evolution thusly:

"I started out in high school listening to classic rock, and then got into reggae. After that, things were just added piece by piece, mostly from world music. The last step was older material like Rosemary Clooney and Dean Martin.

"When I was finished, I just wasn't interested in a steady diet of any one type of music."

## BUDGET APPROACH

The technical core of WSPS's musical programming during daytime hours is its automation software, which has changed over the years.

"When I came, we were using one of the commercial automation packages, but it was labor-intensive to load in new songs, and the cost of ownership was getting prohibitive," said Reider.

He looked for alternatives, and found MegaSeg, which cost around \$250. A bonus for Reider as a Mac user is that MegaSeg runs on the Macintosh platform. WSPS uses two Macs with MegaSeg for their operations. One is dedicated to running the on-air program-

**CONTENT IS EVERYTHING**



**PCAU-SUITE**

ARMORED MONOBLOCK STL

HD • FM • AM • ETHERNET • R5232 • TELEMETRY • TD • AES/EBU • DIGITAL • ANALOG • TSL • ENHANCED APT-X™ • 24-BIT • 22.5 KHZ • AC • DC

WWW.PULSE.COM • 800 381 1997

PULSECOM IS A REGISTERED TRADEMARK OF HUBBELL INCORPORATED (NYSE: HUBA, HUBB)  
APT-X™ IS A TRADEMARK OF AUDIO PROCESSING TECHNOLOGY LICENSING LTD.

ing, the other is for loading in songs and some post-production work.

Reider regularly adds material to the WSPS music library, which has more than 18,000 selections. WSPS also uses MegaSeg to post a list of the most recently played 20 songs, and five upcoming songs on its Web site.

While the variety of music heard over WSPS is vast, there are some things the station doesn't play. "Disco," said Reider. "I just never could get into it." A quick check of the library reveals the exception. Gloria Gaynor's classic "I Will Survive."

As with many student-run stations, Reider is unhappy with the response from record labels.

"I can't get any of the major labels to send material out for free, and we have no budget to purchase CDs." Much of the station's music is purchased from iTunes.

Many of the station IDs are done by St. Paul's faculty, which help the station maintain an identity with the school. Reider records these around campus using a laptop with a USB microphone and GarageBand software. Other promos are recorded in foreign languages, adding to the flavor of world music programming.

Reider has programmed MegaSeg to run 24/7, and audio is routed through a fader in the control room console.



In addition to its CD collection, WSPS holds onto classic vinyl.

making student programming a matter of fading down automation, and fading back up at the beginning of the day. This option also provides an automatic cover when students can't do shows and during Christmas, spring and summer breaks.

In addition to the FM signal, the station has both on and off-campus Internet streams. Alumni of St. Paul's School

enjoy the broadcasts of the school's Christmas service, classical music competitions and other school functions over the Internet stream.

After 7 p.m., the students take over the airwaves, playing a mix of heavy metal, thrash groove, punk and other contemporary music. St. Paul's has an enrollment of about 520 students in grades 9-12. The staff is small but enthusiastic.

degrading to women, no religious bias, no gossip about other students or faculty, and of course, no profanity," said Hamilton.

Most of the students bring their music to the station on iPods or laptops, although CD compilations of new music are also aired.

The evening audience is different than daytime. "Parents of student DJs listen quite a bit, and we get a lot of phone-in requests from around Concord," said Hamilton. "It's a great opportunity for students to learn about radio in a forgiving environment," added Reider.

For Hamilton, the lessons learned at WSPS extend beyond putting together a radio program.

"I've learned a lot about time management, I'm a lot more comfortable with speaking and I know myself better." He adds that radio announcing is a good jumping-off point for public speaking, and he hopes to continue his radio work when he goes off to college.

WSPS has also benefited from good relations with its alumni. One who went on to a successful career in broadcast management and station ownership has donated money to upgrade the station's equipment. Another became an FCC attorney and processed the paperwork for WSPS to increase power to 200 watts gratis. A donation of 6,000 albums and CDs came from another.

Reider reflected on the evolution of WSPS since becoming faculty adviser in 2004.

"Running with automation has been a great option for us. It has enabled the station to have a 24/7 presence on the FM dial, so we don't have to worry about losing the frequency when the license comes up for renewal." At the same time, opportunities remain for students to play a part in programming and operations. He feels that the station is one thing that helps make St. Paul's a leader among New England-area prep schools.

PEOPLE NEWS

Ed Trombley was saluted by the Michigan Association of Broadcasters with its Carl E. Lee Broadcast Engineering Excellence Award. MAB honored his "problem solving and uncanny way of communicating with the finickiest of machinery."



Ed Trombley

Trombley is a field engineer and "RF expert extraordinaire" for engineering firm Munn-Reese Inc. He is former chief engineer and technical director of telecommunications at WSAE(FM)/KTGG(AM) at Spring Arbor College (now University), in Spring Arbor, Mich.

"In addition to his professional work," MAB stated, "Ed is known for his garage full of old broadcast parts and equipment, supplying the local theater with period props, not to mention the numerous engineers who have been helped in a pinch because of his garage full of goodies." TV engineer John Grover also was honored.

Cary J. Broussard was named president of the Alliance for Women in Media, formerly known as American Women in Radio and Television.



Cary J. Broussard

She was VP of communica-

tions for the Wyndham Hotel Group and senior vice president, women's marketing and diversity for Wyndham Hotels and Resorts. She is former VP of marketing and brand management for Meetings Professionals

International and deputy press secretary for Sen. Howard Baker during his time as majority leader of the Senate.

Northern California Public Broadcasting chose John L. Boland to become its sixth president and chief executive officer since its founding in 1954. Boland succeeds Jeff Clarke, who retired after 45 years in public media and broadcast journalism.

Inovonics Inc. named Lukas Hurwitz as sales/marketing manager. He is a graduate of



Lukas Hurwitz

Eastman School of Music at the University of Rochester, N.Y., and has performed with approximately 20 city orchestras and film score studios in New York, New England and California.

IPDD-FRIENDLY

"I don't think of it as a commitment, but total pleasure," said John Hamilton, a senior and one of three student station coordinators. His duties include training new student operators, being on-call and sitting in with first-timers to help them get over the jitters.

Hamilton and Reider also train student broadcasters in the station's policy regarding profanity, which is stricter than what is mandated by the FCC.

"No comments or lyrics that are

STATION SERVICES

Sound Ideas for Building Business<sup>sm</sup>

:30/:60-sec. Radio Features  
Something New Every Month!



GraceBroadcast.com

Common Ground for Uncommonly Successful Sales Professionals



RadioSalesCafe.com

ATTENTION PROVIDERS: Promote your services to Radio World's readers. For information on affordable advertising call David at 212-378-0400 ext. 511 or email dcarson@nbmedia.com.



# Tweet This!

## How Do We Utilize Social Media and The Mobile Phone to Our Advantage?

"Everyone on our staff should be Tweeting! How many fans have signed up for our Facebook page? Isn't it time we started sending out text alerts to our listeners? What's the update on our mobile Web site?"

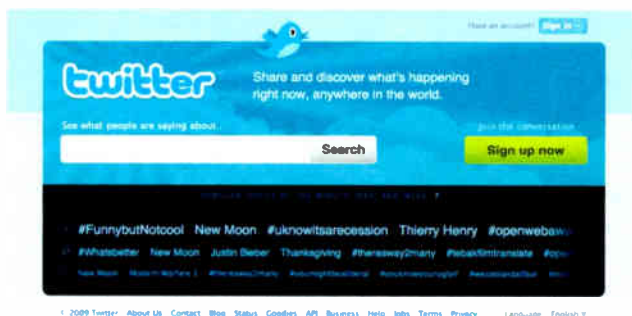
It doesn't seem possible to make it through a programming or marketing discussion now without Twitter, Facebook, text messaging or mobile applications as the hot topic.

The common wisdom says that social media and the mobile phone are vital components to the success of radio. I'm on that bus, yet I struggle with the time invested in the tactics vs. the return in terms of ratings and revenue. Far too many people waste time trying one thing after another with little apparent result.

Many people in the industry also have confused Twitter and Facebook with broadcasting. Just last week, I had a major disagreement with a talent because she thought it was vital that her 237 Twitter followers get a breaking news story before she broke it on the air five minutes later.

Sure enough, the competition beat her to the punch on-air. They even got the news extra fast — because they subscribe to her Twitter feed!

Even after pointing this out, she still



felt she'd "won" because she Tweeted first. This was nonsense. She has thousands of listeners each quarter hour.

So the question is: How do we utilize social media and the mobile phone to our advantage?

Every program director must develop a specific action plan. Instead of everyone on staff doing their own thing individually, set common goals and build the tactical structure to reach those goals while showcasing your brand in the best way possible. Here are some examples:

**Twitter:** By the end of the year, we want to have 5,000 followers sign up for our combined Twitter feeds. We will accomplish this through a set number of promotional announcements on-air, banner ads on our Web site and daily Facebook plugs, driving people to sign up.

We will create one aggregated feed

that takes all the individual feeds and pushes them out together as our station feed. This is the feed that will appear on the Web site's homepage.

Every time a person Tweets they will include a tiny URI that brings people to the station Web site for more details about the topic.

We'll determine how many Tweets a day will be used for promotional messaging (like tune-in promos). If all we're Tweeting are reasons to listen, we're not going to hold our followers for long. They joined us to be entertained and connected, not to be pounded with "Hey, at 10:20 a.m., tune in for the weather!"

**Many people in the industry have confused Twitter and Facebook with broadcasting.**

**Facebook:** By the end of the year, we want to have 5,000 friends on Facebook.

Every on-air personality will make at least two daily contributions to our page. When listeners call and want to talk for awhile, we will tell them about the conversation happening all the time on our Facebook page.

**PROMO POWER**



Mark Lapidus

We will post one new photo per day, tagging everyone we know in the picture.

**Text Messaging:** We will obtain 5,000 opt-ins by the end of the year.

We will create a promotion plan. We will sell in one client each month for \$5,000 per month. That client will be included in a minimum of 60 promos per month and receive seven words on the kickback message for every text message.

We will use text messaging for a different purpose than we use Twitter.

**Mobile Web Site:** What, we don't have one yet? Without a specially formatted page, our Web site is virtually useless on a smart phone. It is not very expensive to join this party. Once we do, what's our goal?

Finally, see if you can also come up with a variation of the following statement:

"While important, we will not allow discussions about social media and mobile applications to dominate our goal of creating the best possible content for our core business: on-air broadcasting via radio."

*The author is president of Lapidus Media. Contact him at marklapidus@verizon.net.*

## PRODUCTS & SERVICES SHOWCASE

**AM Ground Systems Co.**  
www.amgroundsystems.com  
1-877-766-2999  
Physical AM Site Services  
Construction  
Evaluation  
Repair  
MOM Modeling Preparation work  
Sample, Feed & Control Line Replacement & Repair  
Serving the Technical and Construction needs of AM Broadcasters for 25 Years  
A division of  
**KK Broadcast Engineering**

With the Bext FLX Series beauty is more than skin deep. A great looking user interface allows better control of all parameters. A shiny stainless steel finish provides durability. A stylish low profile offers most power in its size. Call today to learn more about the new winner from Bext.

www.bext.com    bext@bext.com    888 239 8462



**BAY COUNTRY BROADCAST EQUIPMENT**

**BUY - SELL - TRADE**

Your #1 Source  
For Quality Used Radio Broadcast Equipment

View The Latest List Online at: <http://www.baycountry.com>  
Or call and we will fax it to you.

7117 Olivia Rd., Baltimore MD 21220  
Toll Free: 877-722-1031 • FAX 443-596-0212 • E-mail: [sales@baycountry.com](mailto:sales@baycountry.com)

**ACOUSTICS**

**AcousticsFirst™**  
Toll-Free Number: 888-765-2900

Full product line for sound control & noise elimination.  
[www.acousticsfirst.com](http://www.acousticsfirst.com)

**ANTENNAS/TOWERS/CABLES**

**WANT TO SELL**

FCC COMPLIANCE  
**TOWER SIGNS**  
AM & FM Tower Signs  
ASR-Tower Registration  
Standard & Custom signs

Guy Wire Protectors - Ant. Tags

**ANTENNA ID PRODUCTS**  
[antennalD@msn.com](mailto:antennalD@msn.com)  
Free Catalog  
610-458-6418  
[www.antennalD.com](http://www.antennalD.com)

**WANT TO BUY**

3 tower base insulators to support 300 foot towers. We can adapt... what do you have?  
218-732-3306.

**AUDIO PROCESSING (INCLUDES ON-AIR)**

**WANT TO BUY**

Teletronix LA-2A's, UREI EA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST - 214 738-7873 or [sixtiesradio@yahoo.com](mailto:sixtiesradio@yahoo.com).

**AUTOMATION EQUIPMENT**

**WANT TO SELL**

It's free and it has been expanded. The only cost is to keep us informed as to how the system is performing and let us know how you are using it. DIY-DJ, is a Linux based radio automation system and now sports a record scheduler (DIY-DJ-RECORDER) which allows you to schedule the recording of a network or any other program for replay later as well as a basic logging system. Beside these additions the system schedules music, does

voice tracking (ALWAYS hit the vocal), create a shell, live assist, exact time events, join satellite feeds, automated temperature announce, do unattended remote events and more. Call (406) 679-0527 or email [krws@digitaldevelopment.net](mailto:krws@digitaldevelopment.net) for a copy today.

**COMPLETE FACILITIES**

NEW OR USED COMPLETE PACKAGES

STUDIO/STL/TRANSMITTER /ANTENNA OR ANY COMBINATION OF ABOVE.  
-LEASE OPTIONS-  
-EMERGENCY RENTALS-  
-REMOTE BROADCAST RENTALS-

SCMS, Inc. (800) 438-6040  
"You Know We Know Radio"

**CONSOLES/MIXERS/ROUTERS**

**WANT TO BUY**

ADM (audio designs and manufacturing) 70s era consoles and parts. Al @ [agrunwel@twcny.rr.com](mailto:agrunwel@twcny.rr.com).

**MICROPHONES/HEADPHONES/SPEAKERS/AMPS**

**WANT TO BUY**

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or [sixtiesradio@yahoo.com](mailto:sixtiesradio@yahoo.com).

**MISCELLANEOUS**

**WANT TO BUY**

**ROTRON BLOWERS AND PLATE BLOCKERS**, new & rebuilt for Ekom, Harris, CCA, CSI, McMartin, Goodrich Ent. 11435 Manderson St. Omaha, NE 68164 402-493-1886 Email: [CGoodrich@conl.com](mailto:CGoodrich@conl.com)

Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric),

Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or [audiovlg@gte.net](mailto:audiovlg@gte.net).

Equipment Wanted: obsolete, or out of service broadcast recording gear, amplifiers, preamps, outboard, radio or mixing consoles, microphones, etc. Large lots acceptable. Pickup or shipping can be discussed. 443-854-0725 or [ajkivi@gmail.com](mailto:ajkivi@gmail.com).

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSFX, KOBY, KCBS, KQW, KRE, KTIM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at [ronwtamm@yahoo.com](mailto:ronwtamm@yahoo.com).

Looking for a broadcast excerpt of a San Francisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or [ronwtamm@yahoo.com](mailto:ronwtamm@yahoo.com).

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or [emailronwtamm@yahoo.com](mailto:emailronwtamm@yahoo.com).

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or [ronwtamm@yahoo.com](mailto:ronwtamm@yahoo.com).

**RECORDING & PLAYBACK HARDWARE**

**WANT TO BUY**

Otari MX5050 B11 or B111 reel-to-reel tape recorder in working condition without rack rails. Reasonable price. [kentverbeck@yahoo.com](mailto:kentverbeck@yahoo.com).

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-687-6357.

Schnader telecriptions 16 mm musical films produced in the early 50 s. Bill Cook, 719-687-6357.

Standard Short-tune series. Bill Cook, 719-687-6357.

**REMOTE & MICROWAVE**

**WE RENT FOR LESS**

Blueboxes FM Exciters  
Zephyrs FM Power Amps  
POTS Codecs STL's  
RF/Audio Gear Test Equipment

If we don't have it, we will get it!  
SCMS, INC. (800) 438-6040  
"You Know We Know Radio"

**STATIONS**

**WANT TO SELL**

AM Station in Rome, NY, \$100K, FM xlators in Jacksonville, NC, Taylorsville, IL, Hopkinsville, KY. [mraley@bbnmedia.org](mailto:mraley@bbnmedia.org).

FM 6000 watt from 1500 feet hill/mountain. AM 1000 watt day reduced to 500 two hours pre-sunrise and post sunset, 108 overnight. 5-year old AM transmitter, 4-year old FM transmitter. Everything in good condition. Located in Eastern Oklahoma. 918-413-4762.

**SPACE IS AVAILABLE!**

**Broadcast Equipment Exchange**

"BEE" in the habit of selling your used equipment here!

Contact David for details at  
212-378-0400 ext. 511 • [dcarson@bbee.com](mailto:dcarson@bbee.com)

**TAX DEDUCTIBLE EQUIPMENT**

**Donations Needed: All Volunteer, Non-profit Low Power community radios stations need Equipment.** Will offer tax deduction letter, You determine donation value, We will pay shipping. Equipment shared between three Wisconsin stations. Looking for Mics, Mixers, field equipment, etc. You name it. Email: [Dan@WIECRadio.org](mailto:Dan@WIECRadio.org).

**TRANSMITTERS/EXCITERS/TRANSLATORS**

**WANT TO SELL**

Rest Assured! FCC Certified  
**FM Stereo Transmitter**

50W RF output, continuous duty!  
Auto protect with auto soft fail & auto restore!  
Automatic battery backup!  
Digital display of all parameters  
Perfect for LPFM, Translators, as well as stand-alone exciters

[www.ramseyelectronics.com](http://www.ramseyelectronics.com)  
800-446-2295  
In Our 36th Year!

**OFF THE AIR? Emergency Back-up Rentals**

FM Exciters - STLs -  
FM Pwr Amps - Antennas -  
Studio & Test Equipment

SCMS Inc (800) 438-6040  
"You Know We Know Radio"

BE FM 10B 10kW xmtr w/ FX 50 exciter, 1997 vintage in vgc, clean, new blower inst in Feb 2010, unit works well and has been properly cared for, has been in back-up ser since late 2008, currently on 93.3, \$15000 buyer arranges & ships. B Chambers, Sierra Bdctg Corp, Susanville, CA. 800-366-9182.

CCA AM 10,000 D - Call John KQSS 928-595-0263 between 10 & 6 PM Pacific Time.

**WANT TO BUY**

30 watt HD exciter. John, KQSS, 928-595-0263 between 9am & 6pm PST.

**RADIOWORLD**  
Equipment Exchange

**TRANSCOM CORPORATION**  
Serving the Broadcast Industry Since 1978  
Transmitters and Broadcast Equipment for Radio & Television

Used FM Transmitters

1	KW	1991	BE FM1B
1	KW	2009	Crown FM1000E (demo), solid state
2	KW	2001	BE FM2-C, solid state
2	KW	2005	Harris Z2, solid state
10	KW	1995	Harris HT10
14+5	KW HD	2005	BE Fm1405 (IBOC), solid state
20	KW	2005	BE FM20S, solid state
35	KW	1986	BE FM35A

Used AM Transmitters

5	KW	1982	Harris MW5A
5	KW	1987	Harris MW5B
5	KW	1987	Harris SX5A, solid state
50	KW	2006	Harris 3DX50 Destiny

**Exciters**

\*New\* 30W Synthesized exciters  
Used Harris Digit 2nd Generation exciter  
Used BE FXi250 FM & HD exciter with ENGINE card  
Used BE XPi 10, HD Generator  
Used Bird Wattmeter  
Used Crown 075 Amplifier

Please visit our website, [www.fmamtv.com](http://www.fmamtv.com), for additional listings.

**BE**

**Continental Electronics**

**CROWN BROADCAST**

**HARRIS**

**naute**

**New TV Transmitters- Analog and Digital**  
OMB, Fineapple and Technalogix  
VHF and UHF TV Antennas  
(10 W to 10 KW) TV STL

800-441-8454 • 215-938-7304 • FAX: +1-215-938-7361  
[www.fmamtv.com](http://www.fmamtv.com) • E-mail: [transcom@fmamtv.com](mailto:transcom@fmamtv.com)  
RETUNING & TESTING AVAILABLE • CALL US FOR A QUOTE!



**EDITORIAL STAFF**EDITOR IN CHIEF, U.S. Paul J. McLane  
NEWS EDITOR/WASH. BUREAU CHIEF Leslie Stimson  
GEAR & TECHNOLOGY EDITOR Brett Moss  
TECHNICAL ADVISER Thomas R. McGinley  
TECHNICAL EDITOR, RWEE Michael LeClair  
PRODUCTION EDITOR, RWEE Karen Lee  
CONTRIBUTING EDITOR John Bisset  
INTERNATIONAL EDITOR IN CHIEF T. Carter Ross  
LATIN AMERICA EDITOR IN CHIEF Rogelio Ocampo  
LATIN AMERICA EDITOR Karina Gerardi  
MANAGING EDITOR, WEB Brian Smith  
EDITORIAL ASSISTANT, MILAN Peter Finch**EDITORIAL CONTRIBUTORS**

W.C. Alexander, Steve Callahan, James Careless, Harry Cole, Mark Durenberger, Charles Fitch, Ty Ford, Harold Hallikainen, Craig Johnston, Paul Kaminski, Peter King, Mark Lapidus, Daniel Mansergh, Sharon Rae Pettigrew, Carl Lindemann, Ted Nahil, James O'Neal, Tom Osenkowsky, Ken Deutsch, Rich Rarey, Tom Ray, Randy Stone, Richard Strickland, James G. Withers, Tom Vernon.

**ADMINISTRATION & PRODUCTION**PUBLISHER John Casey  
EDITORIAL DIRECTOR T. Carter Ross  
PRODUCTION DIRECTOR Davis White  
PRODUCTION PUBLICATION COORDINATOR Karen Lee  
ADVERTISING COORDINATOR Caroline Freeland**CIRCULATION**ASSOCIATE CIRCULATION DIRECTOR,  
AUDIENCE DEVELOPMENT Anne Drobish  
CIRCULATION MANAGER Kwentin Keenan  
CIRCULATION COORDINATOR Michele Fonville**SUBSCRIPTIONS**Radio World, P.O. Box 282, Lowell, MA 01853  
TELEPHONE: 888-266-5828 (USA only 8:30 a.m.–5 p.m. EST)  
978-667-0352 (Outside the US) FAX: 978-671-0460  
WEB SITE: www.myRWNews.com  
E-MAIL: newbay@computerfulfillment.com**CORPORATE**NewBay Media LLC  
PRESIDENT AND CEO Steve Palm  
CHIEF FINANCIAL OFFICER Paul Mastronardi  
CONTROLLER Jack Liedke  
GROUP CIRCULATION DIRECTOR Denise Robbins  
VICE PRESIDENT OF WEB DEVELOPMENT Joe Ferrick**VIDEO/BROADCAST GROUP**EXECUTIVE VICE PRESIDENT Carmel King  
VICE PRESIDENT / SALES DIRECTOR Eric Trabb**ADVERTISING SALES REPRESENTATIVES**US EAST & LATIN AMERICA: John Casey, jcasey@nbmedia.com  
T: 212-378-0400, ext. 512 | F: 330-247-1288  
US WEST & CANADA: David Carson, dcarson@nbmedia.com  
T: 212-378-0400, ext. 511 | F: 866-572-6156  
SOUTHERN EUROPE, AFRICA, MIDDLE EAST:  
Raffaella Calabrese, rcalabrese@broadcast.it  
T: +39-02-7030-0310 | F: +39-02-7030-0211  
UK & IRELAND, CENTRAL & NORTHERN EUROPE:  
Graham Kirk, g.kirk@audiomedia.com  
T: +44-1480-461555 | F: +44-1480-461550  
JAPAN: Eiji Yoshikawa, callems@world.odn.ne.jp  
T: +81-3-3327-5759 | F: +81-3-3322-7933  
ASIA-PACIFIC: Wengong Wang, wwwg@imaschina.com  
T: +86-755-83862930/40/50 | F: +86-755-83862920  
CLASSIFIEDS: David Carson, dcarson@nbmedia.com  
T: 212-378-0400, ext. 511 | F: 866-572-6156

Radio World Founded by Stevan B. Dana

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 810 Seventh Avenue, 27th Floor, New York, NY 10019. Phone: (703) 852-4600, Fax: (703) 852-4582. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.

REPRINTS: Call or write Caroline Freeland, 5285 Shawnee Rd., Ste. 100, Alexandria, VA 22312-2334; (703) 852-4600; Fax: (703) 852-4583

Globe graphic ©iStockphoto.com / Edward Grajeda

Copyright 2010 by NewBay Media, LLC.  
All rights reserved.  
Printed in the USA**READER'S FORUM****ANTENNAS, INSIDE-OUT**

Dear Mr. O'Neal, I was interested to read your story about the "inside-out" FM antenna installation for the former WTOP(FM) — now WHUR(FM) — at 40th and Brandywine Streets N.W. here in Washington (Feb. 1).

You asked if readers knew of any other "inside-out" installations. There is in fact another one, about five blocks away at WTTG(TV), Fox Channel 5. There is an analog Channel 5 antenna installed inside the tower. It was actually put to use about three years ago when WTTG removed its top-mounted analog antenna to install its new DTV antenna to serve WTTG(DT) Channel 36 and WDCA(DT) Channel 35.

A new top-mounted analog 5 antenna was installed above the analog 35/36 DTV antenna; it was simply turned off in June.

*Jim Manning  
VP Technology  
The Classic Soul Experience  
Washington*

*James O'Neal contacted the WTTG engineering department to ask about the report of an inside-mounted television transmitting antenna. The station did have an old RCA three-bay batwing mounted inside the tower for backup or emergency use. It was used only once, for about a month, during the station's transition to digital and full-power UHF operations. Transmitter power had to be backed off due to a high VSWR condition produced by the tower lattice.*

**AUDIMAX MEMORIES**

I came across Charles S. Fitch's *Milestones* article about the CBS Audimax and Volumax as the result of a Web search ([www.rwonline.com/article/3830](http://www.rwonline.com/article/3830)).

I worked at radio stations that used both the AM and FM stereo versions and had some experience working on the guts of the FM stereo Audimax and Volumax. I don't recall the part numbers but, judging by your article, they were probably the 400 series. Over time, I made small modifications to both.

Your article says the AM Volumax had a "nifty but primitive asymmetrical diode clipper scheme." It was much more than that. It was an on-the-fly polarity flipper that would invert the polarity whenever the incoming asymmetry was greater in the negative direction. Thus, even before any clipping, the waveform was optimized to achieve higher positive modulation.



Ready after refurbishment to go back into service for another 30 years, this FM Volumax 410 will go to a new FM for Esperance, N.Y.

The stereo Audimax had the odd quirk that the quantity it strove to maintain constant was the volume of the L+R sum voltage. In FM stereo broadcasting, this is not exactly ideal, because a Left-only or Right-only source causes the Audimax to raise the gain 6 dB higher than a source that is more centered between Left and Right.

But the transmitter's modulation depends on the higher of Left or Right, regardless of whether the other channel is doing the same thing or not.

As a result, if you set your transmitter levels with typical audio signals, the modulation tended to go off the scale whenever a Left-only or Right-only source comes along. Granted that doesn't happen too often, but when it does, the results are not exactly pleasant.

And it gets really bad if you have an errant source with the channels out-of-phase, such that L+R is very low. The Audimax cranks the gain up to max, and either your modulation meter pegs, or your peak limiter has to work overtime to keep it from doing so!

You don't want to keep transmitting with channels out-of-phase, but the misbehavior of the Audimax only made the problem worse by making you go off looking for where the distortion is coming from, and why the peak flasher is stuck ON.

So I modified our Audimax so that the coupling cable between the two channels just ganged the two gain control voltages together (after studying the schematic to make sure it was OK and would do the right thing). This had the effect of adjusting gain based on the higher of Left or Right. Problem solved.

And then there was the Volumax. The FM Volumax was designed with a pre-emphasis circuit in the input stage, and the entire rest of the circuitry operated on the pre-emphasized audio, all the way out past the peak clipping diodes. Then at the output, they had a passive de-emphasis circuit.

CBS Labs recommended disabling the de-emphasis circuit as well as the pre-emphasis circuit in your transmitter, since the two are complementary and it didn't exactly make sense to do both. That way the Volumax had more direct control on the audio that was being applied to the modulator.



The classic 400 series layout, with PCBs in a card cage configuration interconnected with cable harnesses.

Unfortunately, the Volumax's pre-emphasis network in the first stage was a little lacking. It was down a few dB by 15 kHz from the prescribed curve.

While this was within the FCC's limits on the 75  $\mu$ sec pre-emphasis curve, it was only barely so, and any further deviations anywhere in your system (from the mic preamp to the control board output to the STL to the 15 kHz low-pass filters) could easily put you out of spec for meeting Proof of Performance.

I think the Volumax's de-emphasis network also deviated from the ideal 75  $\mu$ sec curve by the same amount, so that when you had both of them in place, the Volumax appeared relatively "flat."

But if you disabled their de-emphasis, which meant you were using their pre-emphasis as the pre-emphasis for your FM station, it was not so good.

So again I modified ours, adding a few small capacitors at strategic locations in their wonderful balanced circuitry, to bring the response up at 15 kHz. That did the trick, and I was rather proud of having what was probably the only FM Volumax (at that time) with a nearly ideal frequency response.

Unfortunately, the station was vandalized a few years later, and the bandits made off with our specially modified Volumax, along with an ancient scope that wasn't worth much.

But all that was ages ago.

*Andy Ingraham  
Acton, Mass.*



## Comrex BRIC-Link

provides reliable, high quality, cost-effective IP audio transmission over dedicated links.

**plus**



## ISM Band 5.x GHz IP Radios

from Trango Systems, Tranzeo, Motorola, Tsunami and others available at BGS provide a low-cost, unlicensed, line of sight data link.

**equals**

## Perfect, low cost STL solution

Use with BRIC-Link's linear and FLAC modes for full bandwidth audio with minimal delay. Easy to set up. Low operating cost.



Available from:

**Broadcasters  
General Store**

www.bgs.cc • 352-622-7700

**BRIC Link**

World Radio History

Put Comrex on the Line  
**COMREX**

www.comrex.com



# FINALLY... FAILSAFE NETWORKED AODIP.

## WHEATSTONE E-SERIES & WHEATNET-IP ARE YOUR BEST CHOICE BY A LONG SHOT.



When it comes to networking your facilities, there's only one best choice. Wheatstone. For years, we've been the network/control surface choice of top broadcasters. And with good reason – we care.

Wheatstone's Audio-Over-IP product is the best in the business. Here's why:

**1. WheatNet-IP is easiest for a station to implement and configure.** It is, hands down, the easiest in the industry. No need for Wheatstone to provide factory on-site assistance unless you really WANT us there. The manual and app notes will have you up, running and stable in less time than any other system.

**2. WheatNet-IP is a natural for large facility multi-station networking (and for smaller facilities too).** It uses the IGMP features of Ethernet Layer 3 switches to identify a multicast packet, see which ports are requesting that packet, and send it only to those ports. Traffic control is maintained and system bandwidth is optimized.

**3. Redundancy is critical.** A typical WheatNet-IP installation has multiple levels of redundancy. Each BLADE holds the complete map of the entire system within its onboard memory – we call it distributed

intelligence – a system with 50 BLADEs has 49 backups with failover in the event of a failure. Cisco Stackwise technology provides redundancy in the central core TOC switch. A WheatNet-IP/E-Series console studio complex can stand alone, even if the TOC goes down, with backup analog or digital program audio feeding a back end router independent of the core Gigabit infrastructure.

**4. Modular is better.** Why would you want to combine your switch, mix engine and I/O into one box? Beats us. With WheatNet-IP, you install only what you need, where you need it. We believe in not overselling.

**5. Manufacturing quality is very important.** Wheatstone is proud to have the best track record in the business for build-quality, reliability and intelligent functionality. With far more up-and-running installations than anyone else, this is where we really shine. An investment in WheatNet-IP and E-Series control surfaces today will reward you with a future-proof, failsafe networking/control environment that's infinitely updatable and in for the long run.

### 6. WheatNet-IP has an advantage.

Take a look at your entire environment. Wheatstone is a perfect partner because we are always there, always innovating. Built into every WheatNet-IP BLADE are features others just didn't think of – handy utility mixers, silence detection, crosspoint routing control, headphone monitoring of any source, lots of logic GPIO, and comprehensive metering of audio I/O, not just signal-presence indicators. And, in the hugely unlikely event that a BLADE needs to be replaced, you just plug in a new one and enter the BLADE number. That's it.

**7. Wheatstone is local.** WheatNet-IP and the E-Series, just like ALL Wheatstone products, are designed, engineered and built from start to finish in our New Bern NC USA facility. Everyone who works on our products is 100% knowledgeable and immediately available. You can relax – as with the famous insurance company, you ARE in good hands.

With WheatNet-IP, we think we've done our homework. In fact, we know we have. And we're happy to say that we've got the best product on the market. To learn more, and there's a LOT more, get us on the phone or visit us on the web. We'll be happy to meet with you and get you everything you need.



Audio Networking – Simply Evolved

phone 1.252.638-7000 | [www.wheatstone.com](http://www.wheatstone.com) | [sales@wheatstone.com](mailto:sales@wheatstone.com)