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GM JOURNAL

Whatever Happened to Shortwave Radio?

The HCJB shortwave transmission site outside Quito, Ecuador.

BY JAMES CARELESS

As recently as 25 years ago, shortwave radio was a preferred source of breaking international news in North America.

Most hours of the day, the BBC World Service boomed in, especially at night on 6175 kHz. There was also Radio Moscow — once the mouthpiece of old-style Soviet propaganda — the Voice of America, Radio Netherlands, Deutsche Welle from West Germany and Radio Berlin International from East Germany.

If you wanted to know what was happening in Cuba, Tel Aviv or what was then called Bombay, you could tune to Radio Havana, Kol Yisrael or All India Radio directly.

120 MILLION PEOPLE

At the time, the BBC estimated global shortwave listenership to be in excess of 120 million people weekly. Granted, most of that audience was outside of North America. But back when there was no awareness of the Internet and no international satellite TV, shortwave was where many news-hungry North Americans went first.

Scan across the shortwave bands and you'll find that much has changed. In North America and Europe, many of the major broadcasters have disappeared or minimized their presence. In fact, the BBC World Service no longer beams programming via shortwave to

(continued on page 10)

New BAS Group Thinks Big

At Least One FCC Commissioner Should Be an Engineer, EIBASS Says

BY LESLIE STIMSON

The question of adding engineering slots to the staffs of commissioners at the Federal Communications Commission has attracted the attention of a recently formed group called Engineers for the Integrity of Broadcast Auxiliary Services Spectrum.

Co-chaired by Dane Ericksen of Hammett & Edison and Richard Rudman of Remote Possibilities — both of whom are well known in broadcast engineering circles — the group would prefer a requirement that one commissioner actually *be* an engineer.

Ericksen said the original practice in which each commissioner had an engineer on staff was based on language in the Communications Act of 1934. "That provision allowed each FCC commissioner to appoint three professional assistants, outside of the Civil Service system, but one of those three assistants had to be an 'engineering assistant,'" he said. In 1982, when the number of commissioners was reduced from seven to five, that requirement was deleted.

(continued on page 8)

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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 Stackw se 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.

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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.

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Imagining Radio's Future at CES

Dave Wilson Eyes New Toys — and Thinks Wistfully of What Could Be

FIRSTPERSON

BY DAVE WILSON

The author owns WHDX(FM) and WHDZ(FM), Buxton, N.C., on Hatteras Island. He is senior director, technology & standards at the Consumer Electronics Association. His commentaries are a recurring feature of Radio World's opinion section. Views are his own and do not necessarily represent those of CEA or its member companies.

The 2010 International CES in Las Vegas was a tremendous success, in my view. CEA's preliminary registration figures had more than 120,000 industry professionals in attendance, and the conversations on the show floor were of a consumer electronics industry that's turning the corner in the latest economic cycle and looking forward to growth fueled by 3D TV, green technology and Internet-connected everything.

As I walked the show floor, I noted products that fit into my vision of what radio broadcasting should become. That vision is of a service whose content, like time-shifted TV programs and Internet podcasts, is no longer consumed predominantly in real time.

It's of a service that, like Internet service and satellite TV, is a very effective distribution system whose final hop to the consumer device is over a standardized, ubiquitous path like Wi-Fi. And it's of a service whose revenue comes from advertising, but advertising that consumers seek out on their terms, like Internet search.

The first product that caught my eye was the Abbee from Myine Electronics, which was honored by CEA with an Innovations Award for being one of the most innovative products of the year.

The Abbee is a $250 FM receiver that records a radio station's broadcast, strips out the commercials, DJ talk, sweepers, bumpers, etc., and allows the consumer to delete individual songs from the recorded collection [also see Radio World CES coverage in the Feb. 10 issue].

This product actually hit the market just before Thanksgiving and I immediately purchased one. I was skeptical as to how well it could do what it promised, but after using it for several weeks I have to say I'm quite impressed.

Only twice in four weeks has it mistakenly recorded some DJ banter. The music it records is stored on a small portable player that's easy to take anywhere.

When the player transitions from one song to the next, it fades down and back up, a feature that helps mask the fact that some of the songs have their beginnings or endings truncated, probably because there was DJ talk or a sweeper running over the song. The fading between songs makes the chopped off portions hardly noticeable in many cases.

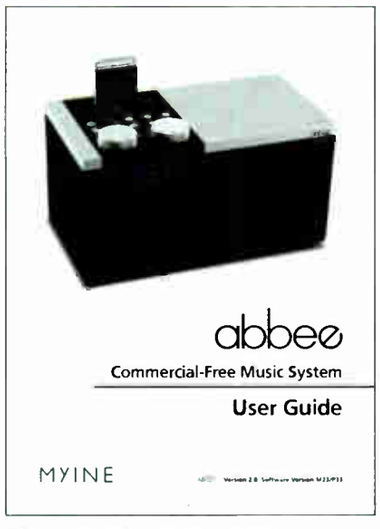
Another cool product was the Tivit, a device the size of a typical smart phone that receives mobile DTV signals over the air and rebroadcasts them using Wi-Fi frequencies.

A person with a Tivit can download an app to a smart phone that will let the smart phone communicate with the Tivit and use it to tune and view mobile DTV signals.

Think of the Tivit as a wireless router for mobile DTV. It can sit on a shelf and turn any Wi-Fi-enabled smart phone within range of its Wi-Fi signal into a mobile DTV receiver.

Phones themselves only need Wi-Fi capability, they don't need a mobile DTV tuner. PCs can also become mobile DTV receivers by connecting to the Tivit's USB port.

Development of the Tivit for U.S. viewers is funded in partly the Open Mobile Video Coalition. The Tivit will be available this spring and is expected to list for under $120.



Abbee records a radio station's broadcast, strips out the commercials, DJ talk, sweepers, bumpers, etc., and allows the consumer to delete individual songs from the recorded collection.

FOND THOUGHTS

It's easy to imagine a device that combines the features of both the Tivit and the Abbee, giving radio broadcasters a way to provide personalized service to their listeners. For example, imagine a Tivit-like device that receives radio broadcasts, but instead of simply rebroadcasting them over Wi-Fi it saves the radio content in on-board memory, like the Abbee does.

However, unlike the Abbee, it saves everything that's broadcast, including sponsors' content, in packages that can be easily sorted and filtered. When a Wi-Fi-enabled device like a smart phone is in range, the "Rivit," as I'd call it, performs a handshake with the smart phone and determines what type of content is

(continued on page 6)

Public Radio System Looks 'Forward'

NPR Distribution Embarks on Upgrade to Its Satellite System Infrastructure

The folks who distribute programming from approximately 200 producers to 800 public stations are embarking on a major satellite equipment refurbishment project.

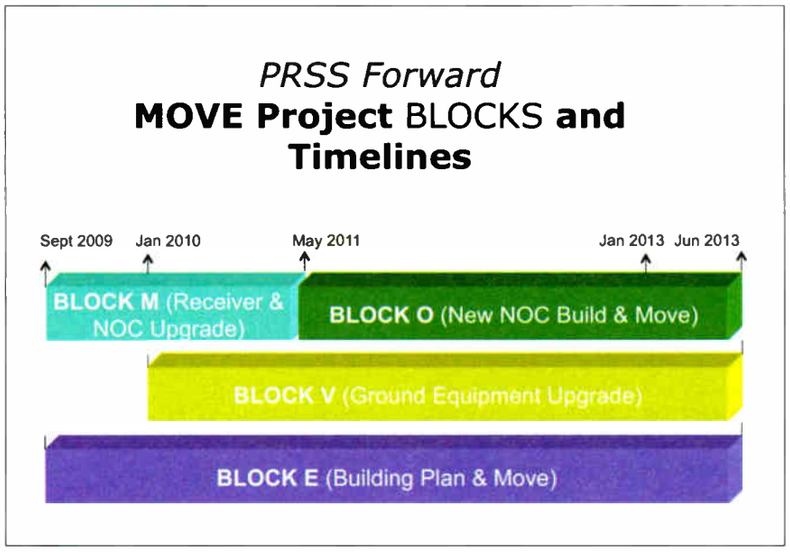
NPR Distribution will spend approximately $17 million over four years to upgrade ground systems at more than 400 stations as well as head end equipment, part of a $73 million federally funded project nicknamed PRSS Forward.

Some background: NPR acts as manager of the PRSS interconnection system, which serves all public telecom entities needing distribution services. Stations and program providers support it through fees that pay for ongoing costs; excess transponder capacity is sold to non-public radio users; and major infrastructure costs are paid by federal appropriations through the Corporation for Public Broadcasting.

PRSS is a cooperative, governed by a committee of the NPR board that includes users who are non-board members.

About 430 stations own their local earth terminal equipment; a similar number receive programming through local connections with those downlinks. The transponder capacity and national systems and equipment are owned by a charitable trust.

We've reported in the recent past on ContentDepot, which PRSS has called its most significant upgrade ever. That project uses digital technology to streamline how users acquire and send programming. ContentDepot replaced a system of real-time audio feeds with IP streams and file transfers, and brought more flexibility in creating distribution networks. But PRSS continues to use satellite as its primary delivery platform; four transponders are now beaming content to users around the United States. The fourth was added just in the past year.



A project timeline shows that the upgrade to station receivers and existing Network Operations Center should be done by mid-next year. Improvements to ground equipment are due by 2013, along with a new NOC at the planned new NPR headquarters.

The PRSS Forward project is intended as an upgrade to this infrastructure. It will bring replacement of station streaming decoders and storage receivers by mid-2011 as well as upgrades by 2013 to stations whose ground equipment is found to require it. It will also involve updates to the Network Operations Center at NPR headquarters in Washington, while developing a new NOC for NPR's planned new headquarters a few blocks away, to be switched on in 2013. A backup NOC at Minnesota Public Radio in St. Paul, Minn., also will be updated.

This is part of three-year funding cycle that started in 2008; total federal funding for transponders, ground hardware and upgrades is about $70 million. NPR Distribution has 27 people in operations and engineering, many of whom will work on the project. Also to be involved are its software developers, working on user interfaces, as well as contract engineers who will visit stations.

I asked Pete Loewenstein, the vice president of NPR Distribution, and Dick Kohles, its director of operations and engineering, whether public radio even needs satellite in this era of high-capacity connections and widespread Internet.

MOST EFFECTIVE

"Satellite is still a critical and vital component in this national interconnection infrastructure," Loewenstein said, "and for the foreseeable future it will be. But it's not the only tech we use." Users access content through a Web-based portal, and PRSS offers distribution alternatives for stations that don't need live streams or that have marginal requirements.

"It's really a hybrid system that includes a combination of technology. But satellite is still the most effective, reliable way to deliver live content with the same level of quality and access."

Kohles cited the point-to-point nature and unreliability of the Internet, as well as the cost of bandwidth. "As long as NPR is interested in quality and precise timing, it's a huge challenge. [And] bandwidth is not free; we're constantly looking at ways to utilize our transponders more efficiently." Satellite, he says, gives managers the most capability.

The refurbishment project is part of a cycle of approximately 10 years'

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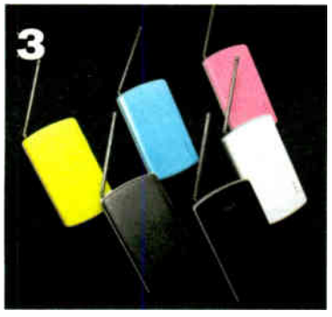
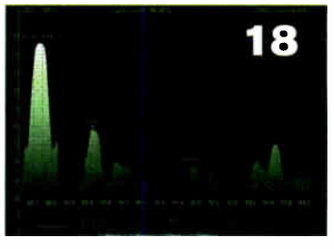
FROM THE EDITOR

Paul McLane

THIS ISSUE

MARCH 1, 2010





PRSS

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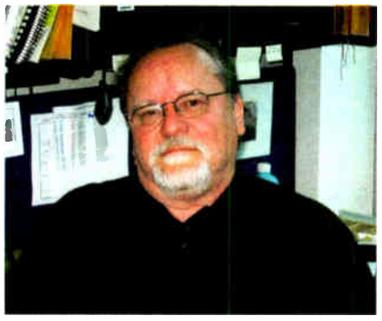
duration. Much of public radio's existing satellite hardware was distributed in 2000 to 2005; users now need more flexible, capable tools.

With new receivers, stations will be able to access twice as many audio channels. A typical station with two receivers will have eight outputs that it can monitor simultaneously. Kohles said the new boxes will provide more audio distribution capability and processing power, supporting possible future service upgrades.



Pete Loewenstein, Dick Kohles and their team are overseeing a major upgrade of the PRSS distribution system.

"There is interest in a technique that's known as 'split copy' in the industry," he continued. "The distributor can distribute information to individual markets; the granularity can be as fine as a single station or as broad as the entire network. You can introduce materials from the hard drive into a live stream, and time and schedule that precisely."

Thus, what commercial radio can do with regionalized spots, public radio can do with underwriting. "With a storage receiver and live content receiver in one box, you can introduce stored content into the live stream much more easily," Loewenstein said. "You could have Home Depot provide underwriting that relates to snow shovels in Minnesota at the same time they're talking about beach umbrellas in Florida. You could have the same mixture of modules stored and inserted based on a local station's own choices."

Benefits of the project will accrue not only to stations but to those who distribute content. "In addition to a more reliable, robust system, there's increased capacity and functionality. As requirements evolve, we have a much more flexible infrastructure."

It offers us a chance to be really creative with what kind of services we can offer, how we can distribute data and how complex this data distribution can be.

– Dick Kohles

Kohles said: "It offers us a chance to be really creative with what kind of services we can offer, how we can distribute data and how complex this data distribution can be — more data throughput, higher microprocessor power."

STATION SURVEY

The receivers will be manufactured by International Datacasting Corp., the Canadian company that made NPR's previous generation of hardware. IDC will provide Model SFX4104 EXP Pro Audio Satellite Receivers as well as head-end components for the NOC, including Datacast XD Host, NetManager2 System and Production Manager transmission hardware.

The distribution system will continue to use MPEG I Layer II compression; among its benefits of that coding format are proven performance and compatibility with HD Radio stations. The receivers' design, however, allows a change later, since they accommodate a variety of formats.

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CES

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appropriate for the phone. It then transfers that content to the phone.

Let's say I'm a college student who has used the Rivit app on my smart phone to indicate an interest in football and basketball content related to my school. I don't have a car so I've indicated no interest in traffic reports.

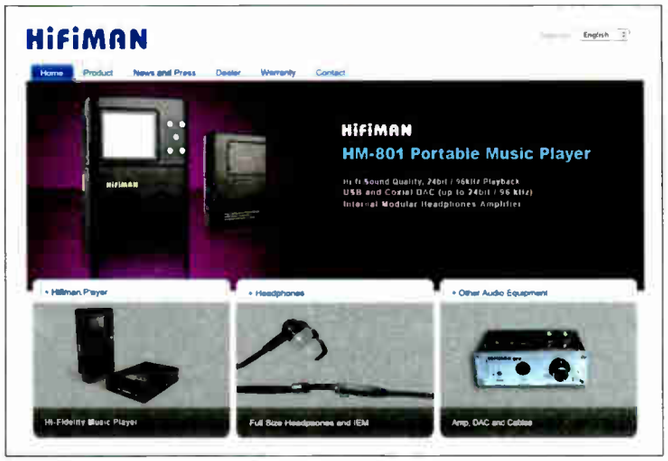
The Rivit would receive and store content related to my school's basketball team, content related to my school's football team, traffic reports and all other content from local radio stations. When my smart phone is within range of the Rivit's Wi-Fi signal the football and basketball content would be transferred to my phone, but the traffic reports would not.

Imagine a Rivit installed in my car. It charges while the car's running and has enough battery life to keep recording from the moment I arrive home in the evening through my departure for work the next day. Thus, each morning when I start the car to head to work the Rivit would handshake with my radio and transfer all of the content relevant to me that's been received overnight.

For example, as I drive to work perhaps I would like a rundown of all quarterly earnings reports from public companies that were released the previous day. This could be broadcast in the middle of the night, with embedded sponsor messages from a local bank or broker.

It would be ready for me to play on-demand as I drive to work. Suddenly those sponsor messages broadcast at 3 a.m. would be a lot more valuable.

(But I digress. This is a report about the 2010 International CES, and sadly I didn't see a Rivit at CES because, in my opinion, the radio industry is obsessed with trying to coerce smart phone makers into putting radio tuners in their devices. It can't seem to recognize that it could instead take matters into its own hands with a Rivit-like device. Does DirecTV whine to the government and anyone else who will listen about the paucity of TVs with built-in DirecTV tuners? No. It builds set-top boxes. So does Dish Network. So does virtually everyone else in a similar situation. Contrast this with the radio industry's behavior. Sometimes I'm embarrassed to be a radio broadcaster. But again, I digress.)

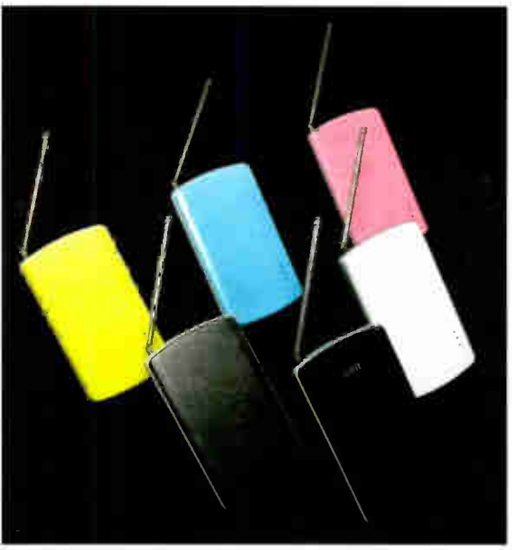


The HiFiMAN portable music player incorporates two high-end digital-to-analog conversion chips capable of up to 120 dB signal-to-noise ratio and 112 dB of dynamic range.

UNDER THE TENT

Another thing I saw at CES was the PowerShade solar field shelter from PowerFilm. It's a tent whose top has thin, flexible solar panels woven into it. The panels are durable. They can be walked on, and if one of them gets

The PowerShade solar field shelter is a tent whose top has thin, flexible solar panels woven into it.



The Tivit can sit on a shelf and turn any Wi-Fi-enabled smart phone within range of its Wi-Fi signal into a mobile DTV receiver.

punctured only the solar generating capacity in the immediate vicinity of the puncture is lost, not the whole rectangular panel.

The PowerShade would be really cool for a remote broadcast. The 1 kilowatt version costs $25,000 which includes the tent, the inverters for the solar panels and everything. It's pricey, but perhaps a worthwhile marketing expense if you're positioning your station as a green operation.

Another neat thing I saw on the show floor was the HiFiMAN portable music player. It's a high-end portable music player and is perfect for all those people who complain about the quality of compressed music libraries over portable players.

The HiFiMAN retails for $799. It incorporates two high-end digital-to-analog conversion chips capable of up to 120 dB signal-to-noise ratio and 112 dB of dynamic range. It has both line and headphone outputs, and the headphone amplifier board is designed to be removable, enabling device owners to purchase other amp boards from other manufacturers to suit their individual tastes.

The HiFiMAN can also play audio fed to it through its USB and coax inputs. As storage capacity and processing capability continue to become more and more affordable it seems logical to assume that many, and perhaps most, consumers will be listening to uncompressed portable audio through high-quality portable amplifiers in the not too distant future.

There was quite a selection of HD Radio products on the show floor too. But my space is limited and HD Radio is covered well by others in these pages, so I'll leave it to them.

The International CES is a lot a fun. I hope to see you there next year.

Radio World welcomes other points of view to radioworld@nbmedia.com.

NEWSROUNDUP

LICENSING: IBiquity Digital reduced its licensing fees for its IBOC technology and expanded payment options; it says the 2010 pricing plan will simplify station migration. The one-time licensee for a main channel had been $25,000, though various discounts brought the price for the average station down to $15,000, according to the company. Now the licensing fee is $10,500 when a station signs a contract; it can be billed $11,000 net 30; or it can pay $12,500 spread over a year (that's $1,042 per month).

WVIA: Pennsylvania pubcaster WVIA(TV/FM) plans to rebuild its transmission center after an electrical fire damaged its transmitter site in February. It expected to recover quickly. The Scranton-Wilkes Barre broadcaster said TV Channel 44 was available in high definition and the FM station was operating on 89.9 MHz at low power until then. WVIA's Bill Kelly said the WVIA-44 transmitter building on Penobscot Mountain appeared to be a total loss and estimated damage at $1 million to $2 million.

SABOTAGE: The Georgia Bureau of Investigation and a local sheriff's office are investigating possible sabotage following a tower collapse at WLHR(FM) in Lavonia, Ga., on Jan. 29. Authorities and station officials believe guy wires were deliberately cut, causing the 284-foot tower for the Class A FM to collapse. The tower was destroyed and station's transmitting equipment seriously damaged. Station officials estimated the loss value exceeds $100,000. WLHR returned to air within two weeks thanks to a loaner transmitter from WRAF(FM) of Toccoa Falls College.

BE: Broadcast Electronics has modified its repair and warranty offerings with a new "Customer Care Plan" for its RF products. The company promises faster response times, more economical fees and greater overall support as a result.

EIBASS

(continued from page 1)

The group has written to Sen. Olympia Snowe, R-Maine, about her bill, the FCC Commissioners' Technical Resource Enhancement Act, which would add an engineering or computer science staffer to each of the commissioner offices.

Dane Ericksen

Richard Rudman

EIBASS suggests that Snowe set her sights too low. While it welcomes any development that would increase the unbiased technical expertise brought to FCC decisions, it argues that the commission needs an engineer in one of the five commission seats.

A commissioner without a technical background, even one supported by an engineering assistant, is not as effective as a commissioner with such experience, the group believes.

"We'd like to see engineers higher up in the FCC's decision-making process," said Ericksen, especially someone who can tell whether a spectrum-sharing proposal is likely to work. Some of the agency's recent spectrum-sharing proposals have serious flaws and the commission needs more engineering expertise, they feel.

"Unlike some attorneys, engineers know that the laws of physics are not subject to negotiation," said Rudman. He said EIBASS favors BAS sharing by compatible technologies if there is a reasonable technical basis to believe such sharing can work.

The group isn't picky; EIBASS doesn't necessarily seek to require that the "engineer" commissioner be a broadcast engineer or even an electrical engineer. A candidate with an engineering degree in any discipline, or professional registration in any discipline in any state, would qualify (though this is a discussion that could set off debate itself, given the historical controversy within broadcasting over the definition of "engineer").

"What is important is that at least one FCC commissioner has a fundamental background in mathematics, physics and engineering that goes with attainment of an engineering degree or professional registration," said Ericksen.

COMMISSIONER ENGINEERS

In its letter to Snowe, the group suggests it would be better to resurrect H.R.3501, the Federal Communications Commission Engineering Sciences Qualification Act of 1991, which would establish a statutory requirement that at least one FCC commissioner be an engineer. Otherwise it's unlikely we'll again see a trained engineer on the FCC, EIBASS fears.

It notes that of the 80 commissioners who have served on the FCC, only eight were engineers. Further, with the exception of Charles Ferris — who had a physics degree, was professor for naval science and marine engineering at Harvard University and served as FCC chairman from 1977 to 1981 — all past commissioner engineers were appointed prior to 1960, according to the group.

A steady decline of engineers on FCC staff also makes the issue a priority, says EIBASS. It said that in 1948 the FCC employed 720 engineers out of a total of 1,380 employees and had an annual budget of $6.2 million. Today the FCC has just 273 engineers out of 1,899 employees and an annual budget of $339 million, the group states.

A recent report to Congress by the Government Accountability Office also notes the declining number of engineers. From 2003 to 2008, it says, the number dropped by 10 percent, from 310 to 280. Further, the GAO says, the FCC estimates 45 percent of supervisory engineers are projected to be eligible for retirement by 2011; while the agency has begun hiring engineers to replace those retiring, "most hires have been at the entry level."

The GAO stated, "Of the 53 engineers hired in fiscal years 2007 and 2008, 43 were entry-level hires. During this same period, 30 engineers retired. Stakeholders stated that recent graduates sometimes have little experience or understanding of how policies affect industry. Increasing the number of staff with backgrounds and experience in industry would help improve FCC's understanding of industry issues and can lead to better policies, according to stakeholders."

EIBASS had not received a response from Snowe's office as of mid-February.

ABOUT EIBASS

Ericksen said he and Rudman formed EIBASS to protect the BAS spectrum. The group has 11 members, mostly broadcast engineers. Its Web site is *eibass.org*.

Broadcast Auxiliary Services bands are all of the TV channels except Channel 37, plus 26, 160, 450/455 and 950 MHz, as well as 2, 2.5, 6.5, 7, 13 and 18 GHz.

Part 74, Subpart H, Low-Power Auxiliary stations, which includes wireless microphones, are allowed on all of the VHF and UHF TV channels, except for Channel 37, in order to protect radio astronomy. For the moment this means TV Channels 2–69, but as of June 12, 2010, LPA stations will be restricted to the in-core TV Channels 2–51.

Broadcasters use the 450/455 MHz bands for two-way communications with helicopters and ENG trucks. AM and FM radio stations use the 950 MHz and 18 GHz bands for aural STLs and intercity relays. TV stations use the 2 through 18 GHz bands for their microwave communications and electronic newsgathering (ENG).

Some private services share these pieces of the spectrum, such as police departments, which use some BAS bands for surveillance. For shared bands, broadcasters have co-equal priority, Ericksen said. Sharing for fixed links is generally on a first-come, first-served basis.

"The FCC is doing its best to accommodate new users of technology in bands that have traditionally been used for backstage purposes," said Rudman, noting the agency recently opened up the BAS spectrum to new uses, which has caused problems for broadcasters.

— *Leslie Stimson*

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.

E-RADIO SETS ITS POWER GRID CONTROL EYES ON U.S.

E-Radio, the company using FM subcarriers to control electricity use, has a deal with Canadian broadcaster CBC. Its next target launch is the U.S., which it hopes will happen nationwide sometime in 2011–12.

The National Association of Broadcasters likes the company's concept; in October the trade group asked the Federal Communications Commission to permit the use of FM radio data system signals to enable smart grid applications.

E-Radio partners with manufacturers of smart grid devices — thermostats, in-home displays, load controls and appliances — and has established pilot programs with several utility companies. It says its Utility Message Channel allows utilities, energy retailers or government agencies to send alerts, messages and commands to smart grid-enabled devices and consumer appliances that tell them to lower their energy consumption and operate more efficiently.

Using FM subcarriers leased from radio stations, e-Radio transmits the notifications to the RDS home-based receivers across a municipality or utility service area that results in reduced peak energy demand, according to the company. The technology can also intervene on the consumer's behalf, cycling off appliances for set periods of time during peak periods.

When I last wrote about the company it was conducting pilot tests in California, Texas and Ontario. Company founder Jackson Wang tells me they've added a few more to the list, including Kentucky, Indiana and Maryland.

"Utilities have coverage areas of hundreds of miles. They like us because radio covers a large amount of miles cost-effectively," he told me.

Several NPR member stations as well as private commercial stations as well are testing the e-Radio system.

Most of the U.S. stations in the e-Radio pilots also broadcast in HD Radio. The higher data rate applications possible with HD Radio open up more possibilities, Wang said, like using some of the transmitted data to send communications such as customer relations text messages or emergency alerts over various devices, like a thermostat.

The Silicon Valley company is looking for investors as well as more engineers and people who have experience with utilities.

SHORTWAVE

(continued from page 1)

the Americas or most of Europe.

"There has been a massive decline in shortwave listenership, especially in Europe and North America," said Andy Sennitt. He is one of the world's most respected experts on shortwave radio and the editor in charge of the Radio Netherlands Worldwide "Media Network" Web site.

"Media Network" began in 1981 as a weekly shortwave program; in 2000 that show ended in favor of its current online presence.

"Other regions vary from country to country," said Sennitt. "Shortwave is still significant in much of Africa, South Asia and parts of Latin America."

WHAT CHANGED?

It is easy to blame the Internet and international satellite television for the decline in shortwave radio listenership. But shortwave was in trouble before these new media took hold, said Larry Magne.

He is publisher of Passport to World Band Radio, the annual shortwave radio tuning guide that thrived for 25 years but suspended publication in 2009.

"We reached an apex in shortwave radio listenership in 1989, when the Cold War ended," said Magne. "Shortwave audiences have been in decline since then."

"AM broadcasting is expensive, and, since the end of the Cold War, many Western governments don't see the need to spend large amounts on transmitting their output on shortwave," said Sennitt. "As a result, some have closed down their shortwave services altogether. Others have created satellite services and/or partner with local stations in key targets, and most now stream their programming on the Internet."

Magne said he believes it was the BBC World Service that speeded shortwave's decline in North America. In 2001, then-BBC World Service Director Mark Byford decided that local AM/FM rebroadcasting, satellite radio and the emerging Internet made it possible to stop shortwave broadcasts to North America. (Byford is now BBC deputy director general.)

The move, hotly contested by avid shortwave listeners, had a domino effect.

"After the BBC ended its North American broadcasts, other broadcasters followed suit," said Magne. "The result is that North Americans don't get much in the way of shortwave programming these days. Spectrum that once carried international news and programming is now host to U.S. fundamentalist religious stations."

Kim Andrew Elliott, a former VOA contributor who reports on international broadcasting at his Web site, *www.kimandrewelliott.com*, adds that BBC World Service was attracting more listeners via U.S. public radio stations than via shortwave when the shutdown occurred. "Those FM listeners are, however, not exposed to as wide a variety of BBC programming than was available on shortwave," he said.

In Elliott's day job as audience research analyst for the International Broadcasting Bureau, he has seen audiences migrate to FM overseas as well.

"For example, a 2009 survey shows that of Cambodians who listen to VOA Khmer, 63 percent do so via FM affiliates in the country, 31 percent via the medium-wave relay from Thailand, and only 6 percent via shortwave," Elliott said.

He also noted that in a 2003 survey in India, 7 percent of respondents said they listened to shortwave radio yesterday, and 7 percent to FM. By 2008, that changed to 18 percent for FM and 2 percent for shortwave.

(Under current broadcasting rules, private FM stations in India cannot carry news programming, which means VOA, BBC, RFI and other international broadcasters do not have local FM partners, as they do in other nations.)

INTERNATIONAL RADIO NOW

Today, the BBC and other international radio broadcasters are indeed available on the Web and satellite radio. But most of the attention that went to radio services is now directed toward Web sites and international television stations.

> **We reached an apex** in shortwave radio listenership in 1989, when the Cold War ended.
>
> – Larry Magne

Meanwhile, the attempt to save money by distributing international programs to domestic broadcasters is backfiring, said German shortwave expert Kai Ludwig.

"Often they cease because the programming from the foreign broadcaster is just no longer considered as appealing," said Ludwig. "For example, Radio Free Europe/Radio Liberty lost its full-coverage FM rebroadcasts in Ukraine when their partner station reformatted to adult contemporary music."

Even when domestic stations do carry international radio programs, they cannot match the coverage and reach of shortwave radio, he added. "Online streaming is of course a valuable addition, but here the competition is just overwhelming."

Meanwhile, the religious stations that have moved onto shortwave do not appear to be making money from it.

"Are people listening? The answer can be found in such developments like Christian Vision withdrawing its programming from transmitters in Germany and Australia; HCJB not replacing the shortwave plant it recently closed in Ecuador, and Evangeliums-Rundfunk, the German partner of Trans World Radio no longer using shortwave," Ludwig said.

DIGITAL SHORTWAVE

There had been hopes that digital shortwave receivers using the Digital Radio Mondiale standard, which do not suffer analog shortwave's traditional audio problems, would be the savior of the medium.

Unfortunately, "DRM was a decade too late, and badly marketed," said Sennitt. "It has its uses for specialist tasks — such as Radio New Zealand delivering its shortwave programs to Pacific partner stations — but as a mainstream shortwave broadcasting platform it's as dead as a dodo. ... The other problem, of course, is that the shortwave receiver companies didn't keep their side of the bargain to develop affordable mass-produced DRM receivers."

As well, "in many cases I've heard DRM stations using telephone-grade bitrates because it's the only thing that would get through to the target," said Elliott. "Higher bitrates, with better audio, often don't get through."

Given these facts, Andy Sennitt said he expects "shortwave broadcasting to Europe and North America will be almost totally phased out, but there will still be shortwave services to Africa and parts of Asia." These services will continue until those regions develop radio, TV and Internet infrastructures akin to the developed world.

IRREPLACEABLE ADVANTAGE

For all its transmission expense and audio problems, analog shortwave radio has one clear advantage over the Internet and domestic radio/TV: It cannot be easily blocked — even when states try to disrupt its signals using jamming transmitters.

Webcasts can be filtered or blocked through IP geolocation techniques that block access to sites based upon the IP address of the site or the user.

Access to local radio transmitters can be withdrawn by officials. For example, Radio Azadlıq, the RFE/RL service for Azerbaijan, along with VOA and the BBC World Service, was forced off local FM and medium-wave frequencies at year-end 2008 after its often critical coverage of that year's elections.

"The Internet, satellite signals and placement AM/FM can all be blocked by a determined officialdom," said Magne. "Yet properly executed analog shortwave tends to get through when others fail. Because of this, international broadcasters have the potential of saying pretty much what they please, when they please, and to whom they please; they don't have to self-censor their messages to appease gatekeepers.

"According to Lech Wałęsa, Václav Havel and other freedom leaders behind the former Iron Curtain, this ability to circumvent gatekeeping was the main reason communism was defeated in Eastern Europe," he added.

Information is still being censored not just in North Korea, Iran and Saudi Arabia, but Tunisia, Vietnam, Cuba and China, among other nations. Shortwave advocates argue that their favored platform remains relevant at a time when outside information is as important as it was in the Cold War.

NEWS ROUNDUP

HARRIS: Harris Corp. named P. Harris Morris as the new head of the Broadcast Communications business. Morris had been vice president and general manager of media and workflow within the broadcast segment. He succeeds Tim Thorsteinson, who left last fall.

PENTON: B2B media company Penton Media hoped to soon emerge from Chapter 11 bankruptcy protection now that it has reached a restructuring agreement with its lenders to eliminate $270 million in debt. Publications include Broadcast Engineering and Radio magazine.

SWISS: With DAB well established in Switzerland and DAB+ services launching there last October, local/regional programs shortly will begin airing FM IBOC signals. Radio Argovia, Radio Basel, Capital FM, Radio 24 and Radio Sunshine plan to start broadcasting with HD Radio technology this September, according to Swiss media consultant Ruoss AG.

SMART: CHOICES:

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.

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Knox-Box Opens Doors to Firefighters

And We Discover a Nifty Multimeter With a Wireless Detachable Display

Are you familiar with the Knox-Box Rapid Entry System? An open Knox-Box is shown in Fig. 1. Mounted on the outside of your transmitter building, the box can be opened by your fire department. Inside is a key to your building.

WORKBENCH
by John Bisset
Read more Workbench articles online at radioworld.com

After registering with your local fire department, your Knox-Box is keyed to a single master key controlled by the fire department. A number of engineers have installed these for their remote transmitter sites. In the event of an emergency, the Knox-Box prevents a fireman from having to take an axe to your door. In unattended studio/office complexes, the Knox-Box is equally useful. Find out more at *www.knoxbox.com*.

Fig. 1: The Knox-Box aids site entry in emergencies.

Visit the Knox site and you'll find that our industry isn't the only one plagued with copper theft. Fire department FDC water intake pipe fittings, mounted on the outside of office buildings, are made of copper or brass. They are just as attractive to metal thieves as coax. Knox has developed and sells a special fitting cap that locks the assembly down, preventing theft. Sure wish it was that simple for broadcast applications.

Thanks to Paul Shulins of Greater Media in Boston for sharing this information.

Fig. 2: The Fluke 233 Remote Display Multimeter in action.

Sunbury Broadcasting's Harry Bingaman, a frequent contributor to *Workbench*, tries to buy a new piece of test equipment each year. This year's find had to be shared with readers. It's a multimeter with a wireless *detachable* digital display. Check out the Fluke 233 Remote Display Multimeter at *www.fluke.com/233_DMM*.

I think Fluke has been listening to some broadcast engineers. Not only is the display detachable but it is magnetic, so it will mount on a rack or steel chassis up to 30 feet from its "mother" unit.

Harry used it on a QEI 3.5 kW transmitter to check the filament voltage. The instrument provides a true RMS reading. In the QEI, there is an AC filament voltage sample that comes out of the PA cabinet through a set of feed-through capacitors. It's a great connection point for the meter. The drawback is that the filament adjustment control is on the front of the transmitter. You either need a second pair of eyes to make the adjustment, or run back and forth to see what change the adjustment has made on a conventional meter.

Harry stuck the detachable meter on the front of the transmitter, and adjusted the voltage while watching the display.

This meter has plenty of potential. If you make the $300 investment, let me know how you use the meter. By the way, YouTube has several videos of the meter in action if you want to see its features before you buy.

Harry Bingaman can be reached at *kc3qhhmb@aol.com*.

Don't overlook a great source of reference material: the Web sites of product manufacturers.

I have encouraged you to check out the Web sites of professional engineering consultants to discover a wealth of knowledge that can help you do your job better.

Stephen Lockwood, P.E., with Hatfield & Dawson Consulting Engineers writes that you need to be concerned not only about the arc gap of an Austin Ring transformer. Proper installation is just as important.

The transformer primary should be installed so as not to let rain drip from the secondary to the primary. See Fig. 3, an image we've shared before.

(continued on page 16)

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.

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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.

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WORKBENCH

(continued from page 12)

The firm has seen several failures at high-power installations where the primary insulation fails on the drip line from the secondary to the primary.

You'll find other useful information at *www.hatdaw.com*.

SBE member Fred Shetler writes from Port Royal, Pa., that good reference material also can be found on manufacturers' Web sites.

After seeing the constricted flexible ductwork in the Dec. 18 *Workbench*, Fred pulled an application note from his file. Prepared by Atco Rubber Products, the guidelines discuss proper installation and support of flexible ductwork. One image shows the duct constriction we're talking about; see Fig. 4.

Atco manufactures a variety of flexible ducting. Application notes can be found at *www.atcoflex.com*.

The company also has a new product called Ultra-Flex, which broadcast engineers may want to specify in new studio/office locations.

Many modern air handlers are using UV bio-treatment lamps or UV air purifiers to decrease the build-up of harmful pathogens like mold or bacteria. These UV sources can have a deteriorating effect on the inner core of standard, non-metallic, flexible ducts. Ultra-Flex is designed to withstand the UV rays, saving the cost of later ductwork replacement.

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. Faxed submissions can be sent to (603) 472-4944.

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

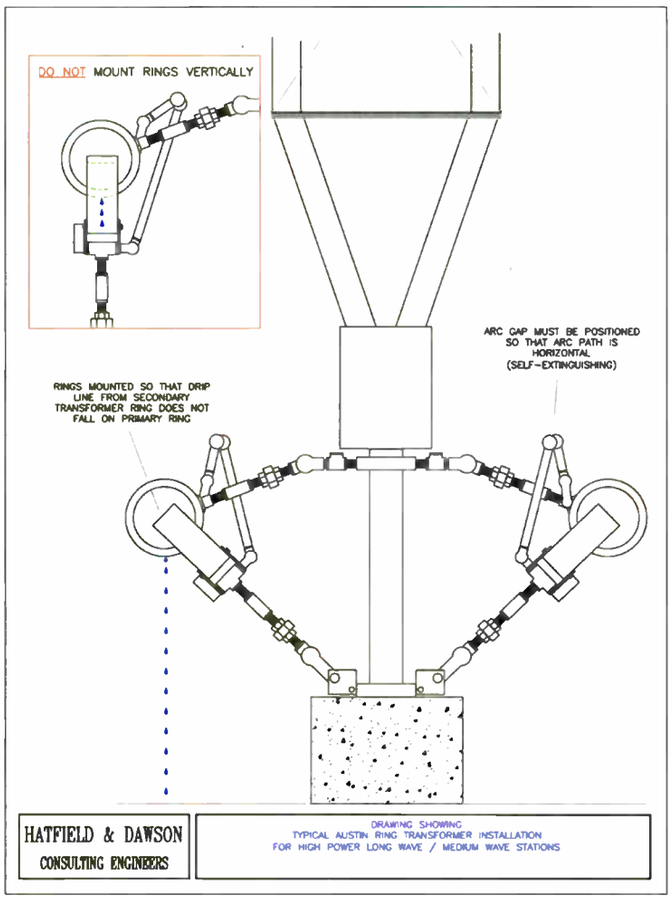


Fig. 3: This Austin Ring Transformer installation drawing is one of many resources on Hatfield & Dawson's Web site.

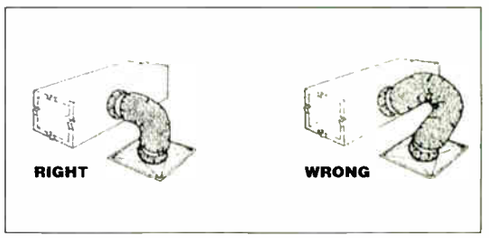
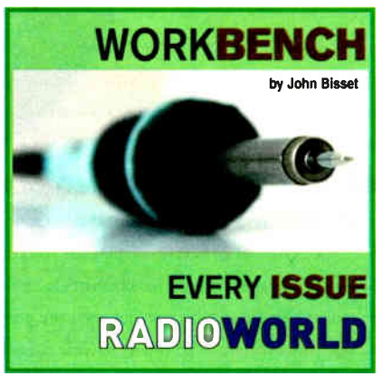


Fig. 4: Bend ductwork properly to prevent constrictions. This is from an Atco application note.



WHO'SBUYINGWHAT

WHEATSTONE GETS SET FOR BIG CORUS QUAY JOB

Wheatstone Corp. is providing the audio infrastructure for Corus Entertainment Group's radio stations in a half-million-square-foot multimedia complex called Corus Quay in Toronto.

Stations CILQ(FM), CFNY(FM) and CFMJ(AM) will use a Bridge-based system integrating Wheatstone E-Series control surfaces into a TDM platform.

It consists of eight Evolution 6 control surfaces, two Evolution 4 surfaces, nine Evolution 6 VMI-E Virtual Mixer Interfaces and a dozen Glass E Remote Control Surface Software bundles.

The backbone of the system consists of two WheatNet 4864s (48-port TDM switches) in a dual-redundant configuration interfacing to six 22-position Bridge I/O frames and 20 10-Position Bridge Satellite I/O frames, creating a 1,000x1,200 audio I/O matrix and 552x552 GPI logic matrix.

The architect's rendering shows Corus Quay as it will look from the south. Wheatstone gear is shown prepped at the factory in New Bern, N.C.

PRSS

(continued from page 5)

The implementation of all this has begun, with NPR surveying stations about the condition of their downlinks. "Are our records correct? What manufactured items do they have — antennas, for example?" Kohles said, listing questions they asked stations. "Is their antenna in excellent or poor condition? Feed horns, the interfacility links, how is the performance of their antenna?"

The survey will help the managers assess the scope of work needed, decide which sites need visits from NPR and its contractors and understand the costs necessary to complete the project.

NPR at its head end must refurbish the Network Operations Center, adding equipment to address the new receivers and to improve network command and control. Even as it upgrades that hardware system, it must plan a new NOC to be installed at the new NPR headquarters.

"From my point of view, it's kind of serendipity that the move to a new HQ is in the same time window," Loewenstein told me. "We move into the new facility with an upgraded, modernized system. It wasn't planned this way but it's been a great convergence."

PUBLIC RADIO BACKBONE

Knowing that the relationship between a station and the network provider can be touchy, I asked Kohles what kind of gripes he hears most often from the folks in the field.

"It's the practical things about owning a receiver — it's the type of connectors; or whether the AES output is following a specification; the problems that they have integrating into a system," he said.

"We read Pubtech" — the public radio technical listserv — "and we know who those contributing engineers are and what they're thinking. We're listening. We're not ordering the big order [of receivers] for some time yet. We are working with a small population." NPR staff is working with IDC on the feature set now, so this is a good time for users to speak up.

"It's important we remind our station engineers that we're not doing this in a vacuum," he said. "We have plenty to talk to them about, plenty to listen to."

During the upcoming Public Radio Engineering Conference at the NAB Show, NPR Distribution managers will be talking further with users and letting them dig into the new receiver design.

"Our system in many ways is unique, with 430 stations, each of which is independent and has its own style, needs and interfacing to the satellite system," Loewenstein said. "It's not driven by a common platform, where everybody is laid out the same way.

"The challenge we have — and what makes this fun, if you're inclined this way — is to find the best solutions that work across that range of systems out there. It's amazing, when you think about how complicated this system is — the variation in how they're set up, the type of needs they have, their content and their level of expertise." But as Kohles put it: "Public radio engineers are extremely competent. They are some of the best out there."

The PRSS folks are proud of their infrastructure and the role it has played in public radio's remarkable growth. They note that the system recently turned 30.

"This was a system that went into service in 1979," Loewenstein said. "This has been three decades of support to the public radio community. It's hard to imagine that the public radio system could have evolved without a robust national interconnection system." The PRSS Forward project, he said, sets the stage for another eight to 10 years of service.

I wonder what distribution decisions they'll be facing then.

HOW TO

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Microgen Expands Its Analysis Toolkit

TS9085 Offers Precision Monitoring of FM Broadcasts When Connected to Your PC

BY TOM VERNON

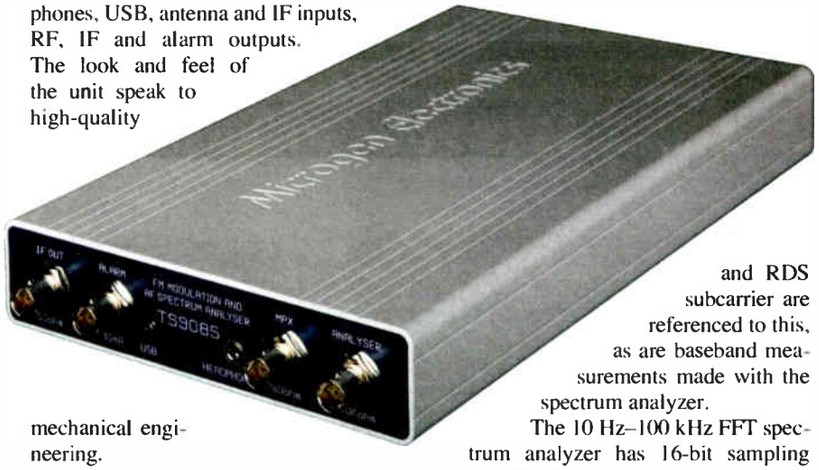
In the not-so-distant past, contractors and consultants who wanted to check parameters at a number of FM stations had to lug around a frequency-agile FM monitor and related gear. Today, DSP technology enables one to do the same things with a small box connected to a laptop.

PRODUCT EVALUATION

One such device is the MicroGen TS9085 FM Modulation and AF Spectrum Analyzer. A predecessor, the TS9000A, received RW's Cool Stuff award in 2004, so I decided to check it out.

My review device was provided by Sierra Multimedia of Bella Vista, Ark., a U.S. distributor for the product, which is made in the United Kingdom. (I tested a TS9080; the company recently added a couple of features, as noted below, and calls it the TS9085.)

The enclosure is a robust dual-chamber aluminum extrusion. End panels have connectors for balanced audio out, headphones, USB, antenna and IF inputs, RF, IF and alarm outputs. The look and feel of the unit speak to high-quality mechanical engineering.



CALIBRATION-FREE

Inside the analyzer is some high-stepping technology. At the core is a digital phase FM demodulator. It features two feedback loops that maintain accuracy over time and temperature by comparing deviation amplitude and phase to a 20 ppm voltage reference band gap diode, making the analyzer virtually calibration-free.

Measurements of deviation, modulation power, pilot level and RDS subcarrier are referenced to this, as are baseband measurements made with the spectrum analyzer.

The 10 Hz–100 kHz FFT spectrum analyzer has 16-bit sampling and a 100 dB dynamic range, which can be extended to 110 dB with waveform averaging. This allows signals below the noise floor to be observed and measured.

The stereo signal is decoded by a software algorithm. The 19 kHz pilot is detected and phase locked to a narrowband filter. The left and right channels then are extracted with a synchronous detector, resulting in excellent phase matching between channels. The extracted audio signal then is passed, via Windows, to the sound card for audio monitoring.

Installation of the iLog software can come from either a CD or MicroGen's Web site; iLog works with Windows 98, Me, 2000, XP, Vista and Windows 7.

PRODUCT CAPSULE

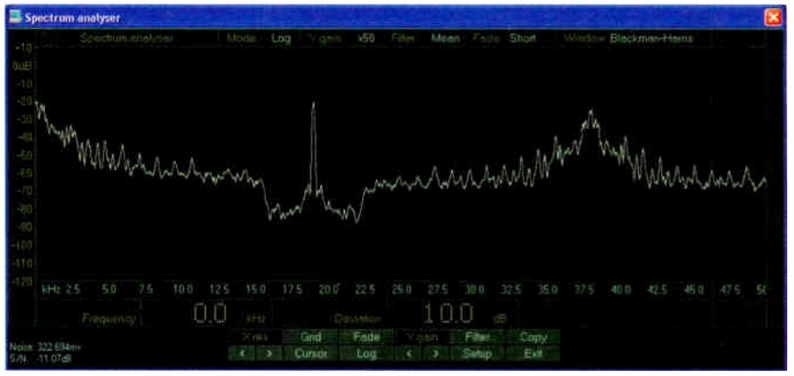
MICROGEN TS9085
FM Modulation and AF Spectrum Analyzer

Thumbs Up
+ Robust RDS analysis
+ Potentially unplugged operation
+ Remote control with simple text file commands
+ Flawless audio for monitoring

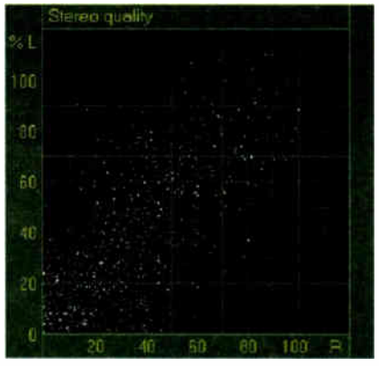
Thumbs Down
– Documentation
– RDS PS with autoscan doesn't work
– Cannot run software without attaching analyzer
– Glitchy software jumps to different signals

Retail: $2,725

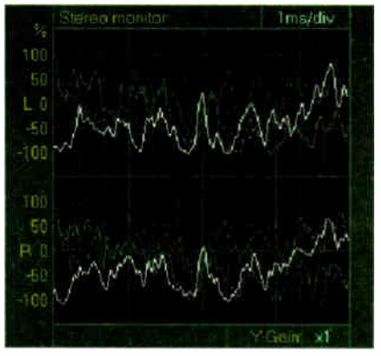
For information contact Sierra Multimedia at info@sierramultimedia.com or visit www.microgenelectronics.com.



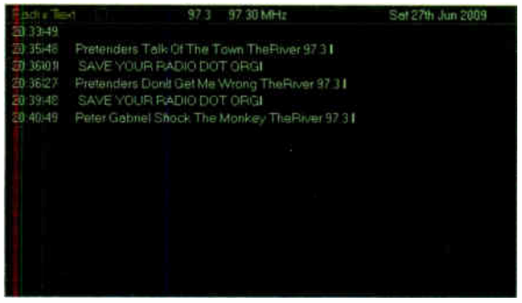
A spectrum analyzer displays stereo pilot and RDS information.



This 2D display visualizes stereo quality.



Stereo monitor. The time base can be set as desired, with vertical gain at X1 or X10 for detailed inspection.



Sixteen RT messages can be displayed on iLog, with an unlimited number stored to hard drive.

The recommended system is Windows XP/Vista/Windows 7 on a 2+ Ghz Pentium/Athlon.

The unit is powered from the USB port. However, my Dell Latitude laptop did not provide enough juice to power the analyzer. This is a known issue, and the instructions suggest powering the unit with an externally-powered USB hub. This works, but sacrifices some of the unplugged portability of the analyzer.

ANALYSIS TOOL

The first step with the 9080/9085 is usually to connect an antenna and do a frequency scan, although you can dive in and do a single channel analysis.

No antenna is provided, but I found a telescoping whip antenna with a BNC connector worked well. Note that auto-scan will run indefinitely, and you must manually stop it after two or three sweeps through the spectrum.

One of the features claimed for the auto scan function is automatically displaying a station's PS name. Despite the fact that many area stations had this working with their RDS, this information would not display in the frequency scan. "BBC London" popped up on one of the local signals at 94.9. The company explains that the analyzer leaves the factory pre-tuned to this. This will be deleted when running AutoTune for the first time.

My efforts to input station information manually often resulted in the text being assigned to the wrong signal.

The analyzer is fussy about multipath, as evidenced by the digital readout and multipath display. Making measurements with high multipath is a waste of time, as false high modulation levels, inaccurate readings and garbled RDS data will result.

Although I had access to several rooftops, the prospect of lugging a long extension cord to power the analyzer and laptop proved tiresome. Picking the right spot in advance seems critical to successful multi-station analysis.

The digital readout gives the frequency and signal strength of the channel tuned. For strong signals, a user-settable attenuator can be selected with settings of –10, –20 or –30 dB. As with all displays on iLog, the scan can be copied and pasted into any application via the clipboard.

The unit features a robust RDS decoder that can decode virtually all groups and display this data on-screen as well as storing to a hard drive. The most recent 16 RT messages are displayed in the RT window. Any number of RT messages can be saved as ASCII text to the hard drive. RDS quality can be displayed to four decimal places, although it is not explained how this statistic is created.

While most users will utilize the analyzer's FM functions, it is worth noting that the spectrum analyzer works in the audio range, making it useful for white or pink noise analysis.

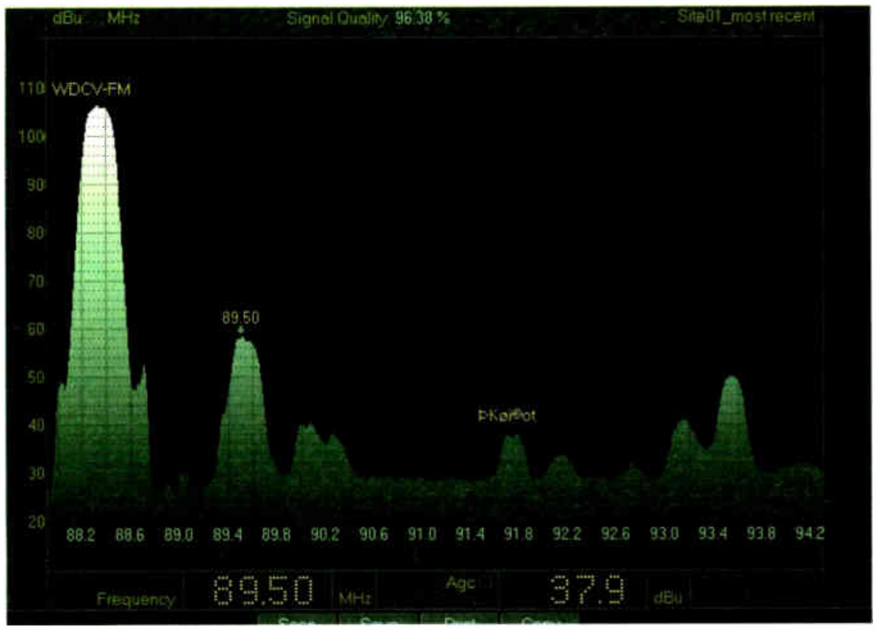
In addition to being a great analysis tool, the unit's headphone and audio outputs provide for some incredible listening. Monitoring with a good pair of headphones reminded me how great analog technology can sound when everything in the FM air chain is done right.

QUIRKS

While this is a well-engineered piece of hardware, it is not without its issues.

Most notable is the poor documentation. What little I found is vague; I ended up learning how to use the analyzer by trial and error. The capability to monitor alarm parameters and do basic remote control using the iLog software with text commands is mentioned in the

(continued on page 20)



A small segment of the spectrum is shown at 10 kHz resolution. Note garbled information for 91.7.

With the release of iLog Version 5, it is possible to log the position of measurements taken. The software will scan the PC for any NMEA GPS device attached and produce files that can be displayed on Google Earth, showing signal strength and other measurements.

MICROGEN

(continued from page 19)

documentation, but not explained. The factory folks note that there is a Help file accessible from the application that details operation, and they tell me that the supplied CD now comes with a PDF file explaining in detail how to operate remotely.

The iLog software will not run without the analyzer attached, making it impossible to look at past data without being connected. Switching color or brightness settings caused the analyzer to jump to another station. According to MicroGen, this only occurs if the frequency is not saved; switching color automatically reselects the preset network.

Despite some quirks and the less-than-stellar documentation, I enjoyed working with this unit and wish I'd had more time to explore its alarms, remote capabilities and other features.

MicroGen emphasizes that the baseband spectrum analyzer, first introduced six years ago, allowed engineers to actually see as well as analyze and measure the signal coming from their transmitter. "Previously this would only been possible with a $20,000+ HP analyzer," a spokesman said, adding that this is likely a reason the original earned awards at the time.

The company also notes that with the release of iLog Version 5, it is now possible to log the exact position of any measurements taken. The software automatically will scan your PC for any NMEA GPS device attached and produce files that can be displayed on Google Earth, showing signal strength and other measurements.

Note also that the TS9080 recently has been upgraded to the TS9085 with the addition of user-selectable wide- and narrow-band IF filters. An additional BNC connector now outputs a 57 kHz bandpass of the RDS signal. Current versions of the iLog software work on either unit.

For the contract engineer or consultant not as concerned with HD Radio monitoring, MicroGen's TS9085 may be just what the doctor ordered.

Tom Vernon is a longtime contributor to Radio World.

MARKETPLACE

DAS OFFERS ALERTING RESOURCES

Digital Alert Systems launched a Web site with resources for broadcasters looking to learn more about emergency alert compliance.

The site supplies information on the company's EAS technologies and includes a resources page "devoted to helping broadcasters be more aware of FCC mandatory regulations, explore ways to increase EAS efficiency while saving financial and staffing resources and understand the wide range of terms and acronyms commonly used in emergency alert management." Visit *www.digitalalertsystems.com/resources.htm*.


Glossary of EAS Terms
Digital Alert Systems
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EAS Acronyms | Glossary of EAS Terms | EAS Event Codes
Activation
the initiation of the EAS by transmission of the EAS codes.
APAWS- Alternative Public Alert and Warning System
Another term for IPAWS.
ASCII
(American Standard Code for Information Interchange) a standard set of characters with numerical equivalents
Attention Signal
eight seconds of two tones (853 and 960 Hz) used as an audio alert
Audio Frequency Shift Keying (AFSK)
a digital modulation technique that uses two shifting audio frequencies to transmit binary data
Authenticator Word Lists
the list of words that federal officials send prior to official EAS national activation; used to substantiate the information being sent. The use of separate and different authentication may be used for local area EAS activations
Authorization Letter
the official authorization, given by the FCC, for an EAS participant station to cease operations during a national level activation of the EAS, such as broadcast stations to go off the air
Automatic Interruption
the automatic encoding and transmission of EAS codes for preselected events. This enables EAS warning messages to be automatically broadcast without operator intervention. This is one of the most important benefits of the EAS over the old EBS
Baud Rate
the speed of data transmitted, equal to the number of elements sent per second (equal to bits per second if a bit is the element)
Bit Rate
the speed of binary data transmitted, equal to the number of digital bits sent per second.

Vice President/General Manager James F. Heminway said the intention is to help broadcasters deal with the variety of issues in complying with EAS regulations, "ranging from understanding the FCC requirements to interfacing with other station equipment, monitoring alerts from other locations and logging and reporting compliance."

Digital Alert Systems was formed in 2003 with the goal of using IP-based technologies to improve emergency communications. In 2009 it merged with Monroe Electronics.

Its DASDEC platform is a CAP-compatible EAS encoder/decoder that incorporates Internet and LAN-based communications while maintaining compatibility with EAS protocols.

DAS says the system addresses a gap between the installed base of alerting gear and the next generation of emergency communications.

DASDEC supports standards including GPI/O, serial, USB and IP networking for interfacing with, and control of, third-party character generator, crawl display, master control and station automation products.

A browser-based user interface provides flexibility for EAS monitoring and control.

For information, contact the company in New York state at (585) 765-1155 or visit www.digitalalertsystems.com.

The new Axia IP-Intercom™ System.

(Go ahead. Talk amongst yourselves.)

Now hear this • If you can hear it, you should be able to record it, edit it, or get it on the air. If you can talk to it, you should be able to cue it and feed it mix-minus IFB. Anything else is tin cans on a string. IP-Intercom puts no barriers between your broadcast audio and your communications channels. Unlimited full-bandwidth access to any studio, news or sports venue, office, hallway, broom closet or latrine — if that's what you're into. Talk and listen to individuals or groups hands-free, with no echo or feedback.

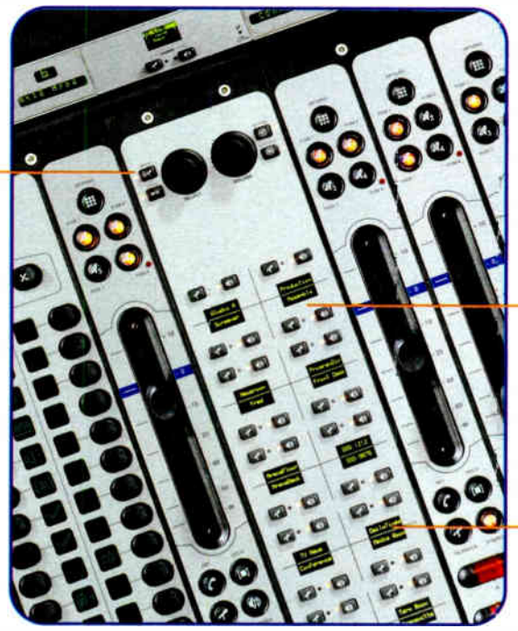
Gab On Gab Off • We believe only Hula dancers should need their hands to talk. Broadcast communications ought to be natural and hands-free. That's why the Axia Intercom incorporates Advanced Echo Cancellation by Fraunhofer Labs. It literally eliminates open-mic feedback without speaker muting. Just open a channel and start talking. You can use your hands for more important things, like endorsing checks, signing autographs, or Wii bowling.

Buzz Off • The last thing you need during a breaking story or transmitter failure is hum and buzz getting between you and the guy you need to talk to. Like all Axia gear, our intercom system is completely digital inside and out. Other systems try to make you think they're digital by piping their analog signals over CAT5 cables, but we think that's a bit like putting an abacus app on an iPhone.

Intercoms Everywhere •

Axia SoftCom software allows anyone with a networked computer to have a virtual intercom station. Just think: you'll never again lose track of who's where when you need them to get on-air or get you coffee.

We hear you • As always, Axia has free 24/7 technical support, 365 days a year (the loneliest support team on earth). And our warranty is the most comprehensive in the industry – 5 years parts and service. (Really, you should call the technical support guys once in awhile just to say hi.)



Family ties • In the world of Axia audio products, think of IP-Intercom as the talkative little brother. It's an integral part of the family, so of course it links with existing Axia networks and consoles. Just connect to the Ethernet with one RJ-45 cable and the intercom is ready to play. In fact, the intercom audio is ready to go directly to air. Or you can feed IFB board audio to intercom callers. The possibilities are endless.

Where there's a wire •

The advantages of IP and Ethernet – low cost, easy installation and maintenance, efficient infrastructure – are a given. IP links everything, and now this includes your intercom system. Installation is a simple single-click connection. And you can expand it like breeding rabbits. Plug as many stations into your switch as you want and add on from there. Then start talking. And if you move to a new location, no biggie — just pick up the gear and take it with you. IP-Intercom is portable so there's no expensive hard-wired custom-cable multi-pair infrastructure mess to deal with.

Plays well with others •

Don't have an Axia system? That's OK. You can still save money, increase efficiency, and decrease the hard-wired infrastructure hassle by choosing IP-Intercom. It's a stand-alone system with I/O that will accommodate multiple consoles. But if you do have an Axia system, you'll get more operational goodies like seamless console integration with these nifty drop-in modules. We're just sayin'.

Touch that button • So you've gotta be a genius to use it, right? Actually, any acne-challenged intern with an index finger can operate this system with ease. The web interface makes setup simple. Sharp, high-contrast OLED displays are easy to read from anywhere in the room. And our clever callback feature makes sure you'll never miss a call, no matter what you're doing. Come to think of it, that intern doesn't even need a finger.

Matrix: terminated • Imagine a digital intercom system with no central matrix. Actually, don't bother. We've already built one that saves on cost, installation time, special plug-in cards, and space. It's real plug and play that works every time — even when you need to add a station, or reconfigure the ones you've got.

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TASCAM DR-100: Multi Mics & More

Portable Digital Recorder Lets You Do It in Style and Bring It Back Fast

BY ALAN R. PETERSON

There are, among us, many reporters, field recordists and crazy stunt interns who *still today* refuse to part with their favorite field acquisition recorder, be it a classic Marantz cassette unit, a handheld Sony MiniDisc machine or a well-worn Denon DAT deck.

PRODUCT EVALUATION

Whether due to sentimentality, familiarity or just the sting of how much a new unit costs, lots of these old workhorses plod along yet today.

But modern portable solid-state digital recorders have it completely over those previous-generation machines. Full binaural recording, mechanical shock immunity and precise built-in microphones (with the resultant absence of XLR cables) are some of the advantages of modern memory card recorders.

Of course, the primary benefit of these devices is instant offload into a DAW via USB for editing or immediate ingest into the station's audio library.

While those cassette-slingin' cowpokes of yesteryear have to spool their cuts off in real time — and hope the tape doesn't jam or stretch — broadcasters who use devices such as the TASCAM DR-100 Portable Digital Recorder are already off to the next story.

FEATURE SET

Early versions of flash RAM recorders — such as the futuristic metallic Nagra/Digigram ARES recorder of a decade ago — got the ball rolling. Today, many manufacturers boast memory card recorders, all of which sound superb: these days, it is hard to find a pro digital audio device that sounds bad.

The difference is the feature set. For example, TASCAM didn't stop at one microphone combination for the DR-100 but gives us the choice of three. And with the addition of phantom power, a built-in limiter and extensive control over all audio settings, there is something here for every broadcaster tasked with bringing it back alive from the field. It also has heft that gives it a serious feel, as opposed to the plasticky, almost fragile feel of devices such as the Zoom H2.

So let's begin with the mics. Many portable recorders today are festooned with pairs of stereo electret elements mounted to the tops of the units. Some in a snug X-Y cross pattern, some spread wide like an ORTF pair.

The primary mic array on the DR-100 is arranged much like the latter. The two metal capsules, while appearing as a parallel spaced pair, actually conceal cardioid elements that tip a total of 90 degrees outward from each other. You can use this recorder to capture a handheld or tabletop "two-voicer" with superb isolation and not have to pass a mono mic back and forth between the two of you.

While not *hyper*cardioid, the stereo image can be unusually wide.

PRODUCT CAPSULE

TASCAM DR-100
Portable Digital Recorder

Thumbs Up
+ Solid serious feel, not flimsy
+ Two separate mic arrays
+ external mic inputs
+ Decent recording time

Thumbs Down
– No editing software included

Retail: $599

For information, contact TASCAM in California at (323) 726-0303 or visit www.tascam.com.

This is noticeable if a recording of a musical ensemble is made with such a recorder. With huge width could come mono compatibility issues when the tracks collapse. So the DR-100 also boasts a pair of omni stereo elements on the front face of the unit for such times. Aiming the mics at the sound source becomes a little less critical. More room tone and background walla might be picked up, but sometimes you just need to take it all in.

Unlike lots of other recorders on the market now, the DR-100 has a pair of phantom-powered XLR mic inputs on the bottom of the device. You are thus not restricted to the microphones that are bolted to the recorder and are free to use your favorites, dynamic or condenser. All three are controlled handily and quickly from a front-panel slide switch and not lost beneath menu layers.

Speaking of bolting, the back of the DR-100 has a threaded socket sized for a common photo tripod, so the recorder can be mounted and pointed in the direction of your sound source. I have found that in broadcast as well as music, mic stands are more prevalent than tripods, and companies such as On Stage Stands make inexpensive mic-to-tripod adapters. It might be worth TASCAM's while to consider including such an adapter as part of the package.

On the reverse panel, slide switches to engage a limiter, phantom power and mic sensitivity add to the versatility of the multi-mic option. And a flush-mount stereo input control on the right side of the recorder rounds everything out.

THANKS FOR THE MEMORY, I GUESS

The DR-100 absolutely requires an SD/SDHC memory card to record. There does not appear to be any internal RAM. The unit I checked out came with a 2 GB card which clicks into a slot along the top between the cardioid capsules.

If 2 GB sounds fairly small these days, consider that setting the record rate to 32 kbps/MP3 provides just shy of 24 hours of continuous recording time (the DR-100 defaults to 16-bit/44.1 kHz WAV on startup). But at this setting we are straining the edge of compromise between fidelity and recording time. Bigger cards, up to 32 GB high-capacity SDHC, work just fine in the DR-100.

In its default mode, the DR-100 records at 44.1 kHz or 48 kHz sample rate. If you were hoping for higher-definition recording, prepare for a delightful surprise: holding down the Enter button while powering up puts the recorder in HS mode, and moves you up to 24-bit and 96 kHz. There is a tradeoff of course. That 2 GB card fills up in only an hour.

Buttons and controls for the DR-100 are not "under the thumb," nor are they expected to be anymore. "Texting" on mobile phones these days has unexpectedly taught us a novel skill, and holding and working the front-panel controls with both thumbs is natural and effortless, especially since we aren't holding a mic in that other hand anymore.

Clicking the Home key on the recorder switches the display between elapsed time and remaining time, if you're the kind of user who needs to see your media running low before taking action.

The PB Control switches in a pitch and speed changer, allowing you to swing through a range of –50 to +16 percent of original speed and pitch. Handy if you need to fly quickly through a cut to find the payoff sound bite.

In-unit editing capabilities are limited to dividing files. If you have experience with MiniDiscs, you well know you can delete sections and perform basic splicing. On the DR-100, you are able to drop markers during recording to highlight and locate the magic moment

(continued on page 24)

TASCAM

(continued from page 23)

in a recording — just hit that big Enter/Mark button in the middle of the jog wheel.

Remember again, this device is meant for recording and for moving files into a computer for editing, so going all-out with an editing toolkit would be somewhat superfluous.

As for that computer editing, use the USB connector to offload your files. It's fast and it works. Opening the SD card slot and repeatedly removing and replacing the card will wear out that part of the recorder prematurely. Files are named either by date *(yymmdd-0123)* or by a six-letter name of your choosing *(newsFM-0123)*.

Finally, there are line-in and line-out plugs for connecting the recorder to the analog world; and the choice of powering the DR-100 with AA cells, a drop-in lithium-ion battery, or a 5V DC power supply — regrettably not included.

DECISIONS

It's a tough call when choosing among portable digital recorders. To my eye, the closest threat to the TASCAM DR-100 is the Sony PCM M10, which boasts a five-second record buffer and a copy of the Sony-owned "Sound Forge" editing software.

But the Sony has only omni microphones, and if you want to use external mics, you would be plugging into a 1/8-inch jack, which does not inspire confidence in the heat of battle.

We all have our favorite digital editor, and we could always obtain a copy of Audacity off the Web if need be, but frankly I wished TASCAM offered up some kind of editing software for the DR-100 so you can go to work right out of the box. If not for that, and the absence of built-in resident RAM, I would call it a clean sweep on this review.

So if you have an active news staff — or a crazy stunt intern trolling the promo nights for happy listeners to scream call letters — do it in style and bring it back fast with a TASCAM DR-100.

Alan Peterson, CBT, CEA is the assistant chief engineer for the Radio America Network in Arlington, Va. He can be reached at apeterson@radioamerica.org.

PRODUCTGUIDE

Titans Roam the Venue: PA sound without having to drag along separate speakers, cables and mixer. TeachLogic offers Titan, a PA speaker with a wireless mic receiver port; rear accepts optional modules including UHF receivers and transmitters, CD/MP3 player, input panel and delay for aligning multiple speakers. Power is AC or battery. Remote control included. Sold by Mainesource: www.mainesource.us

Hi, iDAD: ENCO's iDAD is a companion mobile app for DAD and Presenter automation systems. The initial release targets the Apple iPhone and new iPad tablet. It will let reporters and announcers record, trim and tail, label and then send audio from the mobile device to DAD or Presenter. It features a remote control function to allow control of the automation from the device. www.enco.com

Access Software: Comrex is making its BRIC Traversal Server software available for free. It said some larger network customers asked for the ability to manage their BRIC TS privately for more flexibility. Previously the system was run only through Comrex's installation. TS software allows Access IP codecs to locate each other, navigate routers, networks and firewalls. It requires VMware's VMware player application and is compatible with Windows and Linux. www.comrex.com.

Jackaroo of All Trades: The Jackaroo from SM Pro Audio promises to makes itself handy at the workbench. Sporting a variety of connector types, this is a signal pass-through/converter, signal generator and cable tester packed into a 2 RU rackmount box. Connectors it can handle include XLR (M and F), 1/4-inch, 1/8-inch, RCA, MIDI (five-pin DIN), BNC, RJ-11 and RJ-45. Any input can be routed to any output making the unit something of a combiner/splitter/gender-bender. The signal generator makes 100 Hz, 1 kHz and 10 kHz tones. Includes ground lift and monitor speaker. Jackaroos can be linked via RJ-45. www.mvproaudio.com.

Mayah Upgrade: The codec maker released a firmware upgrade that applies to the C11 codec family, Sporty portable codec, shown, and the Flashman II recorder/codec. The upgrade, 4.0, is includes maintenance fixes and new features including a "Reporter Mode" for Sporty that offers presets for quick set-up and easy operation for nontechnical personnel. www.mayah.com

In Suspense: Rycote aims to revamp microphone suspension with its Universal Studio Mount (USM), part of the InVision line. It says elasticated microphone suspensions have remained more or less the same since the 1940s. Using new materials such as Hytrel and a suspension design called a "lyre," Rycote claims its USM has up to 12 dB more isolation than the traditional "cat's cradle" design. www.reddingaudio.com.

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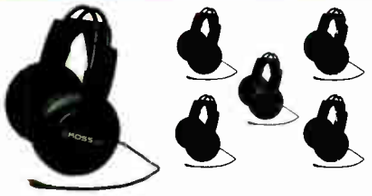

Get a 6-Pack of KOSS UR-20's for only $89!

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.

YAMAHA LS9-16 / LS9-32

Purchase a Yamaha LS9-16 or LS9-32 digital mixing console and get a MY series card of your choice for FREE (up to $859 value - expires March 31st)

ESE ES-102U NAB Special!

ES-102U: Low-cost yet accurate GPS Master Clock/Time Code Generator. Priced at $1,199.
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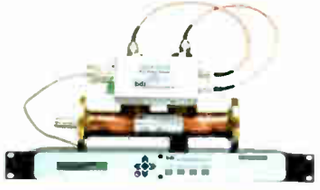

Problem Solvers for Transmitters and Studios from bdi

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

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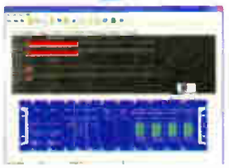
ON THE EDGE

"On the Edge" is a look at recent product introductions in a specific area of broadcast engineering. Here: ***High-Bandwidth Connectivity and Audio Transport.***

WORLDNET OSLO COVERS THE BASES



APT's WorldNet Oslo is a multichannel STL solution combining up to 24 channels of audio, voice and data over T1 or IP connections.

The company says its platform is flexible, offering a unique T1 to IP bridging feature. Should the user decide to migrate from synchronous to IP audio networking, he or she can do so in cost-effective and simple fashion.

There are three steps in this process.

First, the WorldNet Oslo can be deployed in an existing T1 network to operate alongside legacy equipment including those from other manufacturers. With interoperability using linear audio, Enhanced apt-X and various voice protocols, the WorldNet Oslo can slot into an audio chain with no need to purchase an end-to-end solution.

Second, incorporating T1 and IP transport cards in one chassis, the WorldNet Oslo makes it easy and economical to add IP links into a broadcast chain. Main and secondary backup transport cards can be used in any combination: T1/T1, IP/T1, T1/IP or IP/IP.

Third, with the Oslo's unique T1 to IP bridging feature, the unit will terminate contributions from a T1 and map the content onto the IP link for onward distribution. Likewise, contributions from a pilot IP link can be mapped onto the existing T1 STL. Enabling a "Phased Migration" approach, the WorldNet Oslo allows broadcasters to trial IP audio networking while retaining the security of their existing T1 infrastructure.

For reliability, the WorldNet Oslo has no single point of failure and can be configured to provide multiple layers of redundancy, ensuring that a station stays on the air even under stressful network conditions. For codec management, there is no need to deal with DIP switches or a command line interface. APT's Codec Management System (CMS) Software provides control of the network via an intuitive GUI

For information, contact APT/WorldCast Systems in Florida at (305) 249-3110 or visit **www.aptcodecs.com**.

HARRIS SHIPS INTRAPLEX 950 MHZ MICROWAVE STL

Harris is shipping its Intraplex HD Link 950 MHz band microwave STL system, providing an integrated audio and data gateway for studio-to-transmitter links.

Intraplex HD Link is designed to support both FM and HD Radio traffic. HD Link supports uncompressed and compressed audio transport. Where compression is required it uses Enhanced apt-X coding to prevent audio artifacts that can occur with multiple generations of MPEG audio compression.

HD Link also allots more space for data (up to 1,536 kbps) than was possible with previous-generation 950 MHz STLs. It also includes two 7 kHz mono audio channels for AM radio and auxiliary audio services such as RFB, SCA and EAS.

Intraplex HD Link uses Low-Density Parity Check (LDPC) advanced error correction to enhance performance for glitch-free HD Radio transmissions and increase data throughput.

The company says the combined benefits of more RF power, LDPC error correction and enhanced circuit design add up to 10 dB signal improvement over legacy STL systems. This potentially enables smaller antennas, increased path distance, improved fade margin and increased carrying capacity.

HD Link supports both UDP/IP and the higher-performance TCP/IP protocols for delivery of importer-to-exporter (I2E) and exporter-to-exciter (E2X) data streams. It also supports the transport of other IP traffic such as control data and LAN/WAN connectivity, while prioritizing the different streams to ensure that HD Radio information takes precedence.

For information, contact Harris Broadcast Communications at (513) 459-3400 or visit **www.harris.com**.

PULSECOM ARMORED MONOBLOCK T1 STL

Pulsecom says its PCAU-Suite monoblock T1 STL addresses the security and quality concerns related to studio-to-transmitter links, including issues of lightning, hackers, malicious viruses, power outages, bit error corruption of uncompressed HD or FM program material and the need for instant analog links if digital links and their backups fail.

Telecom competition, the company says, has driven down the cost of T1 circuits, enabling new hybrid architectures to combine studio IP content management with the benefits of T1 — resiliency, security and quality — for program transport in a "best of both worlds" approach.

The PCAU-Suite monoblock T1 STL integrates APT Enhanced apt-X 24-bit AES/EBU and analog transport, Ethernet-over-T1 for HD2 and HD3, RS-232 for PAD/RDS and e-Radio and remote LAN connectivity in an "armored" system that focuses on content preservation and protection.

Approximately 7,500 digital PCAU STL units have been deployed in a few years, among 6 million circuits designed and manufactured by Pulsecom for applications that involve exposure to AC induction, temperature extremes, airborne contaminants, earthquakes and especially lightning.

The company states that the system incorporates technology that protects its cell tower electronics — "highly rated, with 50,000 T1 circuits deployed" — with professional audio quality and high-volume U.S. production.

For information, contact Pulsecom in Virginia at (800) 381-1997 or **visit www.pulse.com**.

MOSELEY EVENT 5800: 'UNCOMPRESSED IS BEST'

When it comes to STL, linear uncompressed audio delivers the cleanest, artifact-free on-air sound. But uncompressed audio, especially at higher sample rates, consumes costly bandwidth; and broadcasters need high capacity, especially for multi-station clusters.

Moseley notes that is difficult to control the origins of today's content. Satellite-delivered programs, commercials e-mailed as MP3s and remote broadcasts on ISDN or IP codecs are examples of places where content could be passed through compression algorithms upstream. Using a compressed STL, the company says, subjects the audio to yet an additional pass of compression and decompression before it reaches your transmitter. The effects of cascading these algorithms can deteriorate audio and on-air sound.

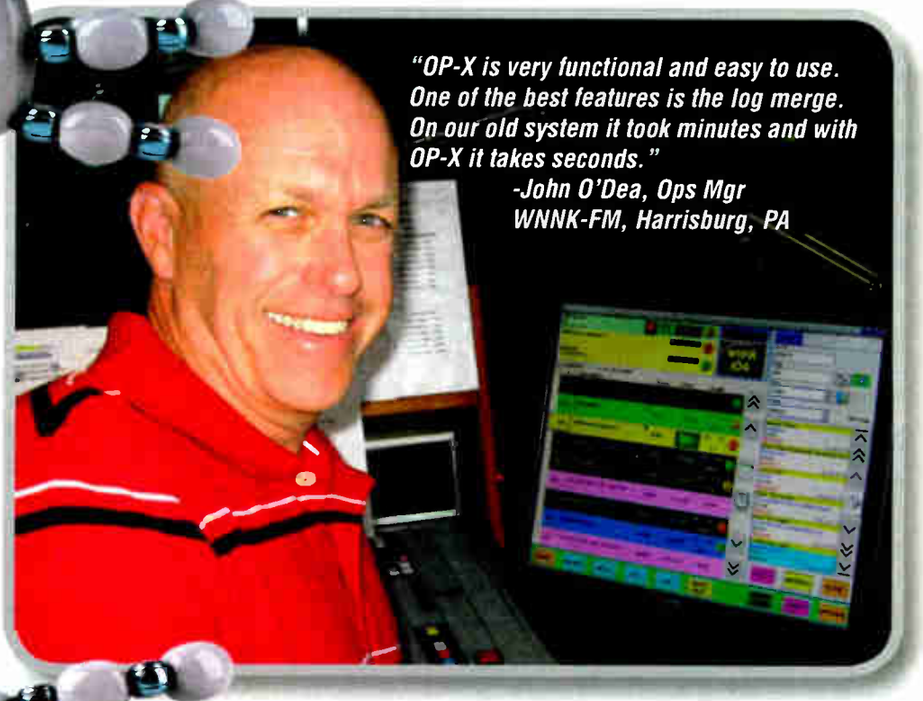
The Moseley Event 5800 radio link, coupled with the Starlink T1, transports up to nine stations with uncompressed digital audio to create a cost-effective multi-station STL/TSL/data link. No compression algorithms are necessary due to the Event's capacity.

The Event's IP Ethernet channel supports LAN network applications, remote servers, surveillance and security, Internet and e-mail connections at the transmitter site.

This combination of multiple audio channels and Ethernet payload provides the signals necessary for HD Radio and HD2/HD3 multicasting. It is bidirectional for backhaul of confidence monitor, RPU or satellite downlink from the transmitter site to the studio.

Combining payload over a Moseley Event 5800 digital link produces high audio performance and saves money compared to using multiple discrete audio, voice and data circuits.

For information, contact Moseley in California (805) 968-9621 or visit **www.moseleysb.com**.



"OP-X is very functional and easy to use. One of the best features is the log merge. On our old system it took minutes and with OP-X it takes seconds."
-John O'Dea, Ops Mgr
WNNK-FM, Harrisburg, PA

- Modular Operation in Op-X allows for a tierec system at a fraction of the cost of it's competitors.
- Each studio client is capable of accessing all Audio Server modules on the network.
- Remote voice-tracking allows for creation of content for remote studios also running Op-X.
- The revclutionary design of Op-X's clock builder turns the previous task of scheduling satellite programming into a few simp e clicks.
- Share serial devices from any machine using the Op-X Serial Server.
- Importing logs now gets its own module that takes confusion out of the process.
- Engineers will enjoy Op-X because it's easy to install, maintain, and has automatic backup features.

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Not since Axia audio-over-IP *was introduced to the broadcast industry have we at BGS been so excited! It is with great enthusiasm we'd like to invite you to take a look at the new Op-X Radio Automation delivery system for any single or multi-station cluster. Op-X's versatility allows it to operate seamlessly with either Axia IP-Audio networks or legacy audio consoles.*

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10 Tips for a Great 'Travel Package'

The Travel Industry in This Country Is Huge — and It Needs Free Advertising

PROMO POWER

Mark Lapidus

Over the decades I have had the pleasure of giving away hundreds of thousands of dollars in cash, autographed merchandise from superstar bands, 25 Corvettes and dozens of other kinds of cars, and trips to England, Australia, Russia, Iceland, Hawaii, the Amazon and many other glamorous and unusual locales all over the planet.

I've also had contest winners turn down free cars because of the tax implications and not pick up cash because it was too much of a hassle to come to the station and fill out the paperwork. But I've never had anyone say no to a free trip.

Why? Because a free trip is an escape. It's a fantasy with promise. It's something to look forward to when life has become routine.

GIVE VALUE

When was the last time you used a free trip in a contest to generate more listening or to drive membership in your online club's database?

I know exactly what you're thinking! "Has Lapidus lost his mind? We don't have a contest budget anymore!"

I may indeed have lost my mind, but because I know what you're thinking, I'll do my best to tell you how to find free trips for your next big contest.

There is a huge travel industry in this country that needs free advertising. That's where you come in. You're going to give it to them in exchange for free trips.

1) First, it's important to understand the rules of engagement.

Make certain that whomever you're approaching has been around for a long time and has a credible reputation. The last thing you want is to be on the hook for this prize if your new partner goes out of business or won't deliver the goods when it comes time to book the travel.

2) Before making the approach, be certain your sales department knows of your desire to obtain free trips. It's possible they may have a client who would like to provide trips to give away, and actually pay you to do so.

One would think that this isn't likely because a client would've approached you about doing this — but perhaps they didn't know of your interest. Or maybe your idea will finally light a fire under somebody to sell it.

3) Next step is to put together a substantial promotional schedule on paper that includes live and recorded promotional announcements, banner ads on your Web site, content links in your e-letter, plugs on your Facebook page and Tweets from your Twitter account.

4) Assign a value to each item. Target six to one in value from your promotional worth to the retail cost of the prize. This means that if you're pitching a partner on giving away a trip worth $10,000, you should be offering at least $60,000 in promotional value to your partner.

Why do I advise you to be so generous? Mainly because you'll want this promotion actually to generate some business for your new partner so you'll be able to do this more than once. Truthfully, if it's a great trip, you're going to want to plug it a lot anyway.

5) Who are likely targets for you? Successful local travel agencies. Cruise ships. Large entertainment venues like Disney, Universal, Six Flags and various theme parks. Boards of tourism (major cities and sometimes countries have them). Airlines and hotels. Rental car companies. Web sites that sell trip packages.

6) A word of caution about doing trip giveaways with travel agencies or cruise lines who want to work with you to sell a package.

Here's how this works: They tell you they're doing a theme trip, typically with celebrities or sports stars. They promise your sales department an ad-buy and ask for a large promotional schedule, offering you a trip to give away.

If your station sells a lot of packages, you won't have any issues. If your station doesn't move enough trips, look out! You'll get a call expressing regret that the trip has been cancelled, and because of that your prize trip is also gone.

Typically your sales department gets paid, so they're not going to be too upset; but you are now on the hook to pay your contest winner the value of the prize or find them a similar prize.

7) I've found the most difficult part of selling these type of packages is that the date is set in stone and most people who buy trips want to go on vacation when it's convenient for them.

8) Finally, keep in mind that if you're sending winners out of the country you must leave them time to obtain passports.

9) Also, make limitations quite clear in your contest rules. These could include the age of the winner's traveling companion, necessity to obtain passport, requirement to take the trip when it's scheduled and a clause that reminds the winner that they will owe Uncle Sam taxes based on the retail value of the prize.

10) Treat yourself! It seems like yesterday when stations would send a station representative along with the winner to make sure everything went all right. While I haven't heard of many stations doing that in about 10 years, it's nice to dream big, isn't it?

Mark Lapidus is president of Lapidus Media. E-mail him at marklapidus@verizon.net.

THEY LOVE HIM IN AKRON

John Lyons, a past recipient of Radio World's Excellence in Engineering Award, was inducted into the Broadcasters Hall of Fame in Akron, Ohio, recently.

Shown congratulating Lyons (in tuxedo), from left, are BHOF Chairman Henry Dunn, Bob Surette, Gary Savoie, Tom Bow, Phil Cindrich, Rich Fann and Nick Koopalethes.

Inductees in the recent class include Jim Davison, William Ellis Jr., Jim Friedman, Wolfman Mike Perlman, Joe Ramirez, Janet Ramirez, Sharon Reed, Bobby Otis Rush, Gilbert Santos and Butter Joseph Tamburro. The Broadcasters Hall of Fame was founded in 1982 by C.S. "Doc" Williams as the Radio Hall of Fame; its purpose is "to memorialize the Golden Age of broadcasting and to promote furtherance of the art of broadcasting." Read more at *www.broadcastershalloffame.com*.

ACOUSTICS

ANTENNAS/ TOWERS/CABLES

WANT TO SELL

Dielectric FM antenna, Harris 6kW Rototiller single bay on 99.7, like new cond, $1800. Bob, 802-236-1629.

AUDIO PROCESSING (INCLUDES ON-AIR)

WANT TO SELL

(5) DC FP balanced to unbalanced converters, $15/ea; SAE 5000A impulse NR unit, $20; ADC Stereo frequency EQ, $15; Pyramid stereo graphic EQ Sen-8600, $15; all + s&h, mraley@bbnmedia.org.

WANT TO BUY

Teletronix LA-2A's, UREI LA-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.

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 for a copy today.

COMPLETE FACILITIES

CONSOLES/MIXERS/ ROUTERS

WANT TO SELL

BE EX-30 30 watt FM exciter, xlnt cond, $875/BO. P Lopeman, 231-845-9666.

WANT TO BUY

ADM (audio designs and manufacturing) 70s era consoles and parts. Al @ 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.

MISCELLANEOUS

WANT TO SELL

(11) boxes Stainless Steel Wraplock, 1/2", #430, $15 + s&h; Belden 9292 Doufoil, Braid 14 AWG 75 ohm. mraley@bbnmedia.org.

WANT TO BUY

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

Looking for serviceable Potomac FIM-21 and FIM-41 meters. Please contact with details. Richard Biby, P.E. rich@biby.net or 540-338-4363.

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or 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.

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.

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.

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 email ronwtamm@yahoo.com.

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

RECORDING & PLAYBACK HARDWARE

WANT TO SELL

Denon MD rcdr DNM10S0R, gd cond, $200 + s&h; (2) Utility Summing & DA units, $15/ea + s&h. mraley@bbnmedia.org.

WANT TO BUY

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

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

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

REMOTE & MICROWAVE

STATIONS

WANT TO SELL

AM Station in Rome, NY, $100K, FM xlators in Jacksonville, NC, Taylorsville, IL, Hopkinsville, KY. mraley@bbnmedia.org.

KBUX-FM Radio Station f/ sale in Quartzsite, AZ,. 205 watts, FCC approval f/6000 watts. License only or w/studio/house on ½ acre+/-. King of Arizona Realty, Jayne F. Cushman, Broker, 928-927-5464.

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.

TRANSMITTERS/ EXCITERS/TRANSLATORS

WANT TO SELL

Moseley PCL 505 xmtr, $400/ as is + s&h; (2) Bext Link rcvrs & Best 40W FM transponder + s&h; (2) Constream decoder audio broadcast rcvrs, $300/ea + s&h. mraley@bbnmedia.org for pics.

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

WANT TO BUY

AM Phasors, Phasor Parts, Phase Monitors, Rf Switches, AM Transmitters. Continental Communications 314-664-4497, Contcomm@Sbcglobal.Net

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EMPLOYMENT

HELP WANTED

JOB TITLE: Radio Broadcast Technician – Maintenance (BBG-10-005)

LOCATION: Washington, DC

The Voice of America is seeking a full-time Radio Broadcast Maintenance Technician (RBT) to join our Radio Maintenance Service team in supporting radio broadcast facilities and other multi-media systems at VOA Headquarters in Washington, D. C.

MAJOR DUTIES

- Troubleshoot, diagnose, repair, and perform preventative maintenance on all technical equipment in studio and production facilities, including portable audio and video multi-media devices.
- Install, construct, and provide design assistance, for new broadcast engineering projects or to upgrade existing broadcast systems and equipment.
- Prepare and process equipment and materials, and evaluate relevant equipment and tools for Radio Maintenance Service use.
- Preparation and timely delivery of required status information and reports including complete maintenance and operation logs, and documents.

QUALIFICATIONS REQUIRED:
Applicants must have technical experience in professional radio, television, and/or multi-media systems that clearly demonstrates the ability to troubleshoot and repair broadcast related equipment, including portable audio and video multi-media devices. The experience must have been progressively responsible and must clearly demonstrate the applicant's competence in troubleshooting and maintaining a diverse range of broadcast related equipment manufactured by a wide range of vendors in the broadcast industry.

Details about this position and how to apply can be found at:
http://jobview.usajobs.gov/GetJob.aspx?JobID=85469772

If you have questions regarding this position (Radio Broadcast Technician – Maintenance announcement (BBG-10-005) please contact: **Leslie Brown (202) 382-7500**

You can mail or hand deliver your application materials to the address below:

International Broadcasting Bureau
ATTN Office of Personnel
330 Independence Ave., SW,
Rm. 1543
Washington, DC 20237

POSITIONS WANTED

Fun, wacky, whimsical radio graduate looking for work as an on-air personality and/or a commercial writer/producer. Multiple voices. Derek, 918-409-7419 or kyrthedarkwizard@yahoo.com.

Music and sports fan, excited an eager to start my broadcasting career. Excellent operator, on-air, and digital production. Fast learner and reliable. Chris, 918-640-2642 or chrisvm13@rocketmail.com.

Radio school graduate with experience in sports broadcasting, seeking immediate full-time sports news or operations position. Great work ethic. Garland, 918-232-3837 or garshanks@yahoo.com.

Bilingual, with good voice-over, news/sports, digital ability. Effective communicator, extremely focused, hard working, quick learner, adaptable, plus managerial, and customer service experience. Ray, 972-974-1359 or cosmemacias@yahoo.com.

Diverse, professional attitude, and work ethic, capable of voiceover, creative copywriting, on-air/behind scenes! Proficient computer abilities. Strong organizational skills, fun and outgoing. Amanda, 817-812-4824 or amcarter80@yahoo.com.

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 917-324-8466 mitchellrakoff@yahoo.com.

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READER'SFORUM

'MOVING DAY'


1941
WBT
THE NEW ADDRESS OF YOUR CBS STATION IS NOW 1110 ON YOUR DIAL

Thanks for James O'Neal's extremely interesting story on the history of AM radio ("In 1941, Stations Confronted 'Moving Day,'" Nov. 18). The KOB part was particularly interesting as I live in New Mexico.

In 1971 I participated in widening the cardioid notch going from Albuquerque to New York City to satisfy WABC. The CE of KOB had to appear at a hearing in Washington as an expert witness about this time. He said he was walking down a hall with their attorney and asked, "Don't you get tired of this case?" The attorney replied, "Absolutely not. It paid for my kids' educations and now it's paying for their kids' educations."

The old RCA water-cooled 10 kW transmitter and the air-cooled 50 kW amplifier from KOB are in a privately owned museum here in Farmington, open by appointment; the owner is always glad to have broadcasters visit. There are several other transmitters (Gates, Collins and Western Electric) as well as a GE TV transmitter and much more old broadcasting equipment.

The museum is the Bolack Electromechanical Museum; see *www.bolackmuseum.com*.

Ron Nott
Vice President of Engineering
Nott Ltd.
Farmington, N.M.

ADVERTISER INDEX

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READER'S FORUM

T1 SERVICE

I enjoyed Dave Corp's commentary concerning T1 circuits for radio use ("The Case for T1 STLs," Dec. 2) but I have to take issue with his statement that "telcos, and their competitors, have mastered T1 delivery so you can get one just about everywhere."

That has not been the case here. I recently dropped my T1 service — or in this case, lack of service — after spending months waiting for repairs.

It appears that because of the sheer number of customers using DSL, service techs have mastered the art of keeping them up and running. Not so T1 and ISDN. The straw that broke the camel's back was switching pairs and a re-provisioning that lasted 45 days, during which we dialed up service with a POTS codec that cost as much as the T1, well over a thousand dollars for 35 miles. ISDN service experience has been just as bad, with G.722 the only compression that will go through the pipe.

In desperation I set up an inexpensive IP that tied our two stations together at a fraction of the cost. It's not perfect but more reliable than T1 and only about $60 a month.

I'm not the only customer to experience similar problems in our area, where telco hasn't kept up with the growth in population. It isn't a case of T1s not going away here; it's a case of them never really arriving.

Bob Ladd
Operations Manager
WMYR(AM)/WCNZ(AM)
Naples/Fort Myers, Fla.


OPINION

The Case for T1 STLs

Like Meat and Potatoes. Here's Why T1 Circuits Aren't Going Away

COMMENTARY

BY DAVE CORP

NO INTEREST IN T1

I honestly wished that Dave Corp were right.

Ten years ago I would have agreed with him and actually did. I started making T1 Optelators, figuring that sales would be impressive in this area, just like my POTS Optelator. In 10 years, I have sold only 15 units. About a year ago, I quit making them because of the cost. No one asked or wanted the product because the popularity of T1 was an all-time low.

Engineers raved about those that I did sell. They had 5 inches of fiber optics to isolate the phone company side from your equipment. Obviously lightning could never damage your T1 system. The regular POTS Optelator is still going strong. When they go bad, they are cheap enough to repair after five years or more.

The T1 Optelator is the only product that I ever made that was actually perfect and never has to be repaired. I agree with everything that Dave said about T1, but I have to say in the AM/FM and TV industry they are a major flop for me. I don't think I can make them cheap enough anymore unless someone put an order in for 50 or more units.

It was a dream that failed for us, even though the product was perfect.

John E. Pecore
President
Stormin Protection Products Inc.
St. Petersburg, Fla.

HOW TO FIX AM

Freeze all broadcast bands at the current levels of population.

Make a comprehensive plan to expand the FM band to go into the old TV channels.

Offer all broadcasters who own and operate non-powerhouse AM and FM stations a frequency in the "expanded spectrum." This would also include NCE stations. Work from the lowest power/facility stations up the ladder. If a broadcaster accepts this avenue, it would have to give up all other licenses and frequencies. One frequency, one owner. No more multiple-station-per-market situations. No more clusters. AM broadcasters would get first consideration.

The continual abuse by those who populate the bands with excessive translators fed by satellite must end. This should have never been allowed in the first place and it serves no one.

If done properly, this plan would give all owners a fair shot at the opportunity to broadcast, at a power level to be completely viable. We can once again have a robust and viable AM band that can serve a variety of audiences, complete with real fidelity.

Michael "Mike" Payne
Owner
Elkplain Broadcasting
Twin Falls, Idaho

POINTED DIGITAL QUESTIONS, TAKE 2

As one of the founding members of the Stop IBOC Alliance, I naturally have been more than vocal in my criticism of this form of AM modulation and its many demonstrated shortcomings.

It's no real secret that Radio World has been a staunch supporter of IBOC. However, Jim Jenkins' letter (Nov. 18) is a little on the unfair side — not to IBOC but to Radio World. Editor in Chief Paul McLane, while a supporter of IBOC, has gone out of his way to ensure that we who oppose it are given our voice in this publication.

If I have any complaints about the presentation in Radio World, it would be two-fold:

First, why not have an equal number of both pro and con IBOC letters in each issue? That would go a long way towards addressing what Jenkins sees as "propaganda."

Second, edit out the pro-only continued used of personal attacks against the anti-IBOC folks, as they serve no purpose in the discussion of the merits or lack of merits that IBOC offers. We who oppose IBOC have been called a variety of things from "dinosaurs" to "Luddites" — and always from people who do not know us, other than through our writings, some of whom do not even work in broadcasting. I have yet to see published a letter from an anti-IBOC person who lowers himself to the use of invectives against those who support IBOC.

Jenkins does make one quite good statement in his letter: "Sure would be great to see the 'radio trades' ask and answer those pointed questions." How about it, Paul?

Jerry Arnold
Director of Engineering
Midwest Communications
Terre Haute, Ind.

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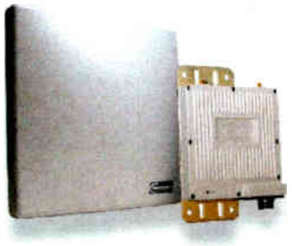

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