DIGITAL RADIO'S WORLD MAP — Page 6

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INSIDE

South Korea Tests FM Digital Platforms

Generally Consistent Over Flat Terrain, Performance Varies in Hills, Multipath Areas

BY DANIEL MANSERGH

As countries interested in pursuing digital radio attempt to sift through available technologies to make well-informed decisions, the scope of the task can appear daunting.

With several generations of various systems available for consideration, objectively comparing the performance and suitability of each for differing allocation conditions and regulatory frameworks presents a significant challenge for policymakers.

Dr. Yong-Tae Lee and his colleagues at the Electronics and Telecommunications

(continued on page 5)

ESPN Radio 'Comes of Age'

New Facility Helps Network Evolve to Provide Content Via Many Platforms

BY PAUL McLANE

ESPN Radio cut a ribbon on new studios on June 1, completing a project that included talk studios, dedicated control rooms and "SportsCenter" booths.

In its announcement, ESPN stated that visitors "will see how ESPN Radio has grown from simply a terrestrial service to ESPN Audio, a content provider via many platforms." According to Mo Davenport, senior vice president and general manager of ESPN Radio Network, "ESPN Radio consumers are no longer simply radio listeners." He said the organization is committed to ensuring that "fans not only get their ESPN Radio content how they want it, but also when they want it, and where they want it."

The job took 10 months; the budget was not disclosed.

Radio World asked Holly Palmer, senior engineer of media technology, for details, particularly about the data side of the work.

(continued on page 12)

Wayne Gignac, seated, and (from left) Robert Gilmore, Kevin Plumb, Brian Janes, Holly Palmer and Kevin Ingles.

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Selected content from Radio World's "The Leslie Report" by News Editor/Washington Bureau Chief Leslie Stimson.

INTEL ACQUIRES SIPORT

Intel now owns a company that plays an important, if low-profile, role in the world of HD Radio consumer electronics.

SiPort, the California-based company whose chip is used in the Insignia HD and Microsoft Zune HD, quietly has been acquired by Intel Corp., one of its investors. Intel is the world's largest semiconductor chip maker based on revenue, it says.

I say "quietly" because there was no press announcement on the acquisition of privately-held SiPort, which, in addition to HD Radio, also designs and manufactures ICs for Digital Multimedia Broadcast (T-DMB) and Eureka DAB digital radio technologies. Specifics of the deal have not been disclosed.

SiPort specializes in low-cost, low-power consuming receiver chips. SiPort's employees, which numbered around 40 in 2008, are now part of Intel's Mobile Wireless Group. As of December 2010, Intel had 82,500 employees worldwide, with approximately 55 percent of those in the U.S.

In a message to customers on SiPort's website, it and Intel state "Digital radio is poised to become an important ingredient for handsets and other mobile devices as broadcast radio transitions from analog to digital. SiPort's digital radio expertise and solutions will leverage Intel's market and technology leadership to provide best-in-class digital radio solutions."

SiPort was a venture-backed, privately-held company formed in 2004. Intel Capital, parent Intel's strategic capital arm with an eye on computing, networking and wireless communications, was an investor, along with venture capital firms Lightspeed Venture Partners, Morganthaler and New Venture Partners.

In August 2008, iBiquity certified SiPort's IC — a single chipset solution for HD Radio tuners. SiPort was working on its HD Radio chip to be integrated into the Microsoft Zune that fall when three of its executives were shot and killed, including SiPort CEO Sid Agrawal, who had co-founded the company. A former SiPort employee was charged. After the shooting, co-founder Aiman Kabakibo became interim chief executive.

Despite the chaos, SiPort continued working on the project. The Microsoft Zune HD went into production in June 2009 with the SiPort HD Radio chip.

In January 2010, SiPort named a new chief executive, David Rolston. Now, Rolston is senior director of the Mobile Wireless Group for Intel Corporation.

Intel is a publicly-traded company on NASDAQ with $43.6 billion in net revenues for 2010, "its best financial results ever," according to its annual report. Interestingly, former FCC Chairman Reed Hundt is on Intel's board of directors. The company made another wireless acquisition this year: the WLS business of Infineon (with some 3,000 employees), which will operate as Intel Mobile Communications and offer mobile phone components such as baseband processors, radio frequency transceivers and power management chips.

David Rolston

In its annual report, Intel said the objective of that acquisition is "to contribute to our strategy to provide solutions with Internet connectivity to a range of computing devices."

As to what the Intel pickup of SiPort means for HD Radio, a source notes that Intel is a "huge" player in the mobile space and the acquisition "is further validation of market opportunity. They're talking to everybody who makes a wireless device on an ongoing basis."

And what about the goal of getting HD Radio into cellphones? It can only help, according to this line of thought.

Intel "did not buy this company to slow the process down," the observer said. "They bought it because they feel like there's progress. Intel isn't going to spend a dime unless they think there's market potential. They do big."

— *Leslie Stimson*

Jim Price: A Life Full of Radio and Faith

He Co-Founded Sterling Communications And Embraced Low-Power FM Radio

Part of what we do in Radio World is tell you about people in our business — their opinions, their triumphs and challenges.

We also report when they die. This is a sad function but in my view an important one, not only to let you know that a member of our technical fraternity has passed but to provide a moment to appreciate their contributions.

One such was Jim Price, a founder of broadcast engineering firm Sterling Communications in Ringgold, Ga. He passed away earlier this year.

His son, Jim III, told company clients in an email that his father "was walking to his station, WBFC(LP), on a nice wooded trail on his property between his house and the studio, and he had a heart attack and was dead instantly.

"Many of you loved my Dad," he wrote. "Many of you are 'on the air' with a radio or TV station because of the burden God placed in your heart, and the assistance you received from my Dad, long before I came on board.

Jim Price is shown shaking hands with then-Rep. Nathan Deal, left, now governor of Georgia; they met to discuss LPFM. At right, Price and an unidentified colleague work a tower job.

... Walking the National Religious Broadcasters convention floor every year with my Dad was always an honor because of the heartfelt thanks he always received from so many of you."

RADIO AS GOD'S TOOL

Jim Price lived a full radio life.

His career started in the early 1960s when as a teen he put together a pirate station in his parents' garage. Soon he was working in Detroit as a DJ and engineer.

His first licensed station was KWFC, which went on the air in 1969 — a full 100,000 watts — at Baptist Bible College in Springfield, Mo.

"That was an exciting time for him," son Jim recalled, "and I remember him happily bustling by me as I, a kid, roamed all over that station. I remember watching the big, noisy 'teletype' machine and drawing on the chalkboard in the conference room. Winter was excellent; it meant days at a time of being snowed in with my Mom, little brother and Dad at the station (three floors! huge for a kid!) while he kept it on the air."

In the 1970s Price moved to Chattanooga, Tenn., to work for CLW, a subsidiary of gospel ministry organization AMG International; then in 1979 he and fellow AMG executive Abe Thiessen left to launch Sterling Communications.

The engineering firm is active in religious broadcasting and runs the website *Christianradiohome.com*, which describes a broadcast station as "one of the finest communications tools God has ever given to us." Sterling now has around 800 clients, including some with whom the elder Price had relationships dating to the 1960s and '70s.

"I don't know how many total stations my Dad played a role in starting, AM and FM, but I'd say it's many hundreds," Jim told me.

"We couldn't drive anywhere without him saying 'There's the tower for W--- or K---. We got that station on the air in 19--' and so on and so on. He knew everyone in the radio industry in most markets, it seemed like."

Price also was a member of the Society of Broadcast Engineers and National Religious Broadcasters; he attended the NAB Show for years. He was married to wife Pat for 43 years and is survived by four sons, a daughter and 11 grandchildren.

That count doesn't include his other "baby," LPFM station WBFC. Price was an active low-power supporter and, after suffering a stroke in 2005, he turned full-time to working on the station, hosting a three-hour gospel and bluegrass program with local talent.

"This seemed to make him famous in the local southern gospel music scene, and a lot of his listeners and artists he played attended his funeral," Jim wrote. The station remains on the air, run by volunteers.

Jim Price had qualities we recognize as common to so many fine engineers.

His son describes him as "clearly an obsessive engineer who needed me as an ambassador to the public. He studied, tweaked, checked for waivers, planned directional antennas, talked with commission staff and generally obsessed over the work he did for you, but wasn't real great at explaining the 'why's and how's' of the project when completed."

In addition to broadcasting and engineering, he had another calling: his faith.

"As I worked for Dad longer and met many of his old cronies, friends and clients," Jim Price III recalled, "I began to see that Sterling is really just a cog in the gear that does a work for God.

"It was a sweet sight to see the church packed to say goodbye to my Dad. However, we know we'll see him again."

FM NOISE OOPS

Attentive reader Bob Meister pointed out that captions for the three pairs of spectrum analyzer traces in "Johnston Laments FM Noise" in our June 15 issue were reversed, thus appearing to contradict Johnston's premise. This was a Radio World error. Traces showing more noise should have been labeled "inside."

FROM THE EDITOR

Paul McLane

THIS ISSUE

JULY 13, 2011

KOREA

(continued from page 1)

Research Institute in South Korea have attempted to address this by conducting an extensive two-year review of the capabilities and performance of current digital radio technologies. The results were released by Lee and members of his research team at the NAB Show in April.

In general, the tests indicate that all systems deliver similar reception performance over even terrain at a comparable power level, but that performance in hilly or high-multipath areas can vary widely depending on specific error-correction or modulation methods.

TEST METHODOLOGY

As Lee explained, the focus of the tests was to assess the performance of each digital radio technology in a quantifiable way and to determine compatibility with existing analog and new digital stations, to serve as a basis for spectrum planning and allocation policy in South Korea and elsewhere.

As a precursor to the 2010 field measurements, Lee's ETRI team conducted lab testing on all systems in 2009. This lab work allowed the team to develop and validate comparable measurement metrics for each system, which were used to develop an "apples-to-apples" field test methodology.

The field tests were conducted in and around the eastern coastal city of Gangneung, approximately 100 miles east of Seoul. Transmission facilities for the tests were constructed on Gwaebangsan mountain, with colocated antennas for the in-band systems — analog FM, HD Radio and DRM+ at 103.5 MHz — and the out-of-band — DAB, DAB+ and terrestrial digital multimedia broadcasting (T-DMB) at 195 MHz.

The digital-only systems operated with 100 W, while the analog transmissions for FM, HD Radio hybrid (at–10 and –20 dBc) and DRM+ simulcast were operated at 1 kW. In addition, the team evaluated two modulation schemes, QPSK and 16-QAM, as a part of the DRM+ trials.

The team selected mobile test routes selected to give a clear indication of each system's performance at various distances from the transmitter and in a variety of local reception conditions. Six shorter "horizontal" routes were selected on roadways that are oriented roughly east-west at distances ranging from 1.6 to 28 miles from the transmitter site. One long "vertical" route runs roughly north-south, passing near the transmitter, and was divided for data-reporting purposes into three segments representing different terrain conditions.

COVERAGE METRICS

To ensure comparable performance metrics throughout the tests, the mobile test platform was designed to measure the threshold of availability in a manner appropriate for each system.

For the DAB, DAB+ and T-DMB systems, coverage was determined by measuring the Character Error Rate (CER) in the receiver and validating the presence of audio by monitoring decoded audio. The results of the ETRI 2009 lab tests indicated that loss of audio will occur at a different CER for each system, with the DAB+ and T-DMB systems being generally more robust than the original DAB system due to the use of Reed-Solomon coding.

The team evaluated HD Radio system coverage by capturing the blend point for hybrid transmissions and audio signal loss for digital-only operation. Since the performance of multicast (SPS) channels will differ from the main (MPS) channel depending upon which subcarrier partitions carry the data, the team tested several channel configurations.

For tests of the extended hybrid (MP3) mode, the main channel occupied the P1 partition and an HD2 channel was assigned to the P3 partition. All-digital (MP5) operation of HD Radio also was tested, with the main program in the P1 partition and two additional (HD2 and HD3) channels in the P2 and P3 partitions, respectively.

Coverage of the DRM+ system was determined by monitoring for audio Cyclic Redundancy Check errors, which cause audio dropouts. To evaluate the quality of analog audio for the DRM+ simulcast mode, HD Radio hybrid mode and analog FM reference transmissions, the total harmonic distortion of a 1 kHz test tone was measured and compared to the threshold level of 1.8 as determined in the ETRI lab tests.

TEST RESULTS

Results for the three Eureka-147 family systems were fairly consistent, with only a slight advantage in performance for the DAB+ and T-DMB systems due to their use of Reed-Solomon error correction.

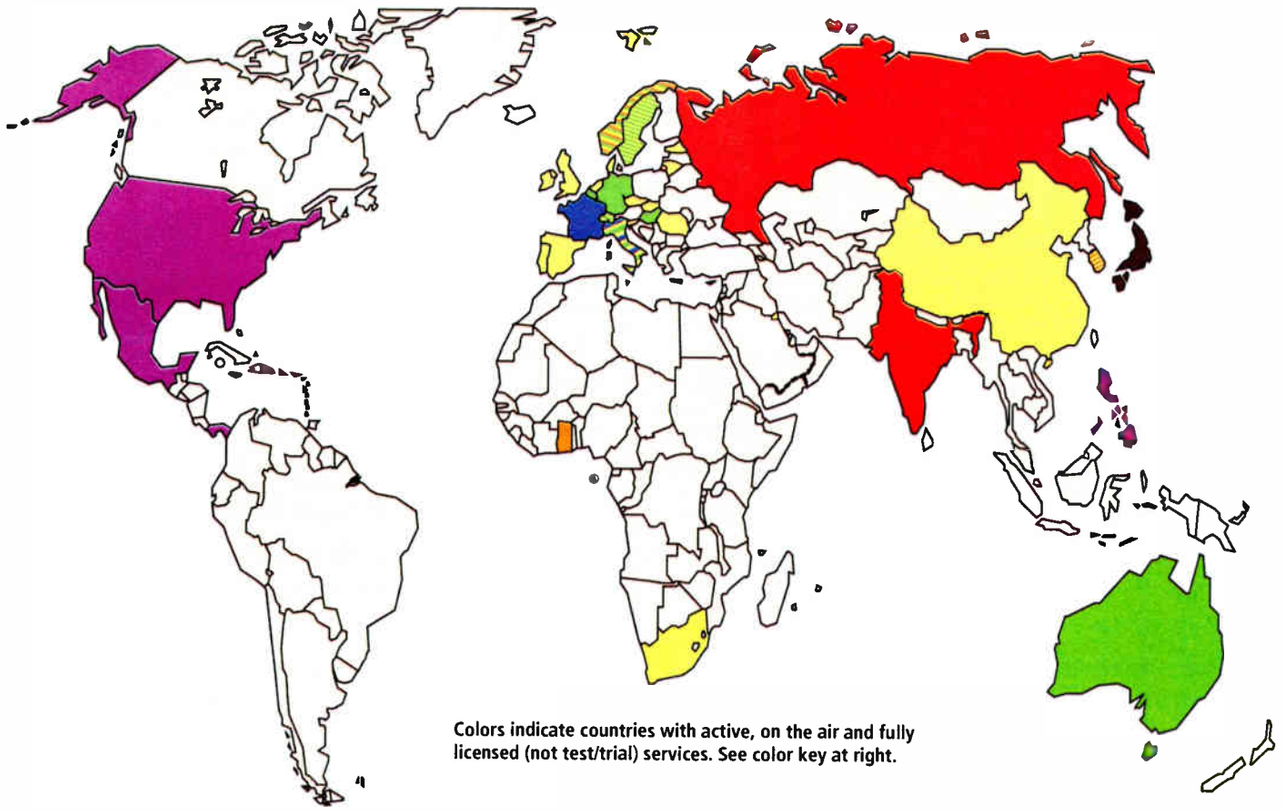
Distance from the transmitter was the single largest factor in reception performance, with quality exceeding 97 percent up to about 7 miles away and better than 90 percent at 13 miles.

Signal quality steadily decreased beyond that, to about 10 percent at 28 miles from the transmitter. The mountainous terrain around the southern section of the vertical route was also challenging, with reception quality of about 50 percent to 55 percent for all three systems.

For the HD Radio system in MP3 mode, the difference between –10 and –20 dBc operating level for the digital

(continued on page 6)

Countries Using Digital Radio Technologies



Colors indicate countries with active, on the air and fully licensed (not test/trial) services. See color key at right.

DAB: Brunei, Czech Republic, Denmark, Estonia, Ireland, Italy, South Korea, Kuwait, Lithuania, Netherlands, New Zealand, Norway, Portugal, Romania, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, United Kingdom

DAB+: Australia, Belgium, Germany, Hungary, Italy, Malta, Norway, Switzerland, Sweden

Not shown — **DAB+ (trial services):** Denmark, France, Hong Kong, Ireland, Malaysia, New Zealand, Poland, Tunisia

DMB-A: France, Monaco, Italy

T-DMB: Ghana, Norway, South Korea

Not shown — **T-DMB (trial services):** Malaysia, Tunisia

DRM30: India, Russia

ISDB-TSB: Japan

HD Radio: Dominican Republic, Jamaica, Panama, Philippines, Mexico, United States

Sources: wohnort.org, WorldDMB, iBiquity Digital, Digital Radio Mondiale

The pattern of development in digital radio is affected in part by events in TV. Worldwide, television services are being migrated to digital, with the International Telecommunications Union having set a deadline of 2015 for most broadcasters to make the switch, while several nations in Africa and the Middle East have been given until 2020 to make the transition. In much of the world, the DTV transition will free up VHF spectrum space for additional services, including DAB+ services in VHF band III.

— T. Carter Ross

KOREA

(continued from page 5)

signal was dramatic. While coverage of the lower power digital signal fell below 90 percent at 13 miles away from the transmitter and continued to drop at greater distances, the addition of 10 dB to the digital carriers delivered 100 percent signal quality out to 13 miles and better than 90 percent quality to 21 miles.

Only out at the 28-mile test route did –10 dBc coverage fall significantly, to around 37 percent. Performance along the vertical route was consistent with the horizontal route measurements, but indicated that the system had difficulty in rough terrain, performing with about 62 percent to 67 percent signal quality at –10 dBc and about 32 percent at –20 dBc.

Tests of the all-digital HD Radio (MP5) mode turned up quite a surprise.

While the overall system performance was similar to that of the hybrid mode with –10 dBc power, matching or exceeding its signal quality along most of the vertical test route, coverage in the rough terrain at the southern end of the route exceeded 98 percent for the program in the P1 partition. Since performance of the channels in the P2 and P3 channels was similar to the other systems, this dramatic improvement can be attributed to the more robust diversity coding scheme used for the P1 channel in the MP5 mode.

Finally, the DRM+ system was evaluated in simulcast mode with a 400 kHz spacing between the analog and digital signals. The QPSK modulation scheme fared significantly better than 16-QAM, delivering signal quality approaching 100 percent out to 13 miles and better than 95 percent at 16 miles. With 16-QAM, quality dropped to 94 percent at 13 miles and quickly fell off as the distances increased. QPSK also performed well in hilly terrain, delivering better than 70 percent signal quality vs. 52 percent for 16-QAM.

Rather than draw any specific conclusions about the suitability of any particular system for a particular application, Dr. Lee preferred to let the data speak for itself. With the results of these tests in hand, regulators around the world now have a useful benchmark as their countries evaluate their digital radio options.

WHAT CAN WE CONCLUDE?

Although the ETRI test report focused on presenting data without drawing conclusions about the suitability of a particular system, several seem evident from the results:

Excluding differences in coding and error correction, RF coverage over even terrain was generally comparable among the most robust mode tested for all systems operating at the same power. Since all of the systems except DRM+ are using COFDM modulation, this is not surprising.

Performance of Eureka-147 (legacy DAB) was slightly poorer than the other digital systems due to its older coding scheme, which cannot be upgraded without making existing receivers obsolete.

–10 dBc sidebands were necessary to operate the hybrid HD Radio test station at a comparable power and performance level as the other systems.

Error correction and modulation were two key differentiators in performance of the systems over hilly terrain, where multipath interference becomes a significant challenge.

The all-digital (MP5) mode of HD Radio performed particularly well overall for the primary data channel due to its error correction.

16-QAM modulation for DRM+ delivers a significant coverage penalty relative to the QPSK modulation mode tested. The QPSK mode also performed better in hilly terrain than most other systems.

— Daniel Mansergh

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DIGITAL RADIO ROUNDUP

MEXICO: Mexico's spectrum regulating authority is allowing the use of HD Radio throughout the entire country. COFETEL in June said commercial and noncommercial stations can use AM and FM HD technology on a voluntary basis. Mexico in 2007 allowed HD Radio within 200 miles of the U.S. border.

The latest decision bodes well for an eventual common digital radio standard in North America, said iBiquity Digital President/CEO Bob Struble, citing the importance of Mexico's economy. Indeed, we've reported that automakers and receiver manufacturers would prefer a common digital radio platform to lower design, manufacturing and marketing costs. IBiquity is working with transmission and receiver manufacturers to accelerate the HD rollout in Mexico.

DAB IN CARS: WorldDMB, which promotes the implementation of Eureka-147-based technologies such as DAB, DAB+ and DMB, held car manufacturer workshops in Munich, Germany, and Commercial Radio Australia held similar events in Sydney and Melbourne in June.

At the events, car manufacturers and broadcasters discussed the further integration of digital radios within new vehicle models. Representatives from several automakers attended including Audi, BMW, Honda, Skoda, Hyundai, Volkswagen, Daimler and Lotus. Vehicle product managers, engineering planning teams, industry association members, retailers and manufacturers attended the workshops to hear from the radio industry on the status of digital radio in Europe and Australia.

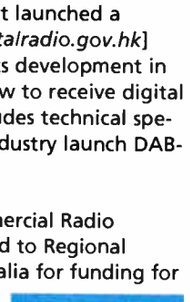
WorldDMB says automakers are considering supporting a pan-European mix of DAB, DAB+ and DMB-A. The DAB+ standard in those vehicles would function in Australia as well, according to DAB proponents, who add that integrating digital radio into vehicles, both in Australia and internationally, will enable the delivery of real-time traffic updates.

INDIA DRM+ TRIALS: Trials in New Delhi of the Digital Radio Mondiale DRM+ system for VHF broadcasting have been completed successfully. All India Radio and the DRM Consortium used a single test frequency (100.1 MHz) to carry three program channels. The air chain test setup included a Nautel VS1 (with 300 W TPO), an RF Mondial DRM+ modulator and a Fraunhofer DRM ContentServer. AIR and the DRM Consortium used two test modes: Robust 4-QAM and high-capacity 16-QAM. They found test transmission reception was comparable with analog transmission of five times more power. DRM Consortium Chair Ruxandra Obreja said AIR has adopted DRM30 for its SW/MW network and DRM+ will play a complementary role operating in the VHF band.

HONG KONG: Representatives of the four DAB operators in Hong Kong — Digital Broadcasting Corp. Hong Kong

Ltd., Metro Broadcast Corp., Phoenix U Radio Ltd. and the government-owned Radio Television Hong Kong — drew channel group numbers by ballot. The three private licensees and RTHK will provide 24/7 DAB+ services on a total of 18 channels, offering several program choices. Formal service will launch by the end of 2011. The HK government launched a website [*www.digitalradio.gov.hk*] on DAB+ services, its development in Hong Kong and how to receive digital radio. The site includes technical specifics to help the industry launch DAB-related products.

AUSTRALIA: Commercial Radio Australia has applied to Regional Development Australia for funding for the construction of digital radio transmission systems that would cover Hobart, Tasmania, as well as Launceston, Tasmania. Guy Barnett, a senator from Tasmania, says Hobart was the only state capital city in Australia to be excluded from the 2009 digital radio rollout. "We are currently being treated as second-class citizens, and that's not good enough. We've looked at other ways of getting digital radio to Tasmania, and an application to Regional Development Australia is the best way to go." Meanwhile, community stations in Melbourne, Victoria; Sydney, New South Wales; Adelaide, South Australia; Brisbane, Queensland; and Perth, Western Australia, have joined commercial and public-service stations in broadcasting DAB+ digital radio services. The formal launch was in May at Triple R in Melbourne. "After years of lobbying, it is a great moment to witness the first community stations enter the digital radio age," said Community Broadcasting Association of Australia President Adrian Basso.



SWEDEN: Sweden's Liberal Party, a member of the four-party ruling coalition, has issued a policy statement entitled "A Liberal Investment in the Future of Radio" in which it asks that the country's public broadcasting service, Radio Sweden, be given funding needed to expand into digital broadcasting. Norway, Denmark, Britain and France have begun their digital transitions, while Swedes risk being left behind, according to the document. "We want to ensure a coordinated start with Swedish radio and private radio jointly launching a transition to digital radio," states the party, which also suggests the transition should be financed through a direct subsidy from the country's broadcasting fund.

LASER CORP.: Australian IT and consumer electronics manufacturer Laser Corp. introduced a multiband portable radio with support for DAB+. The DAB-DG200AM provides DAB+ digital radio and analog AM/FM reception. It features presets for 20 AM, FM and DAB stations, along with a scrolling RBDS display, and an 8 inch by 7 inch by 3 inch form factor. The unit can be powered using batteries or an included AC cord. A backlit screen displays additional data, such as artist and title information or news and sports results. The unit lists in Australia for the equivalent of $105.

SANGEAN DAB+ BOX: The "Sangean DAB+ Box" is a rugged DAB+/FM radio for outdoor use. Sangean says the radio resists rain, dust and shock; the speaker is protected by a metal grille. A roll cage protects the radio for environments like a building site or the back of a truck. The device features a rechargeable battery while an Aux-In socket lets users connect an iPod or MP3 player. Users can set up to 10 presets: five DAB+ and five FM. The

Sangean DAB+ Box lists in Australia for the equivalent of $315.

FRANCE: The French telecommunications authority Conseil Supérieur de l'Audiovisuel approved a nine-month demonstration of DAB transmission for Lyon, in east-central France between Paris and Marseilles. Now through December, 16 radio stations are broadcasting via two multiplex transmission systems that cover about 75 percent of the greater Lyon area. VDL is operating the multiplex transmission system, and providing equipment used for both radio and TV digital transmission. Pure Digital is one digital receiver supplier making products for the demo. "This project will promote new stations; it will show the number of digital receivers that are available, and it will give the French people the desire to discover digital radio. Hopefully this demonstration will be a model for other cities in France," said Pure Digital Marketing Executive Colin Crawford.

JOURNALINE: Faunhofer IIS and iBiquity Digital displayed Journaline at the 2011 NAB Show. They showed the updated JVC in-dash navigation receiver, model KW-NT30HDT, which includes Journaline. The service enables broadcasters to reuse existing data sources like RSS feeds and XML data to transmit text information to receiver displays.

Journaline gives the user hierarchically structured topic menus. Internationally, a number of broadcasters feature Journaline over the Digital Radio Mondiale and Digital Audio Broadcasting, Eureka-147 platforms, according to Fraunhofer. The JVC KW-NT30HDT includes Clear Channel's Total Traffic Network, iTunes Tagging as well as HD Radio's Artist Experience, in which visual images are synched with the HD audio. The unit is available from JVC retailers for a list price of $1,199.95.

Build This Custom Switch Controller

Also: RFI Headaches for Engineers … and the Elderly

Chief Engineer Greg Manfroi shares a useful tip with *Workbench* readers.

His backup transmitter at WUIS is in need of a rebuild. That could be a fun project; but Greg has to find the time, and he only has one well-used 4CX15,000A for it. A local commercial broadcaster will donate one of their well-maintained former backup transmitters; but Greg needs funds to transport it, and he'll have to cut a new door into his transmitter building. Projects never end!

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

At present Greg is operating in HD with separate antennas. He's using a Broadcast Electronics FXi 250 exciter/FMi 201 combination to feed the HD antenna. This exciter can be programmed to go into FM+HD mode when a closure is held on programmable pins on the remote connector.

(continued on page 16)

WUIS AUTOMATIC ANALOG BACKUP CIRCUIT

Switches HD TX to FM+IBOC when main analog TX RF output drops below threshold of comparator

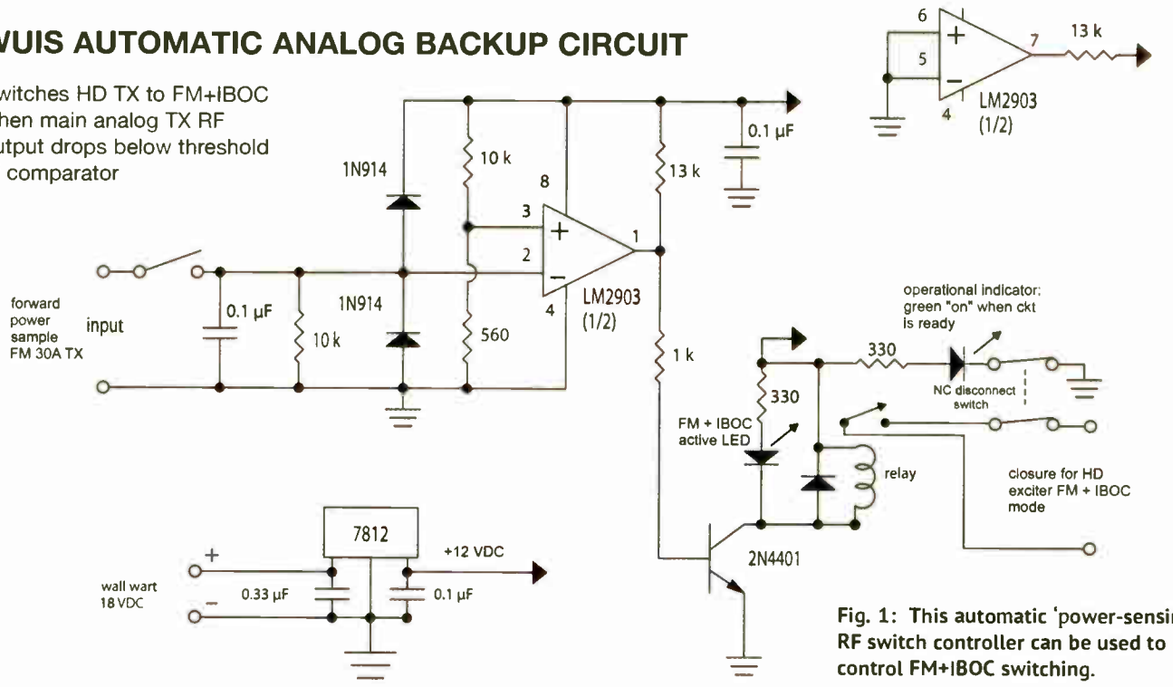


Fig. 1: This automatic 'power-sensing' RF switch controller can be used to control FM+IBOC switching.

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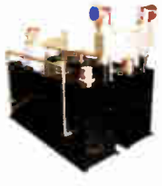

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ESPN

(continued from page 1)

Describe the scope of the project.
Palmer: We added six control rooms, two studios, two news booths, a screening room for highlights and a show prep area.

We expanded our existing IT infrastructure by adding a second core switch, updating our domain controllers to new hardware/OS, changed server platforms to a GPFS cluster and added 22 new ENCO Systems workstations. We expanded our existing Sierra Automated Systems 32KD to eight frames and 27 RIOs.

What was the reason for the job?
Palmer: To accommodate the growth in digital, podcasting, remote broadcasts and "Deportes" [Spanish] radio platforms. We took the opportunity to improve our radio/TV facility by redesigning the studio layouts for a better TV presentation.

Who were major equipment and service providers?
Palmer: Meridian Design Associates for architecture; Associated Construction for construction; and Technet for integration. SAS is our router and console manufacturer. ENCO Systems supplies our digital audio software.

Adobe 3.0 and ProTools are the multi-track editing suites. The furniture was designed by Omnirax.

We used Airtools Mic Processors, ElectroVoice RE27 microphones and Visio TVs, as well as products from Telos, Eventide, 25-Seven, Titus Labs, AudioScience, Tannoy, Neutrik, Fostex and Stantron.

Describe the IT infrastructure.
Palmer: We have a non-traditional approach to IT support; we actively engage our corporate IT department to assist us in supporting our infrastructure. We work together to support radio as a cross-departmental team. That has allowed us to employ technology not previously possible without their support.

We have our own domain for radio including child, root and DHCP servers. Our network includes two core Cisco switches and four satellite switches. We route across four subnets including two dedicated specifically to equipment. Our more than 90 ENCO software installations run on HP server-class workstations that we designed and support ourselves, in-house. The ENCO databases and audio are stored on a GPFS cluster utilizing a shared Samba environment spread across two buildings, delivering true active-active availability.

We also introduced the concept of multimedia desktops to our environment. These desktops live on our corporate network, have multi-track editing software installed and have access to shared storage for light production, thereby leaving our studios/control rooms available for more intense production.

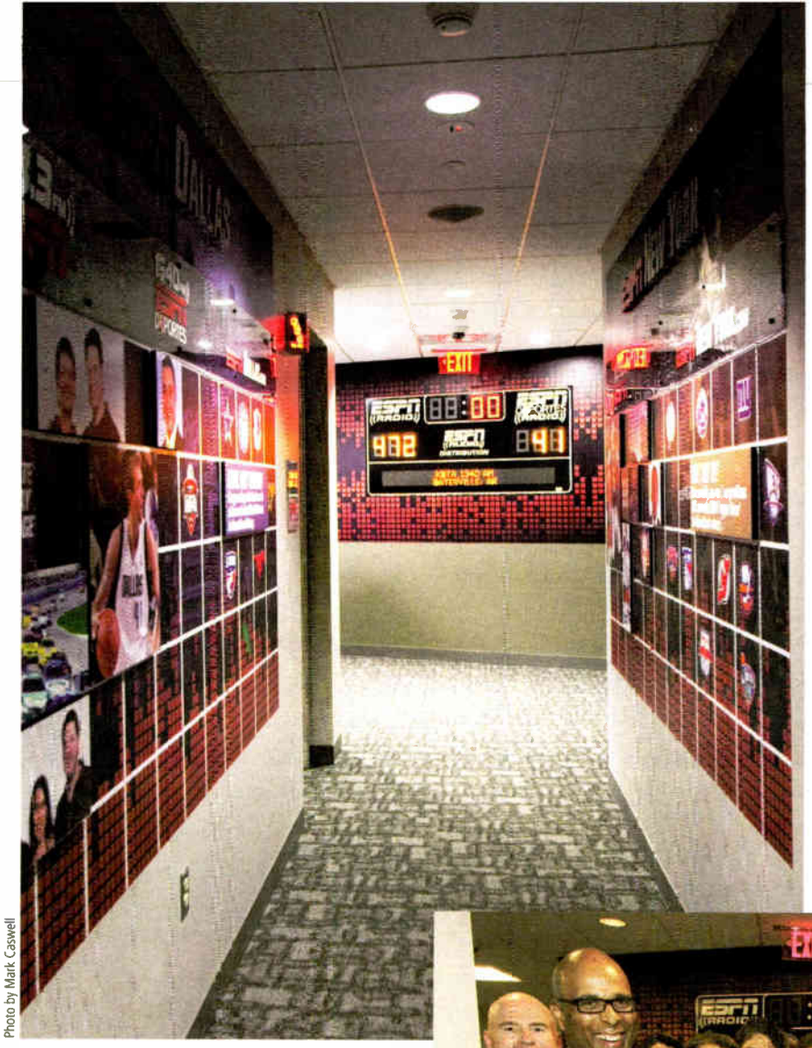

Photo by Mark Caswell

Hallway of the new ESPN Radio studios. Scores on the board are the number of branded affiliates for ESPN Radio and ESPN Deportes Radio.

Photo by John Atashian

At headquarters in Bristol, Conn., ESPN Radio Network exec Mo Davenport, left, led the ribbon-cutting of the network's new studios.

Who was on the project team?
Palmer: I am the senior engineer, media technology. I am responsible for the IT infrastructure and digital audio systems. Wayne Gignac is the project manager and senior engineer, media systems, supporting our traditional radio infrastructure. The team includes Kevin Plumb, senior director of engineering, and engineers Brian Janes and Bob Gilmore.

It was a true team effort. Kevin provided project direction and oversight. Wayne led the way as project manager, keeping us all moving in the right direction; and he was the key person responsible for the router and consoles. I was responsible for working with IT on our infrastructure and hardware requirements as well as the digital audio programming and automation. Brian Janes was responsible for design and implementation of our new screening room as well as the RTS intercom system. Bob Gilmore was responsible for the TV design and implementation and the multimedia workstations.

Briefly, what is unusual about the facility?
Palmer: We have one of the largest ENCO installations, more than 90 workstations, and one of the largest SAS routers currently online in the U.S. — eight frames, 25 RIOs, with 4,096 inputs by 4,096 out.

We have more than 1,600 command cuts in our ENCO library to facilitate our extensive automation including interfacing with the router, the Crestron system for netcues, the delay units and a system status display we developed in-house call VBOC.

We have Crestron controllers as interfaces to allow us to remote-control our more than 115 TVs in the new area (more than 180 televisions in the combined facility controlled by Crestron).

Radio screening is a major source of audio for newsgathering across the entire campus. To facilitate a shared workflow, we developed an application in-house called ESPNAudio.

ESPNAudio pulls together our 700,000 cuts of audio from our active databases and our archive into one place to allow anyone on campus to access it easily from any corporate workstation.

What were the critical equipment and facility decisions?
Palmer: We had to decide if we were going to expand our exiting SAS and ENCO infrastructure, try something new or build the new facility as a separate installation.

Our decision was to expand our existing infrastructure. That decision was made as a team after a lot of research. We knew that by expanding our already extensive infrastructure, we were taking risks, but together as a team we decided that it was the best way to use our resources. The flexibility it gives us is invaluable.

(continued on page 14)

Drops jaws. Not audio.

Broadband Internet is everywhere. Which makes it ideal for live remotes.

Unfortunately, the internet is also notoriously erratic. Even if you're lucky enough to get a good connection, it might deteriorate during your show. So you dial back the bitrate, sacrificing sound quality to play it safe.

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ESPN

(continued from page 12)

The other critical decision was to make television a priority in the project. Every decision, from architecture, to placement of equipment in the control rooms was decided with an appreciation for television and an enhancement of the experience for the listener and viewer.

Any experiences with a central new piece of gear or system?

Palmer: This was our first experience with the SAS Rubicon control surfaces. We automate through ENCO, scripts that allow end users in control rooms to "take" news booths. This changes the mappings for the headphones, speakers, talkback and on/off buttons in the news booth to attach it to the control room that took it. We were able to accomplish this using both ENCO command cuts and SAS automation.

Photos by Mark Caswell

Kevin Ingles in Control Room 3, Studio 4.

Wayne Gignac in the rack room.

Behind the scenes at 'The Scott Van Pelt Show,' with Control Room 1, Studio 1 and News Booth visible.

'The Herd With Colin Cowherd'

What is the design aesthetic?

Palmer: The area demonstrates a certain "coming of age" moment for the network. As one of our head technologists likes to say, "We're big now."

This facility has a serious feel to it. It represents a significant investment in audio by ESPN.

Other unique challenges?

Palmer: It was never far from our minds that we were not only designing a radio studio, we were designing TV space. Because three of our weekday programs are carried on ESPN2 or ESPNU, we had to carefully integrate the needs of TV with the needs of radio. We worked together in a collaborative environment with TV to accomplish this goal.

Who kept the process rolling? Any unexpected crises?

Palmer: Both Wayne and Kevin kept the process rolling; Wayne from a project management standpoint, Kevin from the direction side.

Our challenge came before construction began. We originally specified this project out three years ago, but for a variety of reasons, it was pushed back more than a year. As a result, we had to reimagine what some of the hardware platforms were going to be because many of the originally specified equipment were no longer available.

Additionally, our budget number had changed, forcing us to reevaluate some of our choices so we could deliver on our original design at a cost savings. Finally, we experienced significant delay times for some of our key components, forcing us to change some of our timelines.

Anchor Dan Davis in the News Booth.

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WORKBENCH

(continued from page 10)

Greg feels it would dangerous to put the coaxial antenna switch for the main and backup transmitters in the hands of present-day operators (many years have passed since operators were required to take FCC exams). There are interlocks in the coaxial switch but he prefers not to tempt fate.

Greg built a simple comparator circuit that looks at the forward power sample of his main BE FM30A transmitter. He selected the comparator voltage divider resistors to cause the comparator to operate when the forward power of the main transmitter drops below 20 percent.

When this occurs, the comparator output turns on a transistor that energizes a relay coil. The relay contacts are connected to a programmed remote pin on the HD transmitter/FXi 250 exciter. The exciter analog settings are set to match the FXi 60 exciter feeding the FM30A main transmitter (analog).

If the main transmitter goes down, the HD exciter goes into FM+HD mode immediately. The result is that the station is only off the air for a half-second after the failure. Of course it comes back at reduced power, but it is still on, with no intervention by the air staff. This allows time for Greg to get to the site and troubleshoot the situation.

Greg housed the components of the schematic (shown in Fig. 1 on page 10) in an old black aluminum chassis, a controller saved from the NPR SOSS system. Greg also had an old LED illuminated push button (Push ON/Push OFF) switch that he used for the "enable/disable" switch/indicator.

He knows his remote control can be programmed to do something similar; but all of the relays on the remote are spoken for, and with funds at a premium, the home-brew solution seemed best.

Greg installed this about four years ago and has had a few transmitter failures since; the circuit worked as planned, keeping the station on the air.

Reach Greg Manfroi at *gmanfr2@uis.edu*.

RFI stories can keep engineers entertained (or frustrated) for hours. Educational Media Foundation Transmitter Engineer Dr. Ross du Clair is no exception.

Ross recalls that as the CE and DOE of a flame-thrower AM station in Sacramento, Calif., he once took a call from a person who had recently moved in and apparently was receiving the station's entire broadcast day on every appliance in her home.

Ross drove to the address, which

NEWSROUNDUP

N.Y. PIRATES: The New York state legislature passed a bill adding jail time to the possible penalties when someone is convicted of operating an illegal radio station. Lawmakers in Albany passed legislation that makes it a Class A misdemeanor to operate an unlicensed radio station in the AM or FM bands. The measure is similar to laws in Florida and New Jersey, giving local authorities some say over what previously had been a federal-only area of jurisdiction. Once signed into law, the new measure would take effect in 180 days.

BROADCAST IMPACT: NAB commissioned a study to try to figure out how many jobs — and even how much of the U.S. gross domestic product — can be attributed to local commercial radio and TV. It hopes to dramatize broadcasting's role at a time when legislators and regulators in Washington have been debating spectrum policies. Woods & Poole Economics and BIA/Kelsey collaborated. They report that $1.17 trillion (7 percent) of the country's annual GDP "originates" in local commercial broadcast radio and TV and that 2.52 million jobs are attributable to the industry each year. Radio, the study found, directly employs 118,000 people and contributes $18 billion to GDP, while TV has 187,000 people and accounts for $30 billion. But the study also included the impact of those jobs on consumption, as well as economic activity generated by local commercial broadcasting as a forum for advertising goods and services. Noncom stations and networks were excluded.

was familiar. As he got out of his truck, the new homeowner met him in the driveway, understandably upset with the interference.

When she finished explaining, Ross asked if she knew anything about those two 662-foot Franklin antennas across the street.

"Oh, yes. The real-estate agent said not to worry about those things, as they are cell phone towers."

Not quite.

Ross worked on her phone (adding filters), television (adding more filters) and a radio (which he couldn't hope to clean up). The station purchased a Bose for her.

About a week later Ross took another call from a pottery shop owner in the town next to the AM station location, the same flame-throwing powerhouse. The shop owner complained that her new kilns would not maintain temperature; she felt sure the AM station was affecting the thermocouples.

As an engineer, Ross believes anything is possible. Arriving at the pottery shop, it took him less than five seconds to grasp the situation.

Both kilns were wrapped in a thin layer of stainless steel sheet. They looked pretty, but they were not grounded.

Ross left a 10-foot ground rod and a roll of 2-inch copper strap for her electrician. He explained that his company's rules prevented him from doing anything further but if the electrician would follow his detailed instructions, the thermal controllers would work just fine. The electrician did the work and the controllers worked as advertised.

Reach Ross F. du Clair, Ph.D., at *rduclair@kloveair1.com*.

One of my favorite RFI tales goes back to early in my career.

We'd just installed a modified DAP and a Gates Solid Statesman limiter at our 5 kW AM. The signal was loud! We received a call from a nursing home located down the street and in the major lobe of the station.

The employees had been confused when the elderly residents started saying "turn down that music" or "stop screaming." It took some time for the staff to realize their residents weren't hallucinating but hearing our jocks hollering call letters and playing "hot" top 40 hits via their overloaded hearing aids.

Care to share an RFI anecdote? Email it to *johnpbisset@gmail.com*.

Contribute to Workbench! You'll help your fellow engineers, and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. *Fax to (603) 472-4944.*

LAWSUIT: NAB is asking broadcasters to look around for any automation music system user manuals from the early 1990s. The association passed along a request for documentation to help attorneys representing broadcasters in a music automation patent lawsuit. NAB is not a part of the lawsuit and did not hire the law firm. Mission Abstract Data, doing business as DigiMedia, claims it filed a patent for a digital music storage and playback system in 1994. DigiMedia says in the suit that nearly 900 stations have infringed on its patent. In defense, patent attorneys from Roylance Abrams seek user manuals and other documentation. Stations that have materials from early 1993 or prior are asked to email William Bradley at *wbradley@roylance.com*.

EAS: Public comments on the FCC's Notice of Proposed Rulemaking on Part 11 rules governing EAS are due July 20 [Docket 04-296]. Whether the government will hold firm on the Sept. 30 deadline for stations to install CAP-compliant EAS equipment is hotly debated, as evident in a June 16 webinar produced by the EAS committee of the National Alliance of State Broadcasters Associations and NAB. Davis Wright Tremaine Partner Davis Oxenford said the agency's decision to review comments made in summer, close to the September deadline, makes it difficult for manufacturers to meet certification requirements and for stations to install and test gear by the deadline. The FCC also is asking for comment on whether to allow intermediary devices and certify those.

Engineer, Apply Thyself

Six iPhone Apps That Might Deserve a Place in Your Smartphone

BY LAURA MIR

At a recent SBE meeting of 20 or so participants, I glanced at all the phones sitting on the tables. One thing was clear: Engineers like iPhones.

TECHTIPS

As I watched people interacting with their devices before the meeting, I wasn't surprised to see that a majority of people were just checking email.

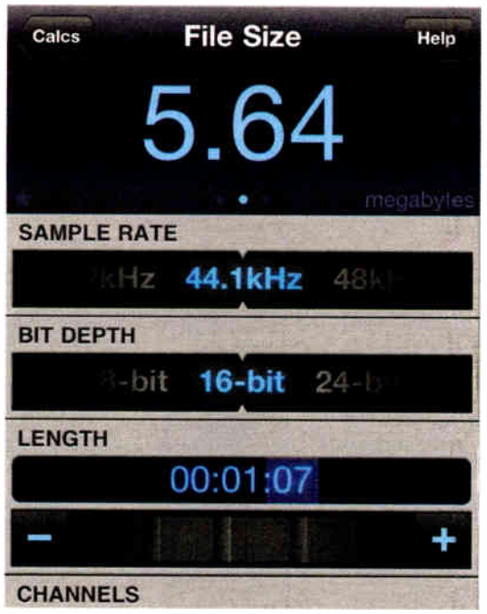
It's one thing to use that phone to stay in touch while you're out of the office. What about when you are on the job? Is that iPhone capable of more than just email and Angry Birds?

Well it doesn't take but a few search terms in iTunes to demonstrate that there is literally an app for everything, including broadcast engineering.

The daily duties of an engineer sometimes involve a quick calculation that might send you back to your bookshelf digging for the latest edition of an engineering reference text. There are apps to help with just this issue. Sure, you may have a browser nearby, but these make it even simpler to gather the info you need.

Backline Calc, a musical calculator from Audiofile Engineering (which also makes the FiRe Field Recorder) offers 32 calculators that engineers will find handy. It has convenient calculators for time code, electric (compare power, compare voltage), acoustics (distance to time, SPL, panning) and Files (file size). All of the calculators potentially are helpful, but I found the file size calculator the most valuable. Enter in sample rate (8 kHz–384 kHz), bit depth (8-bit to 32-bit) and length, and the calculator will determine the size of the file in megabytes. When you are pushing a lot packets it is nice to be able determine file size on the fly.

Cost=Free



Backline Calc offers 32 calculators of interest to musicians and engineers.

Engineering Calc from Agilent Technologies Inc. is a simple reference consisting of a resistor calculator, capacitor calculator, Ohm's Law and Smith Chart, things you likely are to be looking up every day; its ease of use and simplicity make it a smart app to have tucked away in a reference folder on your iPhone. Agilent also makes the MicroWave Calculator to assist with measurements, including calculators for directivity error, mismatch error limit and ratio-to-dB.

Cost=Free

SignalSuite from Faber Acoustical LLC adds a precision signal generator to your phone. There are three advanced, audio-band signal generators to produce various types of periodic signals, broadband noise and frequency sweeps. The app includes three types of white noise and pink noise generators and remembers your signal generator configurations between launches. Pan controls allow different signals to be sent to the left and right output channels when working with the stereo headphone jack or line out. The user provides the cable to interface this with their broadcast equipment, but I found that since I am already carrying a phone throughout the day, this saves me time when I need to get quick tone on the line. The $9.99 price tag may seem a bit steep, but this is a full-featured app.

Cost=$9.99

Toolkit from Chesapeake NetCraftsmen allows engineers to calculate subnets and provides a network calculator and wildcard calculator. With IP audio and networks coming under the direction of many engineers, this is a helpful reference and calculator for configuring network parameters.

Cost=Free

(continued on page 22)

Engineering Calc is simple and easy to use.

The full-featured SignalSuite adds a precision signal generator to your phone.

Why do Axia consoles do phones best? (Hint: who's *your* daddy?)

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But, every now and then, something MAY happen that might call for the replacement of a BLADE. In the exceptionally unlikely event that a BLADE should fail, just plug an alternate in and you are up and running. Since each BLADE has the entire WheatNet-IP Intelligent Network's configuration embedded in its DNA, the new BLADE inherits its function immediately and you are back up and running. Pretty cool, eh?

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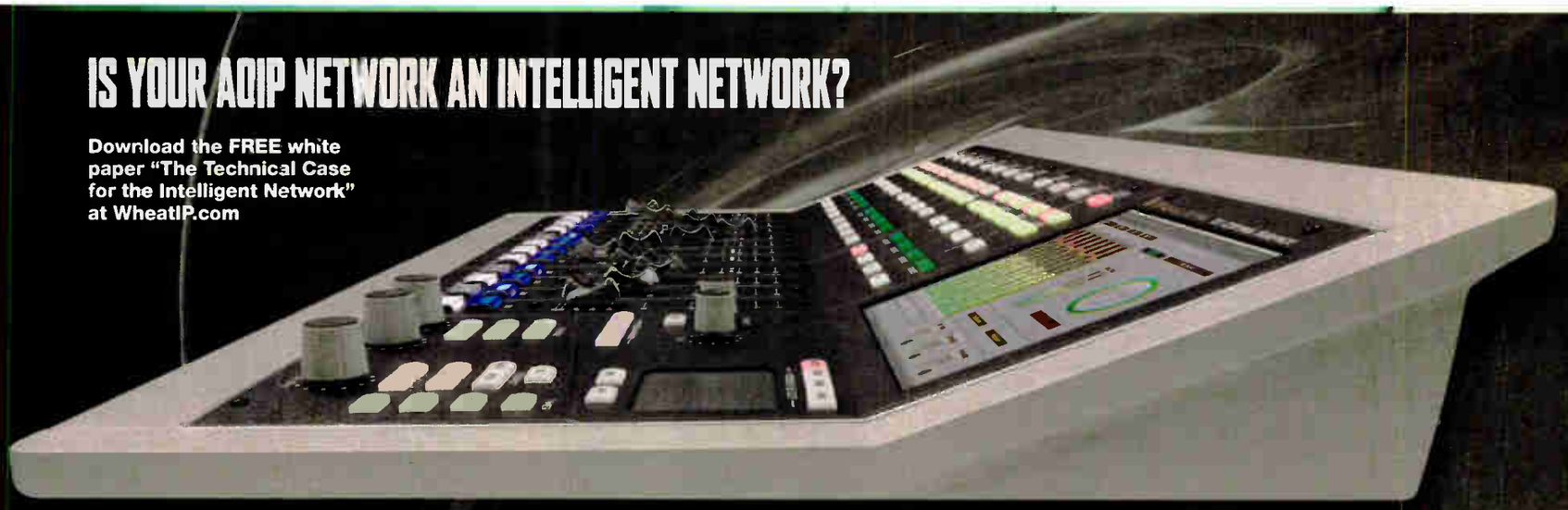


APPS

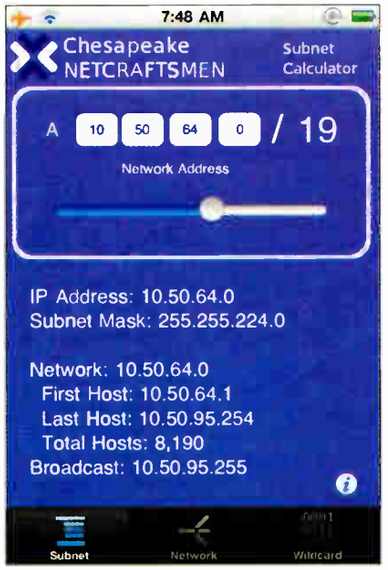
(continued from page 18)

Dragon Dictation by Nuance Communications is an easy-to-use voice recognition application. It uses the same technology as Dragon's Naturally Speaking software that allows you to speak and instantly see your text or to email a message. Not only is this a handy way to provide an almost hand-free email experience, it can be a great tool for taking notes. Documentation is the first thing to suffer when you are busy putting out fires across your facilities. By using an app like Dragon, you can take notes while making changes, or leave yourself or colleague a text or email message with important information as you are working. If you fat-finger the keyboard when typing IP addresses or numbers, just speak them into Dragon; you will get visual confirmation of your text as soon as you finish recording.

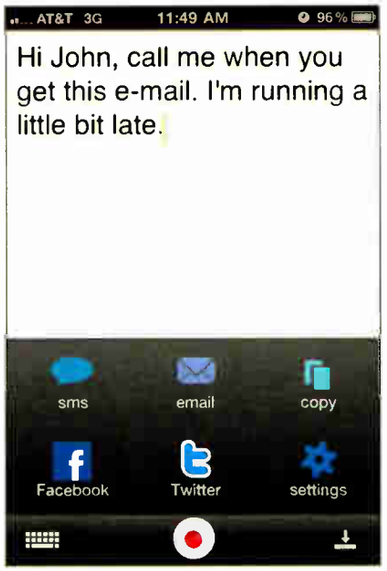
Cost=Free

Ham Helper — This app isn't just for amateur radio operators. With Ham Helper, engineers can make quick conversions from frequency to wavelength or wavelength to frequency; SWR to return loss and return loss to SWR; Watt to dBm and dBm to Watt; µV to dBm and dBm to Watt. This basic app provides another helpful application for calculating data on the job, when time and accuracy are equally important.

Cost=$0.99



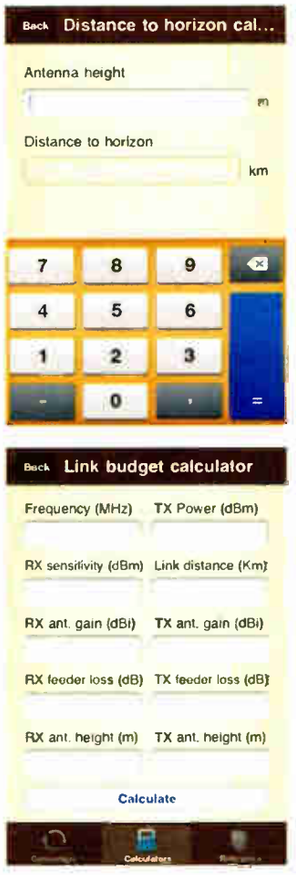
Toolkit from Chesapeake Netcraftsmen lets you calculate subnets.



Use Dragon Dictation by Nuance Communications to compose email or to take notes.

I'm looking for more engineering-friendly applications to share with RW readers. What apps have you found helpful in your job? Drop me an email with your suggestions care of *radioworld@nbmedia.com*.

Broadcast engineer Laura Mir, CBNT, is a board member of SBE Chapter 37.



Ham Helper isn't just for amateur radio operators.

MARKETPLACE

MIC-TRIO: If two microphones on a handheld digital recorder are better than one, three ought to be better than two. That seems to be the operating theory behind the Olympus DM-620. Price: $149.

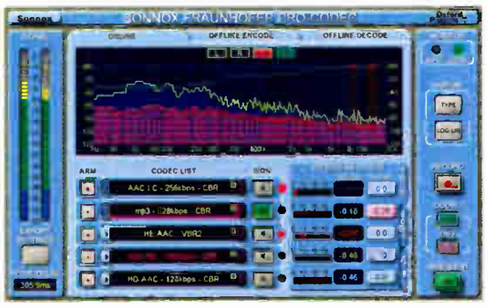
Its Tresmic System consists of two top-mounted stereo condensers with a specialized low-frequency mic in between. According to Olympus the configuration should generate 20 Hz–20 kHz performance. With the LF (center) mic disabled, the specs move to 70 Hz–20 kHz.

A small speaker and a headphone/earbud jack allow for playback. A 3.5 mm jack allows for external mics to be used. A low-cut filter (100 and 300 Hz) and limiter are included.

The DM-620 records MP3, WMV or higher-quality 16-bit/44.1 kHz or 48 kHz WAV files onto 4 GB of internal memory or microSD/SDHC cards. USB port allows for offloading files and recharging the two AAA batteries.

Included is software for simple clip management, conversion and editing. A wireless remote is an option.

Info: www.olympusamerica.com



PLUG 'ER IN: Fraunhofer IIS and plug-in maker Sonnox Ltd. introduced a pro audio workstation software plug-in to allow broadcasters and others to use MPEG audio codecs from the AAC and MP3 families in their preferred audio editing software applications.

Installing it in Pro Tools, Audition, Acid, WaveLab, Logic or Cubase will allow files to be saved in formats such as AAC, HE-AAC, MP3 or the lossless formats HD-AAC and mp3HD. The plug-in also allows on-the-fly monitoring of the codec output in the DAW software during mixing and mastering and is able to encode to multiple formats and bitrates simultaneously.

Fraunhofer's Robert Bleidt said the use of HE-AAC for podcasts, for example, could save two-thirds of a station's download bandwidth costs. "Our codecs can also save downloading time and provide higher quality for demo and approval clips, or for sending voiceovers or actualities."

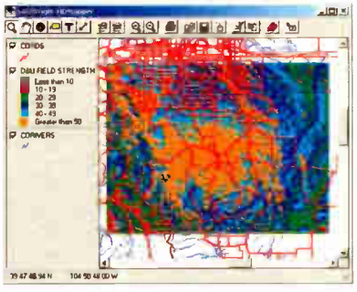
HE-AAC is supported in Windows Media Player 12, QuickTime, WinAmp and Flash streaming as well as Android and iOS devices.

Info: http://www.sonnoxplugins.com/pub/plugins/home.htm

TAPPING THE NET: SoftWright, developer of the TAP Windows XP-based terrain analysis program, said the program now can be used remotely via the Internet by way of a new multi-seat option.

TAP users can purchase the license option and use TAP across a LAN or remotely via an Internet connection.

Info: www.softwright.com



SENNHEISER'S SIDE: Sennheiser recently introduced the MK 4, a cardioid side-address condenser microphone. The gold-sputtered large diaphragm measures one inch.

The capsule is shock-mounted internally. It will ship with a mic clip and protective pouch. It is aimed at the value market, with a street price around $299.

Info: www.sennheiser.com

The future is calling.
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These days, nearly everything is networked. And now, so are your broadcast phones. Meet Telos VX, the multi-line, multi-studio, networked talkshow system.

VX uses standard Ethernet to connect all the phones, hybrids and consoles around your facility, transporting caller audio, mix-minus, POH and control logic on one skinny cable. Connect to POTS, ISDN PRI, or even BRI telco lines via standard gateways, and *voila*, they're available for use anywhere in your facility. And if you decide you want to use VoIP services, VX can do that too.

VX is so scalable, it can manage multiple simultaneous talkshows in the largest facilities. Yet it's cost-effective even for a few studios. Audio is clean and consistent, because dedicated, third-generation Telos hybrids manage each individual call. Even conferences are crystal-clear. You can deploy VX "virtual phones" in production rooms, news workstations, or anywhere there's a PC with a USB mic and headset. Got a hot talkshow that suddenly demands more lines in a certain studio? Just a few keystrokes at a computer and you're set.

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PC Software for archiving and logging all of your stations audio.

Combine the Power of Radio and TV

Partner With the 'Picture Peeps' ... ... to Benefit Both Of Your Stations

Device by iStockphoto

BY MARK LAPIDUS

I'd been on radio for only three years when I received my first invitation to appear on television as guest host of a late-night movie.

Aside from being nervous, I felt that the appearance might be beneficial for my radio station and me, so I said yes. It turned out that I was host for one of the worst movies ever made, "They Saved Hitler's Brain."

I figured nobody would be watching. But for several years after, people came up to tell me they remembered several — incredibly stupid — jokes I'd told.

When television personalities appear on radio, you will hear them share similar stories about how people heard them on the air and remembered something they'd said. The personalities seemed surprised at the impact of the medium.

I bring all this up because the synergy between radio and television is a natural one. There are many ways in which your radio station can take advantage of partnerships.

PRACTICAL CONSIDERATIONS

Like any partnership, an agreement between a TV outlet and a radio station works best when the entities have a solid personal relationship.

If the general managers know and like each other, the process can move efficiently and quickly, because a certain measure of trust exists. If the GMs don't know each other, it's still possible to move forward at a marketing or programming level.

Start with a discussion of promotional spot trade. This will be simple because you both already have a rate card for commercials and neither of you sells all of your inventory. While the spots must be preemptible, every effort should be made to clear reasonable requests.

If you don't have a commercial ready for television, it will be necessary to have the station create a spot for you, so be sure to factor the production cost into your trade agreement.

A word about scheduling your spot on television: Seek those periods of the year when you can run lots of frequency and you're not competing for good time slots with retailers.

For example, January is typically a great month to be on TV because retailers are resting from their huge November and December, while lots of viewers are at home during the cold months watching.

Keep in mind that TV has advertising assets outside of spots that can be useful for you. For example, the crawls on the bottom of the TV screen could contain your promotional tune-in announcements. They also have segment sponsorships, which can highlight your station and perhaps your morning show: "Sports is brought to you by SportsRadio 1010 featuring 'Mike & Bob in the Morning.'"

SHARE ALIKE

After concluding the on-air trade, discuss a content share.

Perhaps one of your DJs can be interviewed once a week about music, entertainment or movies on one of their newscasts. Don't shy away from this just because he's not an expert. Today, it can be as simple as the DJ discussing what people are saying about a new song or movie on Twitter.

In return, invite one of the TV folks onto your morning show to talk about sports, weather or news.

Sure, you can do this every day; but if you're considering one talent in particular to execute a segment, be prepared to get out the wallet. Few TV talents will work regularly on radio without compensation.

Events are next on your hit list, with revenue as your mutual goal.

Can you partner to concoct a fitness and health fair; a home and garden show; or a big boys' electronic toys show? Personalities from each of your stations can be the featured celebrities. You can agree on promotional schedules to advertise the event jointly. You will share some advertisers, so if you want to approach any of them, you should do that together. Otherwise, create a sales incentive in which the organization bringing in the client receives 60 percent of the action.

Is there anything you can do together online with your websites, Facebook pages, Twitter accounts and mobile apps?

The key to all of this is to get started. Beginning is the most difficult thing to do. Once you get rolling, many things can happen organically.

The tough parts are making the initial contact, having the meetings, building a plan and then executing the vision. Those who have the determination to make it happen will reap the rewards of growing ratings and revenue.

The author is Radio World's Promo Power columnist and president of Lapidus Media. Contact: marklapidus@verizon.net.

Tom Davis Explores 'Local Convergence'

BY JAMES CARELESS

Davis Media President/GM Tom Davis is on a mission to save local radio. His solution is an approach he calls "Local Convergence," in which radio

NEWMEDIA

stations turn their websites into preferred sources of local news, weather, sports and community-specific issues.

"We believe the winners in this new multimedia age will transform from being broadcasters to becoming true local media companies," Davis says. "By doing this, they will drive visitors to their digital platforms using the power of radio — and generating more revenues on both as a result."

Davis has put his money where his mouth is. Specifically, he has applied the process to his two Williamsburg, Va., radio stations — WTYD "92.3fm The Tide" and WBQK "BACHfm 107.9" — and Davis Media's digital local newspaper, the WY Daily ("WY" for Williamsburg Yorktown).

Both radio sites have prominent graphic links to the WY Daily, giving surfers a clear route to a comprehensive local news source. The Tide's website also emphasizes hometown sports and numerous archived MP3 interviews with "Local Guests" and "The Smartest People to Visit Us on Hometown Radio."

Davis Media's radio sites also have large iconic links to each other's web streams. Overall, when you start on one of the Davis Media sites, you soon find yourself clicking over to one of the other two, and back again, and so forth.

This interconnected approach is underpinned by Davis' "Hometown Driver" concept.

In this instance, the "driver" is local (hometown) radio, which "drives" (sends) people to Davis Media's three websites. In turn, the sites drive people's interest in The Tide and BACHfm when they're in the car or listening at home or work. And 'round and 'round it goes.

"Radio stations have always been exceptional drivers," Davis said. "In particular, it can drive people to a website as long as the reason for going there has value."

Why use radio to anchor local media companies, rather than print or TV? The answer is money: "Radio is by far the best mass media to drive traffic to local websites and form media companies because it doesn't have the same costly infrastructure found in newspapers and television.

"Furthermore, local content on the radio provides both valuable programming while at the same time driving listeners to a website," Davis contends.

"Newspapers, being flat and emotionless, cannot drive Web traffic the way radio can. Television has too many restrictions on programming and local air time to ensure the frequency of driving web traffic through content. Only radio can do this."

The validity of any good concept can be found in its application in the real world. So, having applied the Local Convergence concept to business for three years, what results does Davis Media have to show for its efforts?

Plenty, Tom Davis replies. First, the WY Daily has "the most readers of any news source in the market," he says. Second, Davis Media achieved 34 percent revenue growth last year, "21 percent of it directly from our digital platform without any 'cannibalization' of revenue from our radio stations — and all profitable," Davis said.

"While the rest of the country keeps saying, 'We need to figure out a model to monetize digital platforms and make money with newspapers,' we've been doing it," Davis concludes, "year after year."

Dan Mason Not Afraid of Streaming Media

'At the End of the Day, It's the Audio We Produce That Drives Everything'

BY JAMES CARELESS

Does CBS Radio President/CEO Dan Mason respect Pandora as a competitive threat? Yes. Is he afraid of Pandora and other Web-based streaming services? Not in the least.

NEWSMAKER

"Radio is a business that's been around since 1928, and over the years it has survived a lot of 'killer apps,'" Mason told Radio World.

"Those killer apps have included television, 8-tracks, cassette tapes, CDs and iPods — and now streaming media. I'm not saying that Pandora won't have an impact; it will. But when it comes to disasters like the tornados in Alabama, people there will tell you that it was local radio that saved their lives; not Pandora."

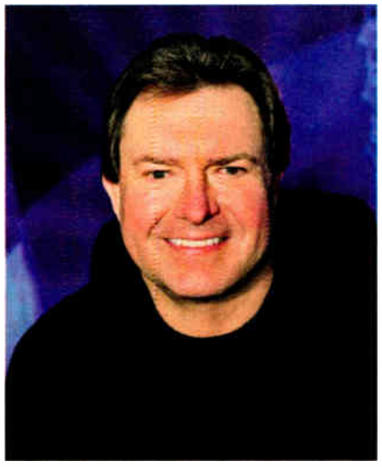
STILL THE HUB

Mason's been a radio devotee since 1973, when he got his first job doing overnights at WKLO(AM) in Louisville, Ky. Some 38 years later, he remains convinced that radio is still the hub around which other media revolve, especially the new media (mobile and Web) that scare some broadcasters.

"When it comes to keeping an audience, it's all about the content. And all of these new options — Web pages, mobile apps — are simply new venues where we can make our content come to life. Thanks to the Web and wireless, we can now do video and graphics as well as audio. And we can have two-way conversations with our listeners, bringing them closer to us and our brands.

"But these are just enhancements. At the end of the day, it's the audio we produce that drives everything."

A case in point: CBS New York sports station WFAN(AM) has come



out with a mobile app aimed at Mets fans. "Using this app, you can talk to any other fans who are at the game with you, anywhere in the stadium," Mason said. "What they talk about is the content we are broadcasting at the game. So they listen to us *and* talk about us at the same time."

NOT AFRAID OF STREAMING

Given his belief in radio as a content hub — and that "local & live" trumps all other content — Dan Mason is not worried about Pandora and Slacker being streamed into people's cars.

"Even today, people have lots of choices to listen to; why, in New York City, there are 100 radio stations! Yet the average car radio only has 10 presets, 20 if you're lucky. So people don't listen to all 100 stations.

"Adding more choice to the mix won't change that."

To bolster his point, Mason cited satellite radio's relatively low penetration (20 million+ at the end of 2010, according to Sirius XM) compared to broadcast radio. He pointed to Sirius XM's lack of local content as a key weakness in its model, the same weakness that currently exists in Pandora and other Web-based streaming services.

As for the notion that ad-weary listeners will desert AM and FM if given the chance?

"People understand that ads are what make radio free to listen to," Mason replies. "Satellite radio isn't free. And you have to have a wireless plan to get streaming media. But broadcast radio is there when you turn on your car, and it doesn't cost you anything to tune in."

Because of these factors, Mason isn't cowed by streaming media. He also is not willing to entertain the notion that radio's day is past. From Mason's perspective, the medium has survived competition from all those "killer apps" over the years — and yet radio is still alive and thriving today.

A technology about which Mason is concerned is HD Radio.

"We are still in the pioneering stage of HD Radio, trying to figure out what works," he said. "We are seeing some success with ancillary sports team channels, such as WOGL's Phillies 24/7 channel on HD2. But this market won't take off until there are far more HD radios in use."

Mason believes that radio will face an ongoing onslaught of competitors and that it will survive them all.

"Five years from now, the Pandoras of the world will keep on coming," he concluded. "But as long as there's a good retail base in the United States that wants to advertise locally, broadcast radio will stay in the game — and keep winning."

James Careless wrote in April about Emmis Interactive Co-President Rey Mena.

STATIONSERVICES

RYAN SEACREST: Premiere Networks and Ryan Seacrest launched "Direct From Hollywood," a national weekday vignette for entertainment radio stations. "From the inside story on 'American Idol,' to celebrity rumors, to breaking news from Hollywood, Seacrest takes listeners behind the velvet rope and gives them the scoop on their favorite stars." The content is in two one-minute vignettes. *Info:* (818) 377-5300

MYMARKETRON: Marketron has a client portal aimed at improving user communication and collaboration. MyMarketron is a place to connect and collaborate so employees and customers can "ask questions, share ideas and partner in creating new product ideas and solutions." Access is free for active Marketron users. Offerings include a community forum, a searchable "knowledge base" with frequently asked questions and a self-service support center with current versions of software and downloadable documentation. *Info:* www.marketron.com

So Your Client Wants to Be in the Spot

Can You Grant That Wish and Still Make a Successful Radio Commercial?

BY JEFFREY HEDQUIST

What's the easiest way to get clients on the air? Put them in the commercial!

What's the quickest way to make a bad commercial? Same answer!

RADIOSPOTS

Most clients think they can pull off being great spokespersons. Most are wrong.

Are there ways you can fulfill their desire for 60 seconds of fame and still make a commercial that works? Yes.

If the owner is a great storyteller or has an exceptional personality (maybe he's so outgoing, maybe he sounds so deadpan) — or if her name is on the letterhead — it might make sense to use a client's voice on the air.

THIS IS MY STORY

For Bob's Automotive, let's hear from Bob — how he got started repairing cars at 14, about how he got his first fixer-upper before he could drive, how he ate, slept and breathed cars all his life, how he continues to take courses and makes sure his people have the same passion for all things automotive.

His name is on the door. His pride can say a lot.

Get him talking (no script) about himself and record lots more than you'll ever need.

Most clients have great stories tucked away in their memories. Be patient and probe for them.

"How did you get started in business? What do you love about what you do? What do you hate about your business? What do you do for your customers that no one knows about? What emotional needs do your customers have that you solve for them? What's the hidden secret you wish everyone knew about your business?" Then edit the responses into several spots.

If he can't tell a great story, tell it for him. Record his intro and outro to each spot.

In: "Hi, I'm Bob and this is my story ..." Out: "I'm Bob, and my name is on the door at Bob's Automotive."

HAVE FUN

If your client has a sense of humor, create a campaign that lets her poke fun at herself.

Maybe it's a pseudo-interview, where she never gets a word in edgewise because the announcer keeps interrupting to tell the audience what she was about to say. Maybe customers keep interrupting, or little emergencies keep appearing that allow you to work in benefits by the way she handles them.

iStockphoto/ Christopher Futcher

He's proud of his new store. Can you help him find his unique voice?

If a client sounds deadpan, alternate him with a voice who is truly excited about the benefits his business has for customers, interspersed with just his unemotional "yup" or "you bet" comments.

Take a "goes nowhere" story, told by the owner in a flat unemotional voice. Cut it apart and create an epic:

Frank: My customers are regular, consistent.
Anncr: Frank Ambrosio, owner of Frank's Restaurant with another amazing story!
Frank: She comes in 'bout noon on Wednesdays, orders the soup and the grilled cheese ...
Anncr: Incredible! What a great combo!
Frank: Yep. That's her favorite, sometimes a salad.
Anncr: Whoa, hard to top that one!
Frank: Well then, she has the lemon meringue for dessert, sometimes not. Guess she likes it. Always comes back.
Anncr: Another amazing story from Frank's Restaurant!

Record short phone interviews with the client's relatives about him and build the campaign around the family stories about the client.

You could just end each commercial with the client's voice delivering a tag line that embodies the client's personality. Record a series of comments from them like "Yes. No. Tell 'em about our guarantee. Your next car is waiting for you. Here's something you might not know." Then you simply write spots around each comment.

Have your client describe his product or service in highly technical terms or using lots of jargon. Between each phrase, explain to the listener the benefits in layman's terms.

Ted: Dude, these boards are mondo gnarly!
Anncr: These surfboards are the latest!
Ted: You'll be totally stoked when you see our rad rags.
Anncr: We think you'll be inspired by the new fashion looks.

If your client speaks a foreign language, this technique can work well.

Don't let your clients just read a script. Find an interesting way to use their voices to best advantage, and build them success stories.

Do you have successful techniques for using client voices? Send them to me for a free gift at Hedquist Productions Inc., P.O. Box 1475, Fairfield, IA 52556. Email *jeffrey@hedquist.com*.

Radio Can Both Help and Entertain

Done With Care, Your Station's Content Can Reflect Economic Reality

BY MARK LAPIDUS

As one out of 10 Americans is facing unemployment and the rest are being pounded with dour economic news, most radio stations are broadcasting the status quo of day-to-day life and business-as-usual.

PROMOPOWER

But while the situation is worse in some areas than others, it's now common for nearly everybody in our country to have a personal relationship with someone on the losing end of the financial picture. As our economy zooms up and down like a roller coaster, it is a legitimate position for a station — especially a music station — to remain in entertainment mode, offering listeners an escape from bad news.

However, I hope that some programmers will use their creativity and license to serve their local listeners by reflecting today's economic reality and offering help and hope to those who need it.

When I made this proposition recently to a young program director, he seemed willing but uncertain as to how he might proceed.

Here are a few idea starters:

On-Air Job Flash: Several times daily, air a pre-produced short vignette with five or six job listings referencing how listeners can get more details.

Sure, people can search for jobs all day online, but there just might be that one person who hears just the right opportunity from your station; plus, the frequency of these vignettes sets the stage to alert the community that you're reflecting today's economic reality.

Make sure you mix up the job listings so that you're balancing blue- and white-collar positions. Put a few of the really cool openings on your Facebook page.

You should also keep your eyes open for job fairs to promote. After these listings are on the air for awhile, your sales manager will ask if they can be sponsored. As long it's done tastefully, this will sound fine. It's likely that job fairs may even have an advertising budget.

Employment Coaching/Advice: Find a local career counselor who is articulate and can appear on your morning show a few times a week. Have her cover the basics — from interviewing tips for those who are a bit rusty to advice on how to network.

Part of the counselor's role is to play psychologist. A good one can be quite interesting. Take calls from real people and let them tell their stories. If your career counselor is game, perhaps he or she could write a short blog on your website.

iStockphoto/Lilli Day

iStockphoto/Catherine Lane

Helping listeners deal with economic challenges doesn't mean you have to turn your station into all gloom and doom. A combination of social outreach and fun can push your content from ordinary to extraordinary.

Your station can combine 'good work' with 'engaging entertainment.'

Drives for Those in Need:

1) I worked with a station recently that held a "dress for success" clothing drive. The promotion asked working women to donate nice office attire which they no longer wore.

2) When unemployment is high, food banks are strained to keep up with demand. You've probably asked listeners to "stuff a truck" by donating canned foods, baby products, toiletries, etc., for holidays like Thanksgiving. You'll find many willing to share what they can once they hear that your personalities are involved.

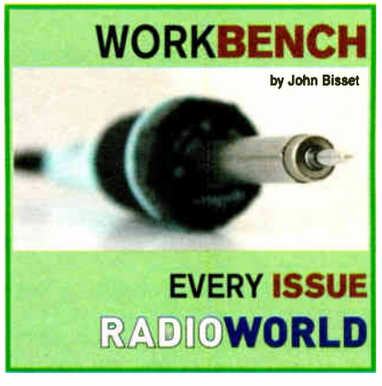
3) Send kids to camp this summer. No doubt there are a few great camps in your area, perhaps even run by the county. They all cost money. Could you raise funds to send a half-dozen children to camp? By using the voices of the kids (no names) explaining why they'd like to go, you will no doubt generate interest and funding.

4) Consider an online drive for drivers. A bad economy often leaves people without sufficient transportation. You could put a ride board on your website, helping to make connections between people.

Stock Alerts: Yes, your middle- and upper middle-class listeners are concerned for their investments. People want to hear about how the volatile market is doing on a regular basis. These updates should be quick and can highlight local stocks if applicable to your area.

Whatever you choose to do to help your community, remember that you're surrounding your good work with engaging entertainment. The combination of social outreach and fun can push your station from ordinary to extraordinary.

The author is president of Lapidus Media. Write to marklapidus@verizon.net.



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Pocketraks Pack a Punch in Your Pocket

Hummingbird-Sized Yamaha Recorders Offer Performance Beyond Their Size

PRODUCT EVALUATION

BY LAURA MIR

Right out the box it was hard to imagine that something so compact and lightweight could record anything of value. Upon a closer look there are quite a few rich features packed into a 3.25-ounce device that has a smaller footprint than an iPhone.

The Yamaha Pocketrak W24 (retail price $458, street around $299) measures just under 2 inches wide, 5 inches long and less than 1/2-inch thick, just enough to fit one AA battery inside. The recording battery life is amazing. Toting the recorder everywhere for an entire week barely put a dent in the remaining capacity. This was also taking into consideration that it was being turned on and off repeatedly.

Yamaha lists a recording battery life of 56 hours in MP3 or 38 in PCM. Batteries are a costly consumable, and having to stock legions of reporters makes the one AA a highly favorable aspect of this recorder. (I'll tell you about its sibling Pocketrak C24 in a moment.)

FEATURE-IFFIC

Looking further at the external qualities of the W24, there is a nice bright orange LCD backlit display, internal stereo X-Y mic, internal speaker, 1/8-inch-3.5 mm mini headphone jack, 1/8-inch-3.5 mm mini stereo mic/line-in switchable input) and micro SD card slot.

The X-Y mic is not only aesthetically appealing, it is extremely sensitive. The heightened sensitivity was immediately noticed when a test recording was made of an acoustic musical performance. Placed a considerable distance from the musician, the audio was clear, crisp and captured all the coloration and depth of the tone very well.

Inside the Pocketrak W24 menus there is a myriad of selections one can make to shape the sound and record in any situation.

The W24 records in PCM stereo (16-bit/44.1, 48, 88.2, 96 kHz) and (24-bit/44.1, 48, 88.2, 96 kHz) or MP3 stereo (32, 64, 128, 192, 320 kbps). In the PCM stereo 24-bit/96 kHz users get 53 minutes of record time on the internal memory (expandable with an additional micro SD card), and that time increases all the way to 129 hours in MP3 32 kbps.

The unit also includes many of the same features found on more expensive recorders such as ALC, mic sensitivity select, peak limiter, five-band graphic EQ and high-pass filter. The playback functions of the W24 allow the user to set a playback speed (MP3 recording) and simple file editing (split clips, fade in/out). It even includes a tuner and metronome for musicians. There is also a simple wireless remote control included in the box.

When the W24 arrived, I was a bit put off by the feel of the device. There was a certain toy-like quality to the recorder. The case is plastic and didn't feel robust enough for rugged location work. It wasn't long after it was turned on that my initial reservations were put aside. The Pocketrak W24 really is an effortless recorder, and seemingly built well despite its flimsy, lightweight feel. The simple navigable menus, onscreen metering and really surprising stereo sound quality were immediately evident.

Test recordings were made using almost every combination of the selections listed above (16- and

Yamaha's Pocketrak W24 measures 2 inches by 5 inches and less than 1/2-inch thick, just enough to fit one AA battery inside.

Author Laura Mir writes that the little sibling Pocketrak C24 'had a few problems keeping up' with the W24.

PRODUCT CAPSULE

YAMAHA POCKETRAK W24
Digital Recorder

Thumbs Up
+ Stereo X-Y mic
+ Small compact size
+ Easy menu and folder layout
+ Operates on one AA cell

Thumbs Down
– Plastic case

Retail Price: $458

PRODUCT CAPSULE

YAMAHA POCKETRAK C24
Digital Recorder

Thumbs Up
+ Easy to navigate menu and folder layout
+ Operates on one AAA cell

Thumbs Down
– Sliding USB connector
– USB mic clip

Retail Price: $300

For information, contact Yamaha in California at (714) 522-9011 or visit http://usa.yamaha.com/products/music-production/recorders/.

24-bit/48 and 96 kHz PCM and 64, 128 and 192 kbps MP3). For rich musical recordings, 24-bit/96 kHz PCM recorded beautifully. The dynamics of the music weren't lost in the ALC, and I fooled a few people who told me portable recorders could never do a concert hall justice. True, this isn't 5.1 surround, but anyone being tasked with that would never use this recorder in the first place.

A bonus is the microphone stand adapter that comes with the W24. The introduction of a small desk stand or mic stand (in the case of the auditorium) really cut down on the handling noise that small recorders are accustomed to, and ensured that the mic placement was fixed for the duration of the recording.

Interviews were a breeze. Changing the recording format to 128 kbps MP3, spoken word was clear and highly intelligible. Utilizing the MP3 format added significantly more recording time using the onboard memory.

For field ENG use, because getting to a computer to transfer audio isn't always easy, the expanded recording time came in handy without compromising sound. Field use also showed off the built-in high-pass filter. Even on a moderately windy afternoon at a busy intersection, a street interview had no problem breaking through the wind and car noise. The interview had a rich sound, and was not lacking low end warmth.

The ALC also performed well in the noisy situation, and appropriately normalized the interview without being overly compressing. A windscreen is included with the W24, should users wish to add another barrier. The addition of the bulky foam cover does make it a bit less friendly for carrying around in a pocket.

LITTLE BROTHER

The Pocketrak C24 is the little brother. Coming in at 2 ounces and retailing for $300 — about $199 on the street — this recorder is tiny and lightweight. But it too packs a punch and comes equipped with a range of features like stereo mic, recording peak limiter, ALC, VAS (voice-activated trigger), tuner and metronome functions.

The C24 has the same recording settings as the W24, and supports a 2 GB internal memory that is expandable via the micro SD card slot. Data transfer is made using a sliding USB connector that is stored internal to the device when not in use. Last, there is a mounting clip that allows the C24 to attach to a mic stand or anything else that is less than about an inch thick.

After I tried the W24, the C24 had a few problems keeping up. The C24 wasn't in the same playing field with regard to sound, robustness and interfaces. The C24 comes in at a more affordable price; however there is a considerable difference in quality of sound.

The main difference was the mic. The C24 is a stereo recorder too, but the placement of the mics differs. They are presented in a left/right facing orientation, vs. the X-Y layout on the W24. It seemed this orientation necessitated better placement of the mic/recorder in order to capture a true sound. When the recorder was closer to the subject, the sound was less desirable than when the recording was of a conference room or auditorium.

For field use, there was too much ambient noise picked up, and not enough of the person in front of the mic being interviewed. The sound was still acceptable, but when compared to the W24, it was lacking in warmth, presence and clarity.

Another feature of both recorders was selectable mic sensitivity. In the C24,

(continued on page 32)

Audio Software on the Cheap

Production Tools for Little to Nothing. Do You Really Get What You Pay For?

BY CURT YENGST

If you're anything like me, you are (aside from being extremely good looking) a colossal cheapskate.

While I'm not the sort of guy who will drive miles out of my way to avoid a toll booth (don't laugh, I have an uncle who used to do just that), I just don't like spending any more than I absolutely have to. If you're a station manager operating a small station on a tight budget, you can relate.

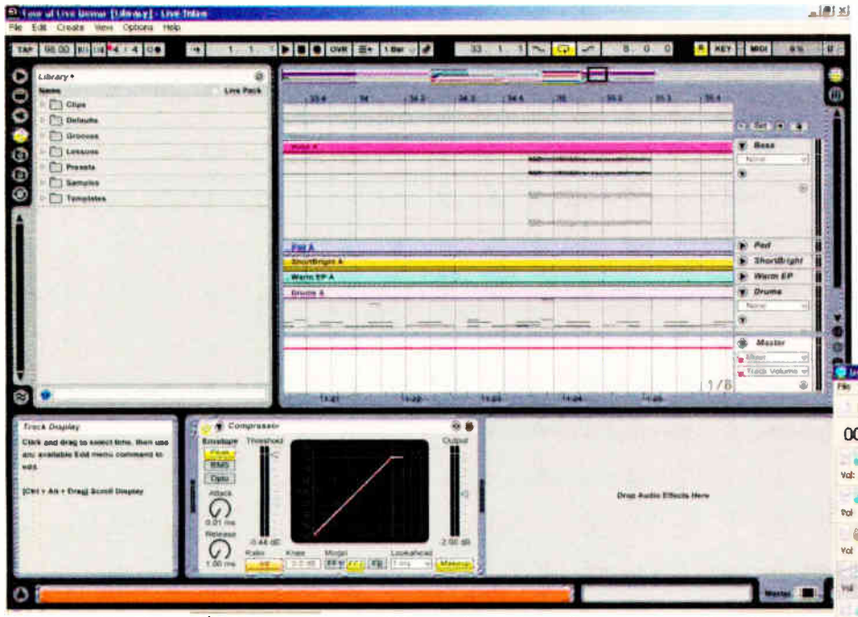
Is it possible to produce professional audio without blowing your entire engineering budget for the year?

There are options for the frugal (or just plain broke) audio producer, ranging from relatively inexpensive to free.

For the sake of this discussion I decided to limit our budget to $100, a price point well below popular applications in use at most radio stations. Features, ease of installation and learning curve also were considerations.

After searching for viable candidates among the industry's heavy hitters, and a few not-so-heavies, I narrowed our search to seven contenders. In order to prove the viability of some standouts, I had a team of production engineers, using demos of these programs, attempt to actually produce airworthy spots.

Here I tell you about two of them. In subsequent issues I'll look at the others and offer some overall conclusions.



Ableton's Live Intro ($99) has a layout different from that of any other audio editor I've used. Lessons guide new users.

$99 – ABLETON LIVE INTRO

Ableton's Live Intro had a layout different from that of any other audio editor I've used.

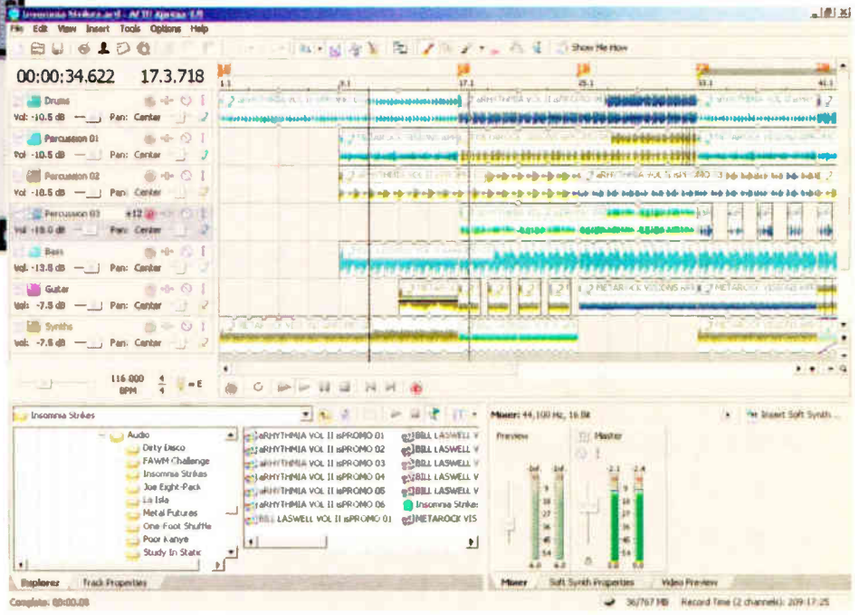
Essentially, it is a loop-based music production tool. Fortunately, the program incorporates interactive "lessons" to guide the uninitiated. Recording raw audio took a trip through a few such lessons. Since it's intended for music production, everything that gets recorded is handled automatically in terms of beats and measures, making precise edits nearly impossible. For creating custom music beds using the included content, this program is useful. The steep learning curve, though, was a huge hurdle, even in light of excellent built-in tutorials. Info: *www.ableton.com/live-intro*

FREE – SONY ACID EXPRESS

I had the opportunity to review this program's big sister, Acid Pro 7, in the Feb. 1, 2009 issue of Radio World.

Acid Express is basically a stripped-down version of Acid Pro, limited to 10 tracks of audio at 16-bit/48 kHz maximum, no VST or DirectX support and no effects. (There's Acid Music Studio, which sells for $69.95 and falls somewhere in between feature-wise.)

Downloading requires free membership in the Acid Planet online forum, which also gives you access to free loops, samples and other content. It was great for generating music beds as well as recording and editing audio. If it were only used for creating production music, it would save money. Recording and editing were easy but the lack of effects was an issue. Another annoyance was the sales pitch to upgrade to Acid Music Studio or Acid Pro every time the program was closed.



The free Sony Acid Express is great for generating music beds as well as recording and editing audio.

I suppose one could regard this program as a glorified infomercial for those versions. Info: *www.sonycreativesoftware.com*

Next time: Acoustica Mixcraft, NCH Mixpad and n-Track Studio 6.

What's your favorite production software and why? Write to radioworld@nbmedia.com.

Curt Yengst, CSRE, is assistant engineer for WAWZ(FM) in Zarephath, N.J.

POCKETRAK

(continued from page 31)

users can set mic sensitivity via the menu selections. The W24 includes this feature as a selection button on the case. In a quick recording situation, having the mic sensitivity selector as a physical button is a great advantage to the end user.

The folder and menu structure of the C24 mirrors that of the W24. Users can select recording banks and folders to better organize the clips and export the folder structure to their computer.

For exporting the sound clips, the C24 provided a sliding USB connector. This format forces the user to dangle the recorder from the USB slot on the computer or requires a USB extension cable to make transfers from or to the device. Furthermore, the connector is protected by a delicate plastic cover that hinges off when the USB is slid out from the rear of the recorder. For daily use it doesn't seem nearly as robust as it should considering the amount of wear and tear it would be subject to.

This sliding USB connector also is how the C24 connects to the mic clip. Users must extend the connector and slide it into a matching receptacle on the mic clip. Essentially the USB is holding the clip onto the recorder. With the USB being the only physical connection into and out of the device (other than removing an optional expansion micro SD card), it seems like a poor design.

(Yamaha responded to my comments by saying the C24 is convenient and compact, and comes with a clip that has a second-generation design. They said I "need not be concerned with the robustness of the design, it has been 'road tested' and proven worthy ... We think it's a good thing that the user can plug right in to the computer with the unit, one less wire to worry about. How many times have users left USB camera cords in USB outlets?")

For a basic entry-level recorder, the C24 performs well. The C24 is likely targeted towards musicians and recording band practices. For more serious recording and for broadcast, users would be better equipped with the W24. The Pocketrak W24 literally does fit in your pocket, and you will likely be pleasantly surprised at how much this little device can do.

LEADERSHIP BREAKFAST

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Thursday, September 15

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Join your colleagues for breakfast and a Radio Show session featuring top leaders from radio. The panel will discuss radio's financial opportunities for growth through operations, new technologies and acquisitions.

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Chairman and CEO
Cumulus Media

Panelist:
Alfred Liggins
President and CEO
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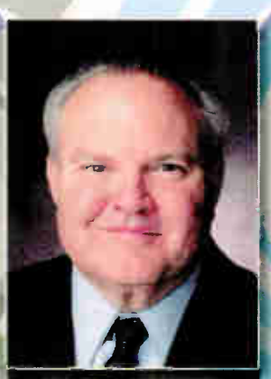
Panelist:
Dan Mason
President and CEO
CBS Radio



Panelist:
Bruce Reese
President and CEO
Hubbard Radio

Moderator:
Lew Paper
Partner, Dickstein Shapiro LLP

Opening Remarks:
Marci Ryvicker
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S-bay high power Jampro antenna, gd cond, $5000; (25) 20' sections, 3-1/8" line in gd cond, $200/ea, avail Fall 2011. C Haynes, 601-218-5969.

ERI 6-bay center fed, full wave, tuned to 96.7; Shively 6-bay end fed, full wave, tuned to 94.5, presently in service; Cable Wave 8-bay end fed, full wave, tuned to 92.9; Cable Wave 8-bay, end fed, full wave, tuned to 96.7; SWR 4-bay, full wave, antenna tuned to 95.9, 1-5/8" line; Jampro 10-bay half wave spaced antenna tuned to 107.1, all BO. Gary, 435-881-6071.

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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.

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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.

SmartCaster 2 station system, worked perfect when removed from service, BO. Gary, 435-881-6071.

WANT TO BUY

Wanted: old analog automation equip, filters and EQ, tube amps, reel to reel, cart machines and parts. Pacific NW area. 503-493-2983.

CONSOLES/MIXERS/ ROUTERS

BE 10-chnl w/rotary pots, looks good, $650; BE 10-chnl w/slide facers, looks good, $800. Gary, 435-881-6071.

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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

ROTRON BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin. Goodrich Ent. 11435 Manderson St. Omaha, NE 68164 402-493-1886 Email: CGoodrich@tconl.com

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WANT TO SELL

(4) Otari 5050 R-R tape machines, BO; miscellaneous cart machines, BO; cart rewinder, BO; other odds and ends... Gary, 435-881-6071.

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.

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 and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

Looking for a broadcast excerpt of a SanFrancisco 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

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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 50 s. Bill Cook, 719-687-6357.

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

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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.

Non-Profit SCA-carried reading service for the blind is looking for rack-mounted SCA receiver and NOAA/EAS encoder/decoder for monitoring/silent sense. Also in need of equipment to interrupt audio in the event of bad weather. If your group has surplus SCA receiver we can put it to good use. If you're preparing to replace your current EAS system with new CAP-compliant equipment, don't relegate the old system to the dumpster. For our needs, we only need a system for NOAA alerts. Our station for the blind/disabled will not carry live programming and will be unattended outside of business hours. If you have this equipment gathering dust, please email michael@recordinglibrary.org.

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

CCA 20000D, gd cond, presently tuned to 96.7Mhz, $6500; CCA 25000D, gd cond, presently tuned to 92.9Mhz, $7500; CCA 25000D, needs work, nothing major, tuned to 97.3, $3000; Harris H3, gd cond, presently tuned to 94.3, $3000; Harris H3, needs work, presently tuned to 104.9, $1000; Collins 1kW FM xmtr tuned to 96.7, $1000; CCA 10000D, presently tuned to 99.1, $2500; CCA 10000D, presently tuned to 103.9, $2000; CSI 2.5kW tuned to 99.1, $2000; Elcom Bauer 1kW xmtr, $750; CSI 2000kW xmtr tuned to 94.3, works great, $7500.Gary, 435-881-6071.

Harris ZD-24-HDS Iboc ready, ready for shipment. KIJN-FM, 972-931-6055.

QEI 30kW xmtr, gd cond, $18000; CSI 12kW xmtr, gd cond, $5000; pre wire shed avail, avail Fall 2011. C Haynes, 601-218-5969.

Used 21.5kW Continental 816R – 2C FM transmitter, currently on 104.1, 802B exciter and upgraded solid state dual IPA, also ERI SHPX-6E 6-bay antenna, available immediately, Minnesota area, rebuilt spare tube, just removed from service. Jack Hansen, 218-847-5624.

TUBES

POSITIONS WANTED

Enchanting, well-organized and flexible. Ambitious talent desires position in radio industry. Skillful in copywriting, traffic reporting, and/or production capabilities. Contact Rebecca, 302-887-6568 or darealsunny22@gmail.com.

Extremely personable and friendly. Organized show prep. Ability to relate to audience, and natural on-air delivery. Notable technical skills with board-operations/digital editing. Juriah, 682-222-7522 or jayjones100@hotmail.com.

Extremely sharp Production/Digital Editing abilities. Creative copywriting, and strong show prep. Dedicated, friendly, well-rounded, with good work ethics, and quick study. Travon, 310-776-2052 or travondj1@yahoo.com.

Zany, energetic, quick witted personality. Experience in production, commercial and copywriting, voice work. Open minded, zealous individual. Willing to relocate. Tyrell, 817-902-4585 or tyrellspiller@gmail.com.

Exuberant, quick witted, self-starter desires a radio career. Great voice for On-Air/Production. Endless creative copywriting and promotions capabilities. Plausible and ambitious. Contact Kelanna at 817-902-2320 or klanna_spiller@yahoo.com.

Great grasp of the basics of broadcasting: On-air/prep, production, copywriting ability. Grand personality, social, knowledgeable, motivated, high-energy, plus catches on quickly. Trelvis, 214-854-0412 or Treg0707@gmail.com.

High energy on-air talent, with strong knowledge of entertainment news/pop culture. Extremely creative copywriting/show prep ability. Passionate, witty, friendly, relatable, dependable. Miava, 817-323-5735.

Seeking on-air postion, country format. Music knowledge, some broadcast experience Television Master Control Operator, DRS Radio Broadcast Software/Adobe Audition, plus Broadcast consoles/mixers. Ray, 530-275-3367 or RAY1455@att.net.

Sports fanatic! Vast knowledge of sports/teams, technically inclined plus good grasp of basics of broadcasting. Dependable, organized show/prep abilities, good utility player! Bobby, 682-558-6216 or bobby_dorman30@yahoo.com.

Extremely knowledgeable and articulate racing writer/talk show host Adam Amick is available for shows, correspondent, features, etc. Check out www.bleacherreport.com for samples. Call 214-384-5812 or email: adam@rubbinsracingshow.com.

Bilingual-Seeking employment on-air/behind the scenes within programming/sports at a broadcasting firm. Sports knowledge/teams, technical, boards, show prep, on-air, and production. Oscar, 214-339-0380 or oscarmartinez001@yahoo.com.

READER'S FORUM

HARD-DISK AUDIO

I read the article "Hard-Disk Lawsuit Threatens Stations" (June 1).

It raised memories of my own work with early automation. I put in the first digital audio system in 1988 when I built WLOW(FM) in Bluffton, S.C. We used a 9 gig Maxtor hard drive that used a Dolby encoder; the maker was an Australian company out of Perth. The controller was a MediaTouch touchscreen system; music was on reel-to-reel tape. We used the digital audio system for commercials and fill-in music. This predates all the hard-drive systems.

W. Lee Simmons
Consultant
Richfield, N.C.

A VOTE FOR PROTON THERAPY

Paul I wanted to share with you and RW readers that I have been in Loma Linda, Calif., for prostate radiation treatment via protons at Loma Linda University hospitals.

My prostate cancer is slow-growing, but I wanted to take a more proactive approach, rather than the wait-and-see my doctors in Duluth, Minn., recommended. Proton radiation therapy was pioneered at Loma Linda about 20 years ago; and the technique is spreading to such areas as Indiana, Massachusetts and finally the Mayo Clinic in Rochester, Minn., is said to be incorporating the treatment.

As many of your readers may be in the age group when prostate cancer is a concern, they should be aware of this medical facility and the help and hope it offers in a Christian setting. The treatments run about nine weeks at five days per week, for a total of 45.

More broadly, people over 50 should be checked for colon cancer, and men for prostate cancer as well. I have had colon cancer, with surgeries in the large intestine 11 years ago and small intestine, six years ago, so you might say I have a semicolon!

I feel fine, but, psychologically at least, I should feel even better after this prostate cancer is taken care of. Loma Linda University and their prostate radiation center in California can be researched at "Loma Linda" plus "protons." Also available from their website are a free video and book, "You Can Beat Prostate Cancer," by Robert J. Marckini. I met him and signed a copy of my book, the "FM Atlas," and he signed my copy of his.

PS — While on the trip I've been taking notes of FM stations and format changes for my book, which also helps make the gas expenditure and kilometerage tax-deductible.

Riding along with us is a Radio Shack Accurian table radio with inverter for checking out the HD stations, RDS in our Ford Fusion and SCS (67 and 92 kHz) in a modified A/C clock radio. Our landlord in Colton, Calif., has quit using Dish network, and only has a converter box. It is fun to check out all the analog and digital TV stations here in the Los Angeles-Inland Empire area.

I am getting one Franken FM on 87 or 87.75 MHz with stereo from Los Angeles, with Spanish, while another 87.75 Spanish lurks in mono, which one of my subscribers thinks is XETV Tijuana-San Diego, still a legal analog station. XETV appears to be all-Spanish, having metamorphosed from all-English.

Bruce Elving
Esko, Minn.

Elving is author of "FM Atlas," 288 pages of FM information including maps and directories with stations arranged by state and then by frequency. It covers U.S., Canada and Mexico, including info on stations having HD, RDS, stereo and FM subcarriers at 57, 67 and 92 kHz. $22 postpaid, Bruce Elving, PO Box 336, Esko MN 55733-0336.

ABOUT JACK NEFF

Re: "Jack Neff Was a Self-Made Man" (originally published Sept. 1, 2010, and archived online):

I started my career working for Jack Neff in Bethesda; I was at Dataworld from 1995–97. We used Fortran 77 to combine FCC tower databases, USGS topo data and Census block demographics to map out audiences for broadcasters. Jack was a fixture at NAB conventions for years.

He was a class-act man, to be sure.

Richard Hay
Senior Test Engineer
Google Platforms
Mountain View, Calif.

CORRECTIONS

In the June 15 issue, a URL given for the PTFP program on page 6 was incorrect; it should read **www.ntia.doc.gov/ptfp**.

On page 16 of that issue, the URL for Axia Audio was omitted; the website is **www.axiaaudio.com**.

In the July 1 issue, two URLs in the Allen & Heath user report on page 28 were incorrect. The station website is **www.qrockradio.com** and the supplier website is **www.allen-heath.com**.

ADVERTISER INDEX

This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEB SITE/URL
16	AEQ, SA	www.aeqbroadcast.com
24	Arctic Palm	www.arcticpalm.com
27	AudioScience Inc.	www.audioscience.com
9, 19	Axia - A Telos Company	www.axiaaudio.com
39	BSI	www.bsiusa.com
3	BSW	www.bswusa.com
7	Comrex Corporation	www.comrex.com
18	Digital Alert Systems	www.digitalalertsystems.com
5	ENCO	www.enco.com
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28	Grace Broadcast Sales	www.gracebroadcast.com
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8, 12, 14	Nautel Ltd.	www.nautel.com
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17	Sage Alerting Systems	www.sagealertingsystems.com
13, 23	Telos Systems - TLS Corp.	www.telos-systems.com
1	Tieline Technology	www.tieline.com
26	Titus Labs	www.tituslabs.com
2, 20–21, 40	Wheatstone Corporation	www.wheatstone.com

I Have Two Words for You: 'New Profits'

AM Owners Should Signal Their Readiness to Accelerate Broadband Access Using AM Towers

COMMENTARY

Lawrence Behr, CEO of LBA Group Inc., spoke recently at an FCC Broadband Access Acceleration Conference. Radio World invited him to flesh out the comments he made at the task force meeting.

BY LAWRENCE BEHR

AM radio towers stand ready — literally — to help government and wireless industry leaders broaden access to digital networks by hosting wireless antennas. Yet relatively few AM towers have the antennas colocated on them. Why?

The reason is not technological. Rather, simple distrust and misunderstanding exist across the digital and AM divide.

AM and wireless leaders don't fully understand each other's technology; not only are they 1,000 megahertz apart, they are a hundred years apart. In addition, the availability of some towers for colocation is not widely known.

Radio station owners and operators should lead the way in clearing away these barriers, first by recognizing the benefits of linking up with the wireless industry.

The benefits can be summarized in two words: new profits.

YOU ARE THEIR INFRASTRUCTURE

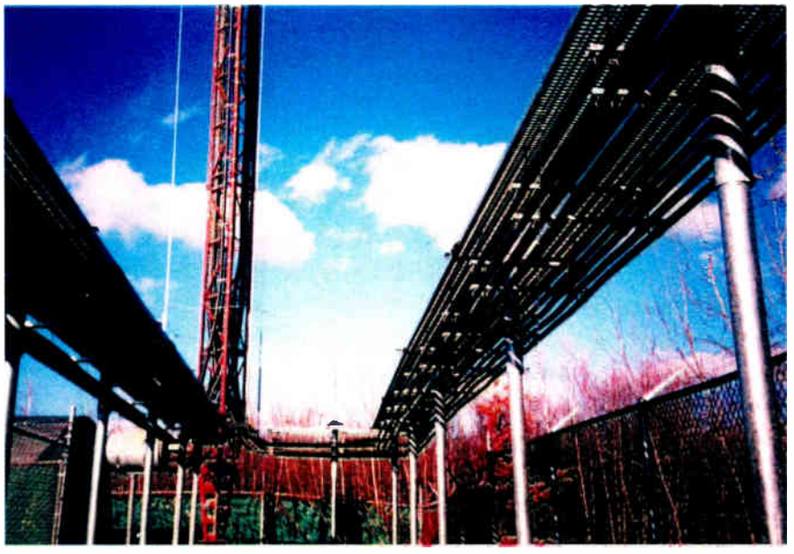
Colocating wireless antennas on a tower can swell an AM station's revenue stream.

AM's estimated 10,000 towers are existing infrastructure for broadband expansion across the U.S. Many of the towers are positioned in underserved rural areas or desirable urban broadband coverage areas.

Yet radio station operators traditionally have rejected out of hand any thought of cooperating with a wireless carrier, fearing a digital antenna would interfere with AM station signals. For this reason, the Federal Communications Commission continues to police the wireless realm to ensure that digital hardware doesn't disrupt AM broadcast patterns.

For their part, wireless carriers have gone out of their way to avoid AM towers and signals because of these interference problems, as well as presumed safety and grounding issues.

Furthermore, from an engineering standpoint, placing wireless and AM facilities in close proximity meant coordinating with the FCC, which generally lengthened and aggravated the process. So carriers have resorted to building their own outlying towers — with attendant zoning hearing hassles.



Colocation allows wireless antenna and AM towers to function together. Pictured is a Colocoil RF Isocoupler, which permits addition of antennas and coaxial cables.

Technologies now are available to overcome these problems and efficiently integrate wireless and AM systems at reasonable costs.

REAL MONEY

Numerous AM station owners, such as Sotirios Angelatos in Florida and Bob Vinikoor in New England, are proof that colocation works.

Angelatos and Vinikoor are earning $1,600 to $2,400 every month from each wireless antenna attached to their respective broadcast towers.

Vinikoor owns five radio stations in Vermont and New Hampshire and has 15 wireless antennas attached to his towers.

"If anyone has reservations about allowing cellular companies to colocate on their towers, I would highly recommend that they reconsider that decision," he said. "Once construction is done, it's pretty much seamless and the cellular companies operate in the background."

In February, a station in Hawaii became the latest AM facility to share its tower using an LBA Group colocation system.

These and other station owners are beneficiaries of engineering that overcame the intrinsically incompatible properties of AM and wireless.

In the AM band, the tower itself is the radiating element, whereas wireless antennas and coaxial cables are self-contained systems that merely attach to support structures. The two systems now have been engineered to coexist and to do so in synergism.

One technological approach to AM colocation is a proprietary LBA system called CoLoSite. The system is based on patented hardware by LBA Technology Inc. with engineering and integration systems implemented by Lawrence Behr Associates Inc.

With CoLoSite, colocation is practical for both single-tower and multiple-tower AM antenna systems. Using the system, wireless antenna and coaxial cable installations have virtually no effect on host AM towers and the AM signal has no effect on the wireless antenna.

Moreover, antennas and transmission lines can be added without the use of additional isolation devices. This means a tower owner can lease additional space to other wireless carriers, limited only by a tower's structural capacity.

On non-directional towers, an isolation system called CoLoPole typically is used. CoLoPole directly grounds an AM tower. Wireless antennas and transmission lines are mounted and bonded directly onto a structure. The system benefits the AM station with improved efficiency, "air sound" and lightning protection, thus enhancing the colocation experience for the station.

Directional stations use multiple towers to form an FCC-licensed radiation pattern crucial to protecting other stations from interference. LBA developed an isolation system called CoLoCoil that effectively prevents wireless transmission lines from interfering with the operating parameters of the directional AM towers.

LIST YOURSELF

While all AM stations theoretically may be used for wireless colocations, practical factors render some facilities economically or technically unattractive for colocation. Therefore, planning for any AM colocation begins with a facility analysis.

Where multiple towers exist, choosing the optimum one is critical because a wrong choice can pad project costs. AM operations can, of course, be complex, with different towers or even different sites being used for day or night transmissions and at varying power levels. Yet all the complexity yields to colocation engineering.

Many AM radio station owners haven't received colocation offers for a good reason: Wireless carries aren't aware of their towers. The towers are hiding there in plain sight.

Angelatos and Vinikoor are earning $1,600 to $2,400 every month from each wireless antenna attached to their respective broadcast towers.

To get these AM towers into play, Vinikoor recommends that owners have them listed — for free — by the Federal Aviation Administration so wireless companies can know of their existence. (An application for FAA clearance, which adds a tower to its database, can be filed at *https://oeaaa.faa.gov/oeaaa/external/portal.jsp*.)

In short, broadening broadband access across the United States continues to be a government priority in 2011. AM stations have valuable assets to help facilitate this expansion. It is to the station owners' financial advantage to team up with carriers.

Because there is no operating downside — thanks to proven engineered solutions — the only remaining question for a station owner is, why are you not doing so?

Comment on this or any article to radioworld@nbmedia.com.

READER'SFORUM

THERE I WAS AT THE BASKETBALL GAME

I love your articles about things that happen during remotes ("There I Was at the Greek Festival," Feb. 1).

It was high school basketball season. Halfway through, the two toughest teams and biggest rivals were set to play. Our station was in fierce competition with another, and both stations were scheduled to carry the game live.

Our competitor was using phone lines; I used a Marti. This was in the days before cell phones.

I arrived at the gym early in the afternoon to have time to work with the janitor and place the Marti antenna on the roof for a 25-mile hop. Once the antenna was planted, I used a pay phone to call in and check the signal.

To my horror there was no signal back at the station. Worse, the problem was on their end. I didn't have time to drive back, fix things and return to the game.

As I sat alone in the gym, it occurred to me I'd heard several stations broadcasting from this venue in the past. The phone company must have more than one line available. But was the additional line hot? Or did they disconnect it when not in use?

With the help of a headset I was able to find the telco terminal, hidden under the bleachers. Sure enough, clearly marked was my competitor's line, the school's business office line and — *voilà* — a third line with dial tone!

I quickly hooked to it and, breathing a sigh of relief, went to dinner.

When I returned the gym was packed. As I made my way to the bench, I discovered that my competitor had been placed shoulder to shoulder with me. Anything I would say, he'd hear, and vice versa.

I picked up the phone line and to my surprise found a conversation on it. Glancing around in confusion, I happened to look out the gym door and realized I had hooked into a pay station visible in the hall.

When the phone was free, I tore off a piece of paper, wrote "Out of Order" and placed it in the booth. But because the phone company glues down the covers of its microphones, I was not able to defeat the mic. I'd have to hope for the best.

I returned to my seat and called the board op. I couldn't tell him I'd tapped a line; if my competitor heard there'd be hell to pay.

During the first half of the game I saw people enter the phone booth, read my note and leave. But at halftime some kids decided to take down the receiver and see if the note was true.

Their voices went right on the air.

I immediately cranked my amplifier as high as possible to override them and make our listeners think the new voices were just fans in the bleachers.

Trouble was, when I threw it back to the station for a break, the board op would engage in a heated conversation with the kids, telling them to get off the line, to which they answered, "Go to h***" and worse four-letter words.

I listened to all this with a passive look on my face lest my competitor get wind that something was wrong.

Fortunately, as the second half started, the kids became bored with the whole thing and went back to their seats.

I ended up pulling the remote off without anyone knowing — and made a mental note to order a line in future.

Bob Ladd
Naples, Fla.

Radio World would like to hear your first-person recollections about unusual radio remote broadcasting. Email yours to radioworld@nbmedia.com.

HOME STUDIOS

Sasha, a rescued German shepherd, is Turi Ryder's studio 'go-fur' but refuses to wear headphones. Ryder says Sasha asks, 'Why? I can hear a squirrel at 300 yards.'

Thank you for including my Shebops Productions studio (and Sasha, my "go-*fur*") in Radio World ("Call It Home Sweet Studio," May 18).

I would like to present my two dear friends and patient broadcast engineers mentioned in the article, Tom Demos and Michael Englehaupt, with copies.

On a separate note, thank you so much for mentioning the passing of Al Resnick, who was our chief engineer at WLS. He was a lovely man, and it was comforting to see him well remembered by your professional publication.

Turi Ryder
Shebops Productions
San Francisco

STOP MAKING ANTIQUATED DECISIONS

I read the online story "Norway Sets 2017 Sunset for Analog FM."

Not everything is better when it is digital.

Digital has to be received perfectly or else it is not there. In an emergency situation, when radio usually shines, isn't it better to hear a scratchy AM or FM that fades, than no signal at all?

The ATSC system for over-the-air TV leaves much to be desired. I am not going to get into the politics that forced this system down our throats, but suffice it to say it's "so good" that the FCC wants to take OTA signals off the air and put their programming on satellite and cable, thereby freeing up TV bandwidth for wireless applications.

When you force a bad system down the public's throats — one that requires you to install an outside antenna on your roof, 1950s style — it is bound to fail. Is HD Radio doing any better? It has been just about abandoned by AM stations and, depending upon where you live, is plagued by reception problems.

Digital transmission OTA works; it just seems we constantly pick the wrong systems — usually chosen by bean counters or lawyers.

There are digital systems that work but we never seem to choose them. Instead, we select methods that incorporate old technology with new instead of just replacing it.

Digital technology blows the doors off of analog in some instances. Unfortunately transmission isn't one of them. Sure, you can squeeze more signals into a sliver of bandwidth, but what is your gain if the listener can't hear it?

This isn't the '50s,'90s or even the '20s anymore. Let's stop making antiquated decisions that will fail miserably, like ATSC and HD Radio eventually will. There are far too many other entertainment choices out there today, and radio is already having a problem getting younger listeners.

Mike Hemeon, CPBE
Tinton Falls, N.J.

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

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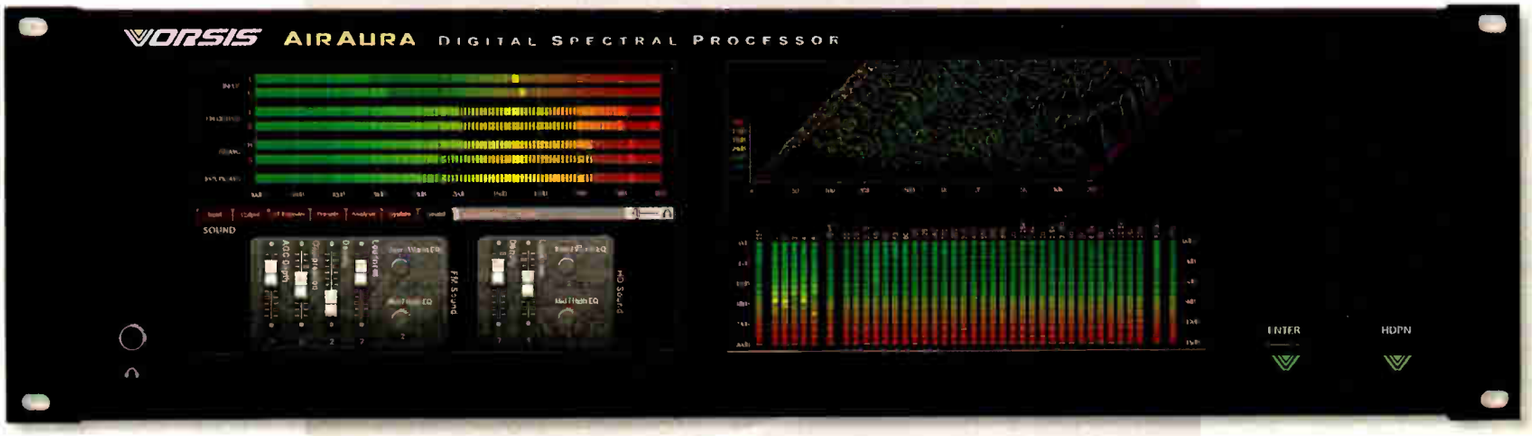

Programmers and engineers everywhere are telling us that CLEAN is just as important as LOUD. That their on-air signal needs to be able to handle multiple formats with the cleanest possible sound - without sacrificing loudness. It's been Vorsis' mission from day one to put CLEAN both before and after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

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

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

Finally, AirAura uses our Chronometric Restoration™ template to restore detail to your audio. By controlling signal timing during multiband processing we are able to retrieve far more existing sound detail than traditional processing.

Comparison Between Conventional & Vorsis SST Multiband Systems

Conventional Multiband System
Four step process

Broadband AGC → Multiband AGC Compressor → Multiband Limiter → Clipper

Vorsis SST Multiband System with Feed Forward
Three step process

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

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

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