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Radio World®
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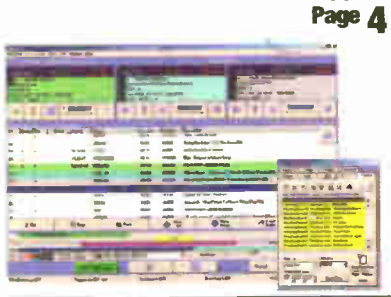


CFA Progress Appears to Be At Standstill

by Randy J. Stine

FARMINGTON, Conn. Chances of the crossed-field antenna gaining FCC approval and being made available to broadcasters in the United States anytime soon appear remote.

Meanwhile, the developer of another AM transmitting device, the EH antenna, hopes to go forward with tests on a newly constructed version in Eatonton, Ga.

Sources say a contract dispute between Crossed-Field Antennas Ltd., based in Farmington, Conn., and Dr. Fathi Kabbary, one of the CFA's co-inventors, is partly to blame for the dismantling this fall of a CFA test antenna in Shropshire in the United Kingdom.

Kabbary and U.S. businessman and CFA Ltd. President Robert Richer disagree whether Richer's firm still holds exclusive worldwide marketing rights to the CFA design.

According to NAB's Radio TechCheck, a publication for NAB member engineers, CFA Ltd. has abandoned construction of a CFA test site in Shropshire. That account was confirmed by two other sources.

According to one source familiar with

See CFA, page 8 ▶

Radio Sawa Claims Early Successes

by Naina Narayana Chernoff

WASHINGTON In an effort to reach more listeners in the Middle East, the United States has traded in a traditional, news-heavy format of government radio broadcast via shortwave for a music-intensive format via AM, FM and the Internet.

Programmed for listeners under age 30 — a demographic that constitutes 60 percent of the Arab population — Radio Sawa is the U.S. government's latest attempt to counter anti-American sentiment in the region.

In March, the Broadcasting Board of Governors, which oversees U.S. government-sponsored international broadcasting, replaced Voice of America's Arabic service with Radio Sawa, a 24-hour, youth-oriented station. The former Arabic service consisted of seven hours of news and music programming transmitted via shortwave frequencies to 22 countries.

Radio Sawa — the word means "together" in Arabic — uses a Western

See SAWA, page 6 ▶

Photo by Naina N. Chernoff

Senior Editor Mohommed Cherkaoui announces news for the Pan Arab stream of Radio Sawa.

◆ NEWSWATCH ◆

Radio Helps Lead Recovery in Comm Sector

NEW YORK Compared to the economy and to other industries, communications companies held their ground in 2001, amid a weak overall economy. Adjusted total revenues for publicly reporting communications companies inched up 2.5 percent to $261.7 billion in 2001, according to the 2002 edition of Veronis Suhler Stevenson Communications Industry Report.

"We believe some signs are now pointing toward a stabilized recovery of the industry," said James Rutherfurd, executive vice president and head of investment banking at Veronis Suhler Stevenson.

"What the CIR shows is the background to today's environment: A technology meltdown and an economic recession that worsened following the Sept. 11 terrorist attacks caused the first communications spending decline in decades.

"This combination of negative trends took a massive toll on the advertising industry, which trickled down into just about every communications sector."

The company reports that radio became the first ad-based medium to post an upswing in spending the first quarter of 2002, which was followed by broadcast television in the second quarter.

Acquisitions and consolidation in the sector produced a mixed report for the 25 publicly reporting radio station networks and station broadcasters. Adjusted total revenues declined 1.6 percent to $6.8 billion. Total operating income dropped 30 percent to $698.8 million, but over the past five years, operating cash flow margins increased at a compound annual rate of 24 percent.

Consolidation in the segment helped the value of assets, which increased 10.9 percent to $50.8 billion, while total operating cash flow increased 18.3 percent to $2.5 billion.

The top three companies in the segment were Viacom, Clear Channel Communications and Westwood One.

VOA French Contracts Questioned

Two former VOA employees are asking why the Voice of America "systematically" has given transmitter business to a European manufacturer.

In an October letter to Sen. Kay Bailey Hutchison, R-Texas, and distributed to others on Capitol Hill, retirees Jack Quinn and Nick Olguin complained about a recent IBB/VOA award for the "Kuwait Transmitting Station Shortwave Expansion" project to French firm Thales Radio Broadcast.

"No American broadcast manufacturer has ever won a job in France, nor are they even allowed to participate in the bidding process. Yet, the IBB continues to ignore our procurement laws and regulations by just handing over one project after another to the French."

The writers noted that Continental Electronics is located in Hutchison's state, offering it as an example of a transmitter company that can provide equipment for higher-power projects.

Neither VOA nor Thales would comment on the matter.

Index

AMS Could Increase AM Modulation

by Michael LeClair

SACRAMENTO, Calif. A new modulation technique for AM broadcasting was demonstrated by industry pioneer Mike Dorrough at a recent meeting of SBE Chapter 43 in Sacramento. The Advanced Modulation System offers to increase carrier modulation to 200 percent, improving the performance, range and sound quality of AM radio.

Ross du Clair, chief engineer and director of engineering for Clear Channel Communications in Sacramento, attended the meeting and was impressed with the AMS demonstration.

"This is real and it does work," he said. "No modifications were needed to a standard AM receiver for it to work."

There are many potential benefits of the AMS system.

The higher modulation capability would provide up to 6 dB of greater loudness, improving the effective signal-to-noise ratio in the receiver. This will extend the coverage range of existing AM stations without the need to increase carrier power or alter existing allocation schemes.

Compatibility

AM audio fidelity also would be improved with the elimination of asymmetrical modulation processing, which inherently distorts the audio waveform and often can introduce inconsistencies in loudness between male and female voices.

Another benefit of AMS is its compatibility with existing receivers, allowing an immediate improvement to listeners when deployed by an AM radio station. According to Dorrough, AMS would be compatible with stations currently operating with AM stereo or those planning to implement in-band, on-channel digital broadcasting.

"New digital technology allows us to manipulate time and phase relationships to mine the true potential of the AM carrier as a natural platform to support fully modulated, interlaced sidebands," Dorrough said.

"We started by wondering how can we bring up the sideband energy (in conventional AM) without clipping the negative peaks," he said. With the Advanced Modulation System, "we're grabbing the sidebands and bringing them up to the amplitude of the carrier so that sideband energy equals the carrier amplitude."

By offsetting the modulation envelope, AMS permits higher peak modulation without carrier cutoff.

A prototype 1-watt transmitter was demonstrated at the SBE meeting. Dorrough plans to test a higher-power transmitter experimentally in the ham band and finally move to experimental operation on a high-power AM station.

Local engineer du Clair was enthusiastic

See AMS, page 5 ▶

DIGITAL NEWS

WYGY(FM) Goes Digital

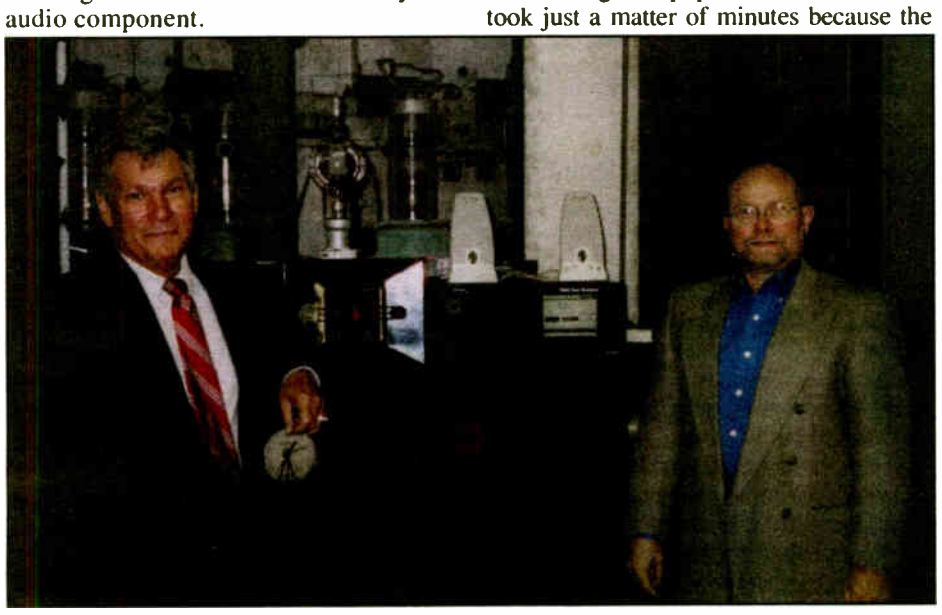
CINCINNATI Susquehanna Radio Corp.'s WYGY(FM) began transmitting in both analog and digital on Oct. 16, possibly the first FM station to activate full-time HD Radio/IBOC service.

The station already had been transmitting a digital carrier in addition to its licensed 50 kW analog signal, but the digital carrier did not carry an audio component.

Harris transmitters.

The station is using the high-level combining method, with an ERI unit to combine the signals before they go into the ERI antenna, Turner said. High-level combining was chosen for compatibility with the equipment in the station.

Turner says there have been no glitches with the digital equipment, and conversion took just a matter of minutes because the



Max Turner and Norman Philips listen to the WYGY(FM) HD Radio signal as they stand in front of the 500,000-watt transmitter at Cincinnati's WLW(AM) with an old tube, Crosley radio and Ibiquity Digital Corp. receiver. WYGY shares its transmitter site and antenna with WLW in Mason, Ohio.

Harris Broadcast had installed a digital exciter and transmitter, and, using a spectrum analyzer and a computer, watched for any artifacts introduced into WYGY's analog signal by the digital signal. Harris continues to monitor the station from its nearby headquarters and has found no problems with the analog or digital signals, said Max Turner, regional engineering manager for Susquehanna.

WYGY is using a Harris Z Series transmitter, the Z-HD 16 FM, and a Harris digital exciter for the digital signal, and a Harris FM 25 CD transmitter for the analog signal.

The effective radiated power for the digital is about 500 watts.

Omnia processors are used for both the analog and digital signals coming out of the exicters and into the transmitters. Omnia founder and Telos Systems President Frank Foti installed the digital audio processor.

The air chain is as follows: The station uses an ENCO audio storage system with linear audio, fed through a Harris BMX-D console, to an Intraplex T-1 link. The signal is fed into the processors — an Omnia-6dab for digital and Omnia-6fm for analog — then into the Harris Digital exciter for the IBOC and the Harris Digit for the analog signal.

The feeds then are sent to separate necessary equipment was in place.

Jocks are not yet promoting that the station has gone digital; the station is waiting until HD Radio receivers are available.

Because of the approximately seven-second delay inherent in the IBOC technology, Turner said the air staff monitors programming off-air with a dummy feed using a processor. They hear the audio before it leaves the studio.

"A delay is common in talk formats," said Turner of WYGY, which has a country format. "Now we're doing it for another reason."

Turner said employees used a test receiver from Ibiquity at first to hear the station in digital. It expects to receive a portable version soon, and plans to take that into nearby buildings where the analog signal is prone to interference and see how the digital signal fares.

Those present for the switchover besides Turner were Norman Philips, Susquehanna director of technical operations; Kevin Surgeon, chief engineer for Susquehanna's Cincinnati stations; George Cabreras, principal electrical engineer for Harris Broadcast; Geoff Mendenhall, vice president of advanced product development for Harris Broadcast; and Foti.

— by Leslie Stimson

NEWS WATCH

NPR Cuts Nine; Lockett Among Them

WASHINGTON Nine layoffs at NPR's Washington headquarters are effective Nov. 22.

NPR eliminated the positions due to a budget shortfall of $3.5 million to $4.5 million. Underwriting from member stations dropped 30 percent in fiscal 2002. A spokeswoman said the layoffs were a last resort, and that the network had implemented other measures first.

Positions were eliminated across six divisions. The cuts include Chief Technology Officer Don Lockett, who came to NPR in 1987 and served as director of engineering and operations and rose to vice president of audio engineering, then VP/engineering and information technology.

Harris Broadcast Lays Off 85

MASON, Ohio The Broadcast Division of Harris Corp. has laid off approximately 85 people, or 9 percent of the division's workforce. Thirty of the positions were part-time.

Harris characterized the cut positions as administrative. A spokeswoman said no radio salespeople were laid off. She could not say whether radio manufacturing personnel were affected by the cuts, which involved all five Harris Broadcast locations: Mason, Ohio; Quincy, Ill.; Littleton, Mass.; and Sunnyvale and Vista, Calif.

She did say no manufacturing jobs were lost in Quincy, home to the company's transmitter manufacturing.

Harris said the cuts were necessary to align staff levels with current business requirements. It gave few details.

Not long before the cutbacks, Harris had lowered its fiscal 2003 earnings-per-share forecast and reported "weaker than expected" results in its broadcast business from postponed DTV equipment purchases. It said a 17 percent decline in first-quarter sales for its Broadcast Communications segment reduced first-quarter operating income to $1.9 million, compared to the prior year's $7.5 million.

The division's last personnel cutback was in 2000. Approximately 950 people remain in the broadcast division.

AFTRA Presses FCC On Consolidation

NEW YORK The American Federation of Television and Radio Artists is leading a coalition of groups that has asked the FCC to hold hearings before it takes further steps to loosen ownership in radio or television.

"Ownership consolidation has severely reduced diversity of voices in the marketplace, marginalized the interests of local communities and restricted access to distribution outlets for creative talent, all at the expense of the public interest they are purportedly bound to serve," said AFTRA Executive Director Greg Hessinger in a statement.

The coalition includes the Newspaper Guild-Communications Workers of America, the AFL-CIO Department for Professional Employees and the Writers Guild of America/East.

The commission seeks public comments in its review of broadcast media ownership rules.

FCC Fines Pirate

WASHINGTON The FCC reaffirmed a $10,000 fine against Richard Munoz for illegally operating a radio station. Munoz told the FCC he agreed to purchase 50 percent of the station, which was operating on 105.1 MHz in Tampa, Fla., from Daniel Morisma.

Munoz believed there was an application for the station on file and that the station could go on the air while awaiting approval. He said he didn't have the funds to pay the fine. The FCC also stated that Munoz did not submit proof of financial hardship.

FROM THE EDITOR

Is Your Salary Keeping Pace?

by Paul J. McLane

The latest salary figures from NAB show that engineers continue to be paid less than other highly specialized professionals in radio.

Chief engineers working in commercial radio saw a little bit more in their paychecks last year than the year before — not much more, although still outpacing inflation. The average chief earned 3.3 percent more in 2001, according to the annual survey conducted for NAB.

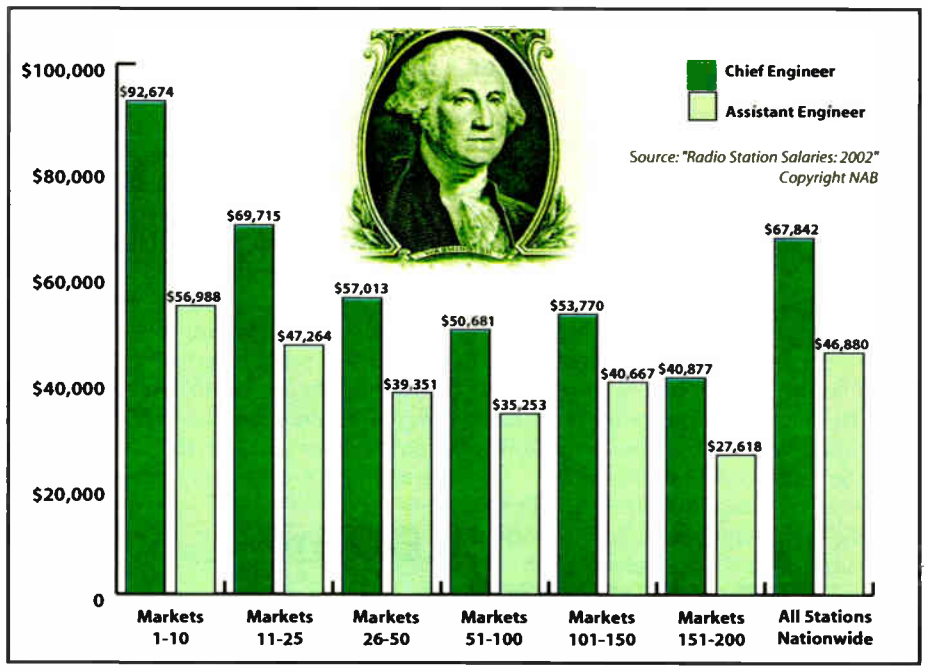
The average radio chief received $67,842 in total compensation, including salary, bonus and incentives, up from $65,643. The average assistant engineer earned $46,880, an increase of 3.5 percent.

The Consumer Price Index for the year was 1.6 percent, as measured by the U.S. Bureau of Labor Statistics.

Salaries varied widely by market size. The average chief in the top 10 markets enjoyed $92,674 in compensation; colleagues in the smallest markets typically earned less than $41,000.

So engineers certainly aren't in the poorhouse; and they are paid more than radio newspeople, IT administrators or promotions directors.

But in radio, there is a salary caste system; and engineers too often reside in the upper parts of the lower levels, rather than participating in the upper levels commensurate with their highly specialized skills and knowledge.



The average GM in commercial radio received a quarter-million dollars in compensation in 2001. The average base salary for GMs was $186,783; with bonuses and incentives included, the average was $252,191.

General sales managers averaged about $157,000 in compensation. Program directors averaged about $102,000. The typical top account executive received $128,400.

By comparison, the average salary for a chief engineer — not an assistant, but the top technical person at the station — wasn't much more than that of the average midday talent.

Numbers, of course, can play tricks on you. Salaries vary widely, by region and market size; and in some cases the median average differs widely.

For instance, the highest-paid morning talent in the survey made $1.5 million, substantially contributing to the average of $120,136 for that job category. The *median* morning talent package, however, was $65,000, meaning an equal number of people had compensation above and below that point.

Still, as I've said before, engineers are among the hardest folks to replace in our industry. The good ones deserve to be compensated better than they are at most radio stations.

Survey data were collected by Miller, Kaplan, Arase & Co. Some 235 operators responded, managing about 500 stations; Miller Kaplan estimates that the respondents are responsible for about 60 percent of nationwide radio revenues, so it believes the results are representative.

The report "Radio Station Salaries: 2002" provides averages for all major job categories and breaks the data down by market size, station revenue and formats. The report retails for $159.95 and can be purchased by calling (800) 368-5644.

★ ★ ★

If you live anywhere near Dallas/Ft. Worth, why not take in the next "roadSHOWcase" sponsored by Klotz Digital America in cooperation with SBE Chapter 67?

The free day of equipment exhibits and demonstrations will be held at the Sterling Hotel in Dallas on Dec. 5. Radio and TV engineers and programmers are welcome.

Special content includes a presentation by Mike Dorrough about his proposed new modulation technique, described on page 3 of this issue. There will also be an IBOC/HD Radio demo featuring Jeff Detweiler of Ibiquity Digital and the folks at BE and ERI.

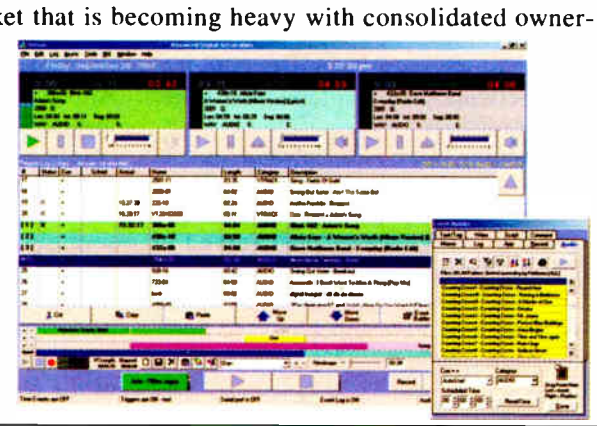
Participating vendors include 360 Systems, ENCO, Klotz Digital, Moseley, ERI, Telos Systems, Graham-Patten, Gepco, Broadcasters General Store, Broadcast Electronics, Netia, Eventide, Aphex, Studio Technology and Comrex. Lunch is provided.

For info call (678) 966-9900 or visit *www.klotzdigital.com.*

2002 Radio World READERS' CHOICE Sweepstakes

Stan Carter, chief engineer and operations manager for Buchanan Broadcasting station WJNT in Jackson, Miss., wins Simian digital automation software from BSI in our sweepstakes this issue.

When I called to let him know about the prize, Stan said things have been busy at NewsTalk 1180 AM, one of the few standalones in a market that is becoming heavy with consolidated ownership. He's also in the process of putting in a new transmitter.



Simian is suitable for hard-drive and satellite automation, as well as live on-air use. It is compatible with most traffic systems and off-the-shelf broadcasting hardware.

Retail value: $1,499.

GUEST COMMENTARY

Amber Is Not All Black and White

by Richard Rudman

Getting the public to look for abducted children is now a hot topic with the public and emergency managers, and legislators. The National Amber Alert Network Act of 2002 (S-2896) sponsored by Sens. Kay Bailey Hutchison, R-Texas, and Dianne Feinstein, D-Calif., passed the Senate in September. A House bill was in the works. George W. Bush has promised the nation that he would sign such legislation.

Rudman works at a remote on the Paramount lot in Hollywood for KFWB(AM) when he was DOE for that Los Angeles station.

From public warning and alerting perspectives, the issue of enlisting the public to help find abducted children is not as clear-cut as it may be to legislators and the public. Emergency managers and the rest of the warning stakeholder community have valid concerns. They want to make sure that the EAS public warning system is preserved for large-scale life safety events.

'EAS may be morphing into more of a nationwide All Hazards Warning System.'

The concept began when Amber Hagerman, a nine-year-old from Arlington, Texas, was taken from in front of her home while riding her bicycle. Amber was found dead four days after she was abducted. Broadcasters and local public safety officials devised a program to ask local residents to look for the abductor based on the EAS.

The program worked. It meant to Amber's family and friends that Amber had not died in vain. Since that time, two Amber EAS activations in the Dallas-Forth Worth region have resulted in one successful recovery of a child and one false alarm. Other Amber success stories have been documented nationwide.

When the National Center for Missing and Exploited Children saw what the Arlington community had done, it created a well-thought-out template that has helped other communities create their own versions of Amber programs. The NCMEC's Amber program template targets only non-family abductions for special EAS activations when it is clear to an investigating officer that the life of a child is in immediate danger.

FBI statistics highlight a brutal truth. If an abducted child is not recovered within three hours of abduction, it is likely the child will be found dead.

There are two pieces of good news out of the FBI statistics. Qualified Amber non-family abductions are not that common. The best news is that the nationwide average yearly occurrence of these inhuman crimes is trending downward.

Warning experts and law enforcement officials believe that the epidemic of Amber activations may be a byproduct of massive media attention to this type of crime and growing pains for new Amber systems being brought on line rapidly.

The FBI, other law-enforcement agencies, the EAS National Advisory Committee, the EAS Committee of the Society of Broadcast Engineers, the NAB and several state broadcasters' associations reviewed NCMEC's Amber program. As successful Amber plans were being created in many local communities, the NCMEC asked the FCC to create a special Child Abduction Emergency Code. The CAE code was approved along with other new EAS event codes. Changes became effective on May 16.

The original Amber plan was crafted carefully and tested before going online. In Arlington, Texas, a formal review process was made part of the plan to scrutinize activations to make sure they were proper and to learn how to improve the system. The NCMEC tells us that a number of local Amber plans based on the Texas prototype have been set up by dedicated stakeholders.

In some cases, local plans patterned after the original, carry names of local victims. The thing they almost all have in common is they use the NCMEC's guidelines as their frame of reference to prevent overtaxing the EAS. The trend now is toward statewide legislation.

The FCC's Further Notice on EAS did not mandate that broadcasters upgrade their current EAS equipment to recognize the new codes it approved. Local and state EAS Committees are asking broadcast station and cable systems to upgrade their EAS equipment voluntarily. Fortunately, the upgrade will not cost most broadcasters more than $100 plus tax and shipping.

The EAS is our only nationwide broadcast and cable emergency warning resource. Looking to the future, more statewide Amber plans and some level of nationwide coordination and funding appear certain.

However, the mass-warning mission for EAS certainly has not gone away. What may be happening is that EAS may be morphing into more of a nationwide All Hazards Warning System. Other warning tools such as activation of roadside traffic signs, warnings on networked lottery machines as well as the Emergency Digital Information Service are complementing EAS to enhance basic Amber programs.

As the process continues, EAS committees and the SBE must make sure that all EAS plan elements are thought out in advance so they will work well together. Adding components to EAS that help find abducted children alive and improve our mass warning capability are both compelling and noble efforts.

Rudman is on the EAS Committee of the Partnership for Public Warning. Reach him via e-mail to rar01@earthlink.net.

For more information visit Amber (www.missingkids.com) *and click on Amber Alert; EAS* (www.fcc.gov/eb/eas)*; and EDIS* (www.edis.ca.gov).

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

AMS

▶ Continued from page 3

about the possibilities of increased modulation on AM radio.

"We would like to participate in an experimental test of this new modulation technique on our station KFBK," he said. The station, which is celebrating its 80th anniversary, operates with 50 kW at a frequency of 1530 kHz.

Dorrough suggested that some upgrades to station transmitters might be necessary for AMS.

"This technique may require more bandwidth in the IPA stage of existing transmitters. It may also require some beefing up of the power supply," he said.

While compatible with existing AM receivers, AMS would face some regulatory hurdles.

"I suspect the FCC would have to look at two things: the current modulation standards and the existing NRSC mask for compatibility," du Clair said.

FCC rules currently allow a maximum of 125 percent positive and 100 percent negative modulation. It will also be necessary to show that the higher modulation does not increase interference to other AM stations by generating energy outside of the occupied bandwidth limits as defined by the NRSC.

Mike Dorrough was given the NAB Radio Engineering Achievement Award in 2000 for his contributions to the art of audio processing and monitoring.

Sawa

▶ Continued from page 1

radio approach to deliver a public diplomacy message. Its creators aim to attract listeners by playing popular music selections based on extensive market research while broadcasting faster-paced, substantive and uncensored newscasts that clarify American policies twice an hour.

The BBG began developing plans for the Arabic-language radio service well before the Sept. 11, 2001 attacks. After being nominated by President Clinton in late 2000 to serve as a BBG governor, Westwood One founder and chairman Norman Pattiz examined the state of U.S.-sponsored foreign language news services.

"The Middle East stood out like a sore thumb," he said. Surveys by the BBG indicated that the Arabic service captured the interest of less than 2 percent of the audience, he said. The board formed a Middle East committee to increase its efforts to reach the Arab "street" and chose Pattiz as its chairman.

Upon returning from his first of three fact-finding trips to the region in February 2001, he headed the initiative to get Radio Sawa on the air on AM and FM frequencies, listening methods favored by younger Arab listeners. Radio Sawa also has satellite programming distribution arrangements with the three companies: NileSat, Arabsat and Eutelsat.

Pattiz said the primary mission of Radio Sawa is journalistic.

"We strive to be an example of the free press in areas where that right is not abundant," he said. "They need to hear about our policies, our culture and our people, and then they can make their own decisions."

Last year's terrorist attacks did help propel the launch of Radio Sawa. In September 2001, Pattiz said, two-thirds of the funding for the service was in place. Soon after, Congress allotted $35 million to the BBG for Radio Sawa for fiscal year 2002, including $16.4 million for one-time capital costs of transmitters and other broadcasting equipment.

Pattiz said the service is being deployed in phases. Currently at Radio Sawa's facility in Washington, an 80-person staff of reporters, producers and technicians — former VOA Arabic service staff — are transmitting music around the clock with 5- and 10-minute newscasts in Arabic broadcast at 15 minutes after each hour and headline news at :45.

The news is supplemented with other programming including a daily news roundup on Iraq, public service announcements and interviews with world leaders. In coming months, Pattiz said the service will add new features including call-in shows.

The service is broadcast on medium-wave (AM) from transmitters on Cyprus and the Greek island of Rhodes to the eastern Mediterranean, including Egypt, Lebanon, Syria and Gaza, and from Kuwait to Iraq and other Persian Gulf states. An additional medium-wave transmitter in Djibouti on the Horn of Africa will begin broadcasting in 2003 to cover Sudan, Yemen and Saudi Arabia.

Radio Sawa also is carried on FM transmitters in Amman, Jordan; Kuwait City, Kuwait; Dubai and Abu Dhabi, both in the United Arab Emirates; and Doha, Qatar, according to International Broadcasting Bureau Associate Director Gary Thatcher. (The IBB provides administrative and engineering support for U.S. overseas broadcasters, such as Radio Sawa. The IBB and BBG were established as independent federal entities with oversight of U.S. overseas broadcasters after the U.S. Information Agency, which previously shouldered the responsibility, was disbanded.)

More FM frequencies in other countries such as one in Manama, Bahrain, are expected to launch as well, he said. The IBB is seeking licenses in all Middle East countries not currently receiving Radio Sawa. If the network were to reach agreements with all 22 countries in the region, Thatcher said, Radio Sawa would have 80 million potential listeners.

Listener praise

So far, the blend of Arab and American pop songs with short news updates appeals to Arab young people. In a market that has been dominated by youth-oriented music station Amman FM, the BBC, Pan-Arab music station MBC-FM and Radio Monte Carlo, 43 percent listened to Radio Sawa the most over the other choices, according to a recent study commissioned by Radio Sawa. Edison Media Research conducted the survey in August and September among 500 Jordanian listeners aged 17–28 who have an interest in Western music and use the radio for news.

Thousands of e-mails from listeners also have come in, the organization said.

"The idea of talking directly to Arab youths is great," wrote one listener.

"Radio Sawa is the greatest thing that ever happened to me since I don't know when," wrote another.

The service has received some criticism, however.

"It's popular because the mix of music is nice, but in terms of changing opinions about U.S. foreign policy, it's not having the intended effect," said one Mideast expert in the United States.

He believes the service is based on the concept that American policies need to be marketed and that providing exposure to American ideals will change Arabs' opinion of the United States.

"But it gets people angry because the message that gets across is that they think we believe they can be duped."

Marc Lynch, assistant professor of political science at Williams College in Massachusetts, agreed. While visiting Jordan last May, he spoke with listeners about the new radio service.

Radio Sawa's mission of reaching out to Middle East youth and promoting American values and ideas are good ideas, Lynch said, but its decision to broadcast "better public relations" is problematic particularly in countries like Jordan, "whose citizens are aware of possible biases in news reporting."

'Eye-rolling'

The majority of Jordanians understand American policies, they simply disagree with them, he said.

Jordanians' view of Radio Sawa could change, Lynch said, if Radio Sawa establishes a reputation as an objective news source. Call-ins shows, if listeners are allowed to express views freely, could lend the service credibility.

Lynch concedes that the service is popular in Jordan. He heard it in cabs, restaurants and stores, but said most people listen to the music, not the news, which they view as American propaganda. "There's a certain amount of eye-rolling when the news comes on."

Despite this skepticism over its news reports, Radio Sawa has filled a need for young people in the region, Lynch said, saying Radio Sawa's main competition is not other radio stations, but television networks such as Al Jazeera.

It's unclear whether other countries have launched counter-programming since Radio Sawa began.

Pattiz defends Radio Sawa's approach, saying that the service is not delivering propaganda. When he toured the Middle East, he said, he found a media environment marked by "disinformation, incitement to violence, hate radio, government censorship, journalistic self-censorship."

The Bush administration submitted a request of $21.7 million for Radio Sawa for fiscal year 2003, including $5.4 million for operational costs for transmitter stations. Pattiz estimated that Radio Sawa's annual costs would be $20 million each year.

Pattiz expects that Radio Sawa will be fully operational in mid-2003, with plans to open an additional facility in Dubai with 50 staffers including full-time reporters, stringers, producers and technicians. Those reporters will focus on regional stories while the Washington staff will continue to report on worldwide events, he said. Undecided is how many Washington staffers would transfer to Dubai.

The network also will expand to five programming streams in various dialects of Arabic to listeners in the following regions: Iraq, Amman/West Bank, the Persian Gulf, the coast of Egypt as well as Lebanon/Syria and North Africa/Sudan/Yemen.

Thatcher said the Dubai facility, known as the Middle East Program

See SAWA, page 7 ▶

Struble to IEEE: 'We're Committed to AM'

Ibiquity President/CEO Bob Struble told attendees of the fall meeting of the Institute of Electrical and Electronics Engineers the company is "100 percent committed to AM."

This was in response to attendee questions about the status of AM IBOC nighttime testing. The discussion took place the day after FCC commissioners voted to select IBOC as the digital standard in the United States.

While FMs were authorized to run both analog and digital signals day and night, AM IBOC service will be restricted to daytime only initially due to interference concerns.

Ibiquity hopes to finish its AM IBOC nighttime tests and turn over the data to the National Radio Systems Committee by the end of the year. Struble expects the FCC will include both day and night operating parameters for AM and FM in the final standard.

Commission staff said it was too soon to predict when final IBOC rules, including a technical standard, would be out, other than to say sometime in 2003.

In the meantime, Ibiquity expects 10 receiver manufacturers to display IBOC radios at the Consumer Electronics Show in January.

Approximately 187 people attended this year's IEEE meeting, held Oct. 9-11. Also during the meeting, Albert Heuberger of the Fraunhofer Institut discussed field tests of the Digital Radio Mondiale system in long-, medium- and shortwave bands.

— Leslie Stimson

Photo by Leslie Stimson

Ed Williams of PBS, Albert Heuberger of the Fraunhofer Institut and Robert Struble of Ibiquity Digital Corp., from left, pause at the IEEE meeting in Washington.

Sawa

▶ Continued from page 6

Center, would be one of the largest IBB-funded facilities in the world when it opens in early 2003. Radio Sawa's Dubai center uses the Dalet Plus Media Asset Management system, a multimedia database combined with content acquisition, production, scheduling and distribution tools for radio, TV and the Internet operations, he said. The facility also will comprise studios, satellite routers and uplink equipment.

Pattiz said negotiating agreements for FM frequencies has gone smoothly in several countries, pointing to agreements BBG set up with Jordan, Kuwait, part of the United Arab Emirates, Bahrain and Qatar.

But much of the Arab world, including Egypt and Saudi Arabia, is unwilling to provide FM frequencies for Radio Sawa, he said.

Egypt retains tight control over content, and Saudi Arabia cites cultural reasons for withholding permission for Radio Sawa transmitters in the country, although AM signals for Radio Sawa do reach Egypt's coast.

Developments

The success of Radio Sawa with young audiences has prompted IBB to plan another radio service in the Middle East. Pattiz said the BBG will introduce a similarly formatted Farsi-language station targeted at Iran early next year.

The yet-unnamed service, he said, will have an office in Washington, with a separate newsgathering department.

In October, upon the release of the Jordanian listener survey on Radio Sawa, Pattiz and other members met with Hollywood television and entertainment executives to enlist their help in launching a network to counter Al Jazeera, the region's only current source of 24-hour news. Founded in 1996 with funds from the Qatari government, Al Jazeera is considered the most watch Arabic-language news channel in the region.

At the meeting, Pattiz said the BBG members and service chiefs from VOA, Radio Free Europe and Radio Free Asia exchanged ideas with executives from Paramount, NBC, Fox and other entertainment companies about U.S.-led international broadcasting projects.

IBOC Q&A

Will IBOC Affect SCA Radios?

This is one in a series in which Ibiquity Digital Corp. answers questions about how to implement HD Radio, the newly-trademarked name of what used to be called in-band, on-channel digital audio broadcasting.

Broadcast Technology Manager Jeff Detweiler answers here. Past answers are posted at www.rwonline.com *under the tab "IBOC DAB."*

Q: I am reviewing an SCA performance contract with a prospective broadcast tenant. How will my plans to implement IBOC impact my SCA operations?

A: IBOC implementation should not impact your SCA business. However, we believe that over time, most of these services desire to migrate to the more robust digital signal available as a standard capability in new receivers.

Tests on SCA compatibility verify that the hybrid mode (in which the analog and digital signals are both transmitted) of Ibiquity's HD Radio IBOC system has no significant impact on SCA performance.

Appendix J of the NRSC's FM "IBOC Evaluation Report" available on the NRSC Web site at: *www.nab.org/SciTech/nrsc.asp*, concludes that "the perceptual scores indicate that the overall utility of the subcarrier is not particularly diminished with the addition of FM IBOC signals, because the field test subjective scores remain well above the listener 'tune-out' threshold" identified in an Ibiquity Digital report.

To further support this conclusion, Ibiquity Digital's report "Experimental Report on (IBOC) DAB Compatibility with Existing SCAs" confirms that the audio signal-to-noise ratio of recovered audio from the 67 kHz SCA observed with baseline IBOC carriers (-20dB host), while receiver dependent, was not impaired enough to cause interference with, or impact to, the host SCAs range of reception.

SCAs located at 92 kHz are more prone to noise and interference, as the noise floor and the IBOC intermodulation products are higher at upper baseband frequencies. Even in this interference prone spectrum, 92 kHz SCA audio had SNR reduction of only 2 dB.

IBOC implementation should not impact your SCA business.

— Jeff Detweiler

The test results for digital modulated SCA channels show that IBOC degradation was in the 0.5 percent range. This test result translates to less than one-tenth of a dB on the bit error rate curve, which would result in a negligible impact on a digital SCA's service area.

Additional support can be found a study by National Public Radio and the International Association for Audio Information Services, "Further Report on Analog SCA Compatibility with Ibiquity Digital's FM-IBOC System." This report also is available on the NRSC Web site. The report states, "On average, the added IBOC-interference effect, based on population, was projected at 2.6 percent."

The benefits offered by the audio quality and advanced data services of the HD Radio system clearly outweigh any potential impact on analog SCA services. Both can easily coexist on the host station during the hybrid phase of implementation.

Send your IBOC questions to radioworld@imaspub.com. *Radio World welcomes other points of view.*

CFA

▶ Continued from page 1

the project, "The Shropshire CFA is being dismantled and no new plans are in development to build a test site elsewhere."

As recently as this past spring, Richer said he hoped to have the Shropshire CFA in operation and tested by Ben Dawson, a partner in the Hatfield & Dawson technical consulting firm (RW, June 19, 2002).

No test plans

Construction on the Shropshire project began in early 2000 but was delayed several times because of poor weather and illness. Engineers also experienced problems properly phasing the antenna, Richer said at that time.

Richer declined several recent Radio World requests for an interview and would not comment on the legal dispute between CFA Ltd. and Kabbary.

Developers were hoping to use test data from the Shropshire site to gain FCC approval of the technology for use in the United States.

Kabbary said CFA Ltd. suffered from a shortage of money to pay his company to complete the Shropshire CFA test site to obtain results approved by the commission.

"The uncompleted CFA project in Shropshire will delay results needed to gain FCC approval to market the CFA in the United States," Kabbary said.

Kabbary said in June he had reduced his ownership stake in CFA Ltd. to 20 percent, and he has said since that he has no relationship with Richer and that no negotiations over the disagreement between he and CFA Ltd. are planned.

Kabbary said there is still interest in the CFA among broadcasters here.

"I have received many inquiries on the CFA from broadcasters in the United States, but my answer to them is that we have to have FCC approval first," he said.

The antenna's developers have claimed that the CFA can outperform conventional AM designs while reducing transmitting tower heights from the 200 to 400 foot range to less than 30 feet. The CFA uses small discs and round radiating elements to create the RF signal.

I have received many inquiries on the CFA from broadcasters in the United States, but my answer to them is that we have to have FCC approval first.

— Dr. Fathi Kabbary

CFA supporters have been fighting skepticism about whether the new design is an effective radiator since Kabbary and Richer formed CFA Ltd. in 1999 and proposed using the technology in this country.

Kabbary said CFA antennas are in use in Egypt and Italy, and that agreements are in place with broadcasters in Finland, Japan, Brazil, China and Germany.

EH formality?

Meanwhile, the developer of the equally controversial EH antenna says he is ready to begin testing a rebuilt EH antenna this fall if the FCC issues an experimental license. Field tests in 2001 conducted by Graham Brockman Consulting Engineers showed that the first EH antenna suffered from poor efficiency.

Like the CFA, the EH antenna is a short antenna that does not require the customary ground system, which means radio stations could benefit from reduced land use and easier zoning approval for tower projects.

"We believe FCC approval is just a formality and hope to have the experimental license granted by sometime in November," said Ted Hart, president of EH Antenna Systems.

Once operational, the new EH antenna will be compared to a standard broadcast antenna at WKVQ(AM) in Eatonton, Ga., Hart said.

"Even though we didn't see the results we wanted to with the one we built in 2001, we think we proved it can work," Hart said.

Hart told Radio World at the time, "A design mistake was due to the use of a network developed for the HF version of the EH antenna (a dipole), which has a high radiation resistance and low capacity. The AM broadcast antenna had low radiation resistance and high capacity."

Since then, Hart said, his company has done a lot of scale model testing and believes it has made the needed corrections.

"It's an evolutionary process. The data should be much better this time," Hart said.

What flamethrowers use for fuel.

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Lights, Camera ... Chainsaw!

by John Bisset

If you maintain an older tower, lit with traditional red lighting, you might want to investigate the Dialight 860 series of red LED obstruction lights and beacons. In addition to a service life up to 10 times that of an incandescent bulb, the energy consumption is dramatic: 12.5 watts vs. 116 watts for the incandescent.

The cost of electricity keeps rising, so any legitimate way to save on operating expense should be considered. An added plus: these folks are open to SBE shapter presentations. I saw their demonstration in New York a couple of months back. The program is informative, and those lights are bright!

You can get the details at *www.dialight.com* or contact the company at (723) 223-9400 to get data sheets. Show your manager that you are concerned about his bottom line. Here's an excellent way to invest a little money to save a lot of money.

★ ★ ★

So how's your grasp of transmitter manufacturer history?

My friend and associate Stephen Schott handles radio sales for Harris in Texas and Oklahoma. He sent me the sobering word puzzle shown in Fig. 1 — sobering, because there sure have been a lot of radio transmitter companies over the years.

Use the list and see how many you can find. The answer key will appear next issue.

Seasoned engineers may be able to find the companies without the list!

★ ★ ★

Digital Innovations has a solution for those scratched CDs that you're ready to toss.

The SkipDoctor looks like an oversized manual can opener. You snap the offending CD into the jaws, apply a resurfacing fluid and turn the crank. The disk rotates beneath a resurfacing wheel. The scratch is removed as the disk is resurfaced.

For visible flaws, there's a "reversible" switch, so you can concentrate the resurfacing on a specific part of the disk.

After buffing, the resurfacing pattern created by the SkipDoctor is virtually invisible when viewed straight on. The resurfacing pattern is visible when viewed at an angle, but the effect is harmless. The CD player laser "sees" the disk straight on, so the resurfacing pattern is of no consequence. Label-side damage cannot be repaired by this device; however, the same CD can be repaired multiple times.

Digital Innovations has a useful guide for caring for CDs and a copy is available from the company's Web site at www.digitalinnovations.com or by calling the company at (888) SMART-58.

Thanks to Wendell Hall at WJFK(FM), one of the Infinity stations in Washington, for sharing the SkipDoctor with Workbench readers.

★ ★ ★

How is your supply of spares at the transmitter site?

Have you checked your fuse supply? Don't forget the large fuses in the transmitter and air-conditioning disconnects.

Mike Patton, a contract and projects engineer in Louisiana, also reminds engineers to check your stock of replacement light bulbs, filters and even batteries for things like a calculator or DVM, and the "memory" battery for your solid-state transmitter.

Mike adds some inexpensive purchases: electrical tape, several pieces of heat shrink and a hardware assortment, for starters.

For FMs, a spare tank of nitrogen is inexpensive insurance. So is a spare muffin fan. Even if the muffin fan isn't a drop-in for the original, it usually can be rigged to limp by until the replacement arrives. Grainger is a good source of fans and blower motors large and small.

With the cold weather underway, it pays to think ahead. It's easy to get stranded at remote transmitter sites. A can of

See WORKBENCH, page 24 ▶

WHERE ARE THEY TODAY?

S	I	N	G	R	S	I	N	G	V	E	C	T	B	S	U
W	R	A	Y	T	H	E	A	E	V	E	C	T	A	I	L
W	E	S	I	N	T	R	O	N	I	C	S	A	U	N	A
R	T	S	V	E	R	S	I	C	O	U	S	S	T	A	N
W	L	P	T	V	B	S	T	A	N	D	A	R	D	V	H
E	G	E	N	E	R	A	L	E	L	E	C	T	R	I	C
S	R	M	S	C	R	C	U	D	I	V	I	D	B	S	N
T	A	U	T	T	R	N	E	E	N	E	I	A	A	U	S
I	R	E	A	O	B	C	E	I	R	R	C	E	U	A	I
N	A	F	A	R	A	S	T	L	A	S	O	C	A	L	N
G	Y	A	E	C	U	R	I	T	E	I	A	T	S	V	G
H	T	E	T	D	A	A	R	I	O	C	I	E	R	I	E
O	H	U	V	M	E	A	G	M	R	O	T	S	I	V	R
U	E	S	C	R	P	R	C	R	A	U	E	R	A	A	A
S	O	M	N	S	C	R	A	E	E	N	A	R	I	I	R
E	N	S	T	W	N	D	A	L	L	T	A	R	L	C	G

AEL
BAUER
CSI
FEDERAL
GENERALELECTRIC
ITA
MCMARTIN
RAYTHEON
RCA
SINGER
SINTRONICS
SPARTA
STANDARD
VECTOR
VERSICOUNT
VISUAL
WESTERNELECTRIC
WESTINGHOUSE

Fig. 1: How's your grasp of transmitter history?

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FEED LINE

VSWR Bandwidth, Friend or Foe?

by W.C. Alexander

This is the fourth in a series of articles about FM transmission systems. Previous articles are online at www.rwonline.com.

The bandwidth of a commercial FM broadcast signal, depending on whether or not subcarriers are used, is about 260 kHz. This figure is representative of a carrier modulated 110 percent (or 82.5 kHz deviation), the maximum allowed under 47 C.F.R. §73.1570(b)(2).

The term "VSWR bandwidth" generally is defined as that bandwidth over which the antenna *system* has a VSWR of 1.1:1 or less (5 percent reflection coefficient). The antenna *system* includes the radiating elements, the interbay transmission line, matching devices and the transmission line. VSWR bandwidth generally is measured at the input to the transmission line (or the output of the transmitter).

Too often, FM antenna systems are tuned with the engineer watching the transmitter reflectometer while the tower worker adjusts the matching device on the tower. While this should result in the lowest attainable VSWR at the carrier frequency, it does not address the VSWR at the sidebands. Higher values of VSWR at the sideband frequencies or an asymmetrical passband will result in all sorts of undesirable effects.

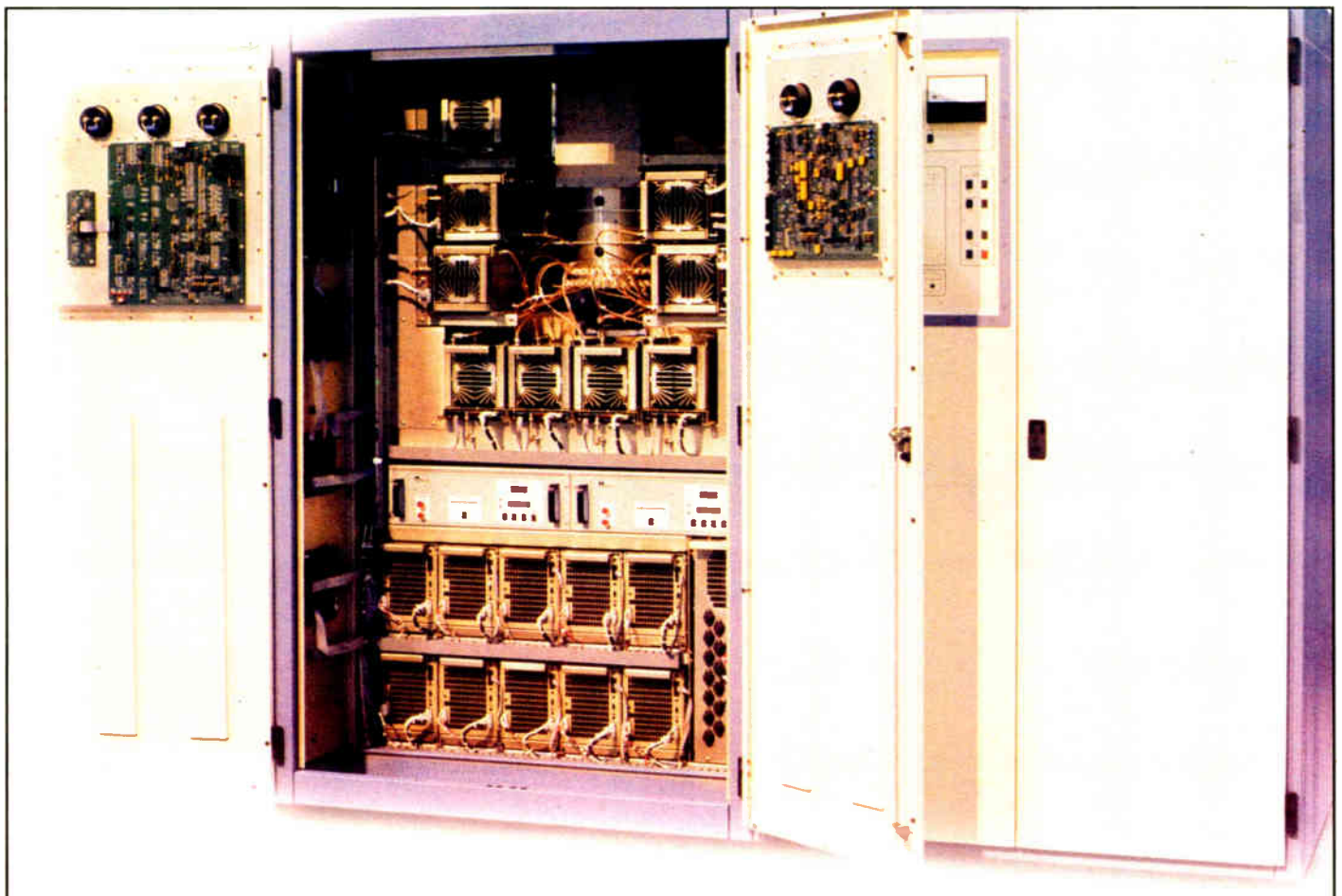
Problems

Synchronous AM is one such undesirable effect of narrow VSWR bandwidth and/or asymmetrical passband.

Consider a system that exhibits a very low VSWR on carrier and higher VSWR values at the sideband frequencies. As the carrier is modulated and power shifts to the sidebands, the perfect center-of-channel load presented by the antenna system becomes a much-less-than-perfect load at the sideband frequencies.

Final amplifier tuning is no longer optimal and a significant amount of power is reflected from the antenna system back to the final amplifier. The result is a change in the otherwise constant amplitude of the FM carrier with modulation, or amplitude modulation. The phenomenon is called *synchronous* AM because the amplitude modulation occurs synchronous with the FM modulation of the carrier.

Other signal problems caused by narrow VSWR bandwidth or asymmetrical passband are reduction in power amplifier efficiency, intermodulation distortion and stereo crosstalk. The greater the deviation, the worse the resulting signal degradation. Sometimes, such signal anomalies are identified incorrectly as multipath, when in reality they originate in the transmitter and antenna system. Needless to say, it is highly desirable to maintain good VSWR bandwidth.



Higher values of VSWR at the sideband frequencies or an asymmetrical passband will result in all sorts of undesirable effects.

As suggested above, the antenna and transmission line must be viewed and treated as a *system* rather than discrete elements, in much the same way as the phasing and coupling system along with the towers themselves are treated as a system in AM directional work. Each has an effect on the other. The longer the transmission line, the greater the effect it will have on the performance of the antenna system, and not only in the area of losses.

Long transmission lines introduce considerable phase delay in the transmitted signals. While that is not a problem with respect to the power traveling from the transmitter to the antenna, it is a problem when power is reflected back to the transmitter from the antenna.

The reflected power is delayed en route back to the power amplifier, where it recombines with the energy coming out of the power amplifier. It doesn't take a lot of imagination to see how an on-channel signal with an unknown phase relationship and instantaneous deviation can muck up an FM signal.

Because of this delay effect, with long transmission lines it is even more important to maintain good VSWR bandwidth. In fact, some engineers insist on sideband VSWR of 1.08:1 or less out to 130 kHz either side of the carrier in situations where long transmission lines are employed.

See BANDWIDTH, page 14 ▶

WIRED FOR SOUND

Pop Goes the Cable: More History

by Steve Lampen

Over the last few months, most recently in the Oct. 23 issue, we've been looking at the history of wire and cable. Back articles are also available online.

In 1837, Samuel F.B. Morse (1791-1872) demonstrated the first crude "recording telegraph" using his Morse Code. By 1843, he had perfected, patented and sold the idea to the U.S. government, which had requested a telegraph line from Baltimore to Washington, D.C. The secret, as we now know, is that you only need one wire to send the signal because the other wire is the ground itself.

At first Morse considered burying the telegraph wire. Experiments showed that this was more difficult than he had first thought.

He wrought plenty

For one thing, the wire would need to be insulated so that it does not connect to "ground." The best material around is gutta-percha, uncured rubber. But Morse didn't realize that the dielectric constant of gutta-percha when the wire is suspended is a lot worse than the dielectric constant of air.

A buried wire will have many times the capacitance of a suspended wire. A higher dielectric constant would round off or smear the dots and dashes. Those dots and dashes we might recognize today as a crude square wave, and the capacitance of a suspended wire is *much* lower than a buried one. So he resigned himself to suspending the wire on poles, and the telegraph pole was born.

On May 24, 1844, Morse tapped out the immortal, and fairly egotistical, words, "What hath God wrought?" Within a very few years, telegraph poles crisscrossed America, and the same was happening all over Europe. Morse eventually bought up a number of telegraph companies in western New York State, and Western Union was born.

These wires were almost all iron, not copper. Copper is a soft metal and cannot support its own weight in long distances from pole to pole. Iron has five times the resistance of copper. That simply means the iron wire must be larger to reduce resistance, or the supply voltage must be a bit higher, more batteries in series.

High-purity copper, and the annealing to give it flexibility, had not been invented. Remember our iceman's ax, with its copper blade 99.7 percent pure? If only we had not lost that technology from 3,000 B.C.

If you're ever in San Francisco, you can visit an excellent display of early telegraph instruments, and even telegraph wire, at the Wells Fargo History Museum

See LAMPEN, page 16 ▶

Bandwidth

▶ Continued from page 12

I mentioned above the reflectometer method of tuning an FM antenna. A much better method employs a signal generator and impedance bridge. An even better method makes use of a network analyzer. It is only by making an impedance sweep of the entire passband and plotting the results on a Smith chart can one accurately evaluate the overall VSWR bandwidth and performance of an antenna system.

Accurate evaluation

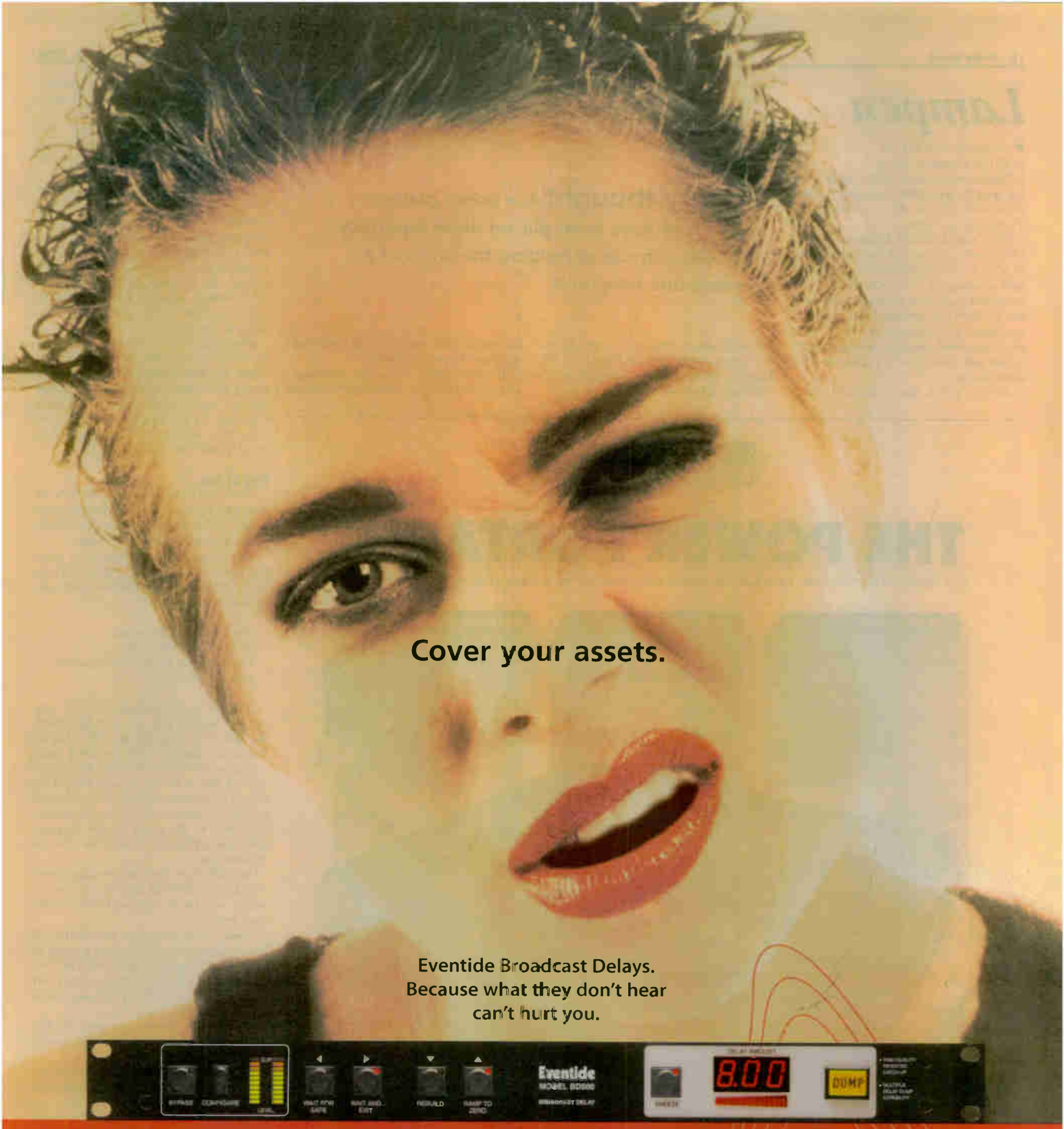
Without specialized test equipment available, it is sometimes possible to get at least a rough idea of the VSWR bandwidth of an antenna by observing the screen current in the power amplifier. Screen current in some amplifier designs is a direct indicator of amplifier loading. Modulation activity in the screen current often is an indicator that VSWR bandwidth is less than optimal.

Only by making an impedance sweep of the passband and plotting the results can one evaluate the system VSWR bandwidth and performance.

Checking synchronous AM noise is another good indicator, provided that it is known that the transmitter tuning (especially in the IPA and PA grid) has been adjusted for minimum synchronous AM.

In our next installment, we will examine the various designs of FM antennas commonly used along with their advantages and disadvantages.

Cris Alexander is director of engineering for Crawford Broadcasting. He welcomes questions and ideas for this series via e-mail to crisa@crawfordbroadcasting.com.



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Lampen

▶ Continued from page 14

at 420 Montgomery Street.

While our intrepid heroes were playing with the telegraph wires, many others were studying the effect of electricity traveling down wires.

One was Michael Faraday (1791-1867), who determined that capacitance in wire is related directly to the insulation covering in the wire. In 1837, he proposed that each insulation material has a "dielectric constant" that described how good an insulator it is. By 1854, he also suggested that this constant determined the velocity of a signal traveling down a wire.

Pretty good for a bookbinder's apprentice. He got fired from that job because he kept reading the books he was supposed to be binding, especially the scientific ones. In 1812, he applied for a job as an assistant to one of the foremost scientists in England, Sir Humphrey Davy, based entirely on his reading, and got the job.

In 1857, Gustav Kirchoff (1824-1887) proposed that inductance also was a factor in the speed of signals down wires and that the velocity of a signal on a wire approaches the speed of light when all other factors are minimized.

By the 1850s, there was considerable speculation on running a telegraph wire across the Atlantic Ocean. As early as 1844, Morse had said, "A telegraphic communication line could certainly be established across the Atlantic Ocean." The problem, of course, was the vast distance from Newfoundland to Ireland.

Maury thought the ocean plateau 'seems to have been placed there especially for the purpose of holding the wires of a submarine telegraph.'

Lieutenant Matthew F. Maury of the Washington National Observatory, perhaps the greatest oceanographer of his time, said, "I do not, however, pretend to consider the question as to the possibility of finding a time calm enough, the sea smooth enough, a wire long enough, or a ship big enough to lay a coil of wire sixteen hundred miles in length."

But he did discover that the ocean floor between Ireland and Newfoundland is mostly one huge plateau. Maury, in a letter to the Secretary of the Navy, said this plateau "seems to have been placed there especially for the purpose of holding the wires of a submarine telegraph and of keeping them out of harm's way."

Pay it out

Between 1856 and 1858, there were four attempts to lay a telegraph cable across the Atlantic Ocean. All failed. There were six cable breaks alone.

Once, in 1857, the brake on a giant reel failed and stalled the reel, which then broke the wire. This incident inspired the following poem:

Pay it out, Oh! Pay it out,
As long as you are able;
For if you put the darned brakes on
Pop goes the cable.

Another time, the brake failed to stop the reel and the end of the cable ran off the end of the ship and into 2,000 feet of water. Still another time the chief engineer, Dr. Wildman Whitehouse, convinced that a huge voltage would be required to communicate over so long a distance, attached his high-voltage dynamos to the cable on the English side, and promptly ruined the first 20 miles of cable.

In 1858, New York businessman Cyrus Field succeeded in laying a cable the entire way, but it only worked for about four weeks.

There is an excellent description of the sordid details of these attempts in the book "How the World Was One" by the noted science-fiction writer Sir Arthur C. Clarke, from which our poem also was taken.

As Maury pointed out, one of the key problems was finding a ship big enough to carry the wire.

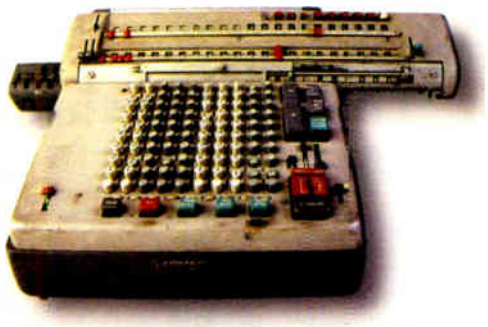
And here into our story enters an unforgettable fellow, Isambard Kingdom Brunel (1806-1859).

Brunel was a driven man. Learning mathematics and engineering in his father's firm, he was famous as a bridge designer and builder. He even became famous for his hats, and many in London would sport a Brunel Hat in the 1850s. It inspired the hat worn by the Mad Hatter of "Alice in Wonderland."

Brunel was obsessed. What was the nature of this obsession, and what does it have to do with wire and cable? Tune in next time for a further exciting chapter.

Previous articles in this series are available at www.rwonline.com.

Steve Lampen's book "The Audio-Video Cable Installers Pocket Guide" is published by McGraw-Hill. Reach him at shlampen@aol.com.



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To Look Ahead, Try Looking Back

A Historical Analysis of the Transition to FM Sheds Some Light on the Prospects for HD Radio

by Skip Pizzi

Now that digital radio has become a regulatory reality in the United States, it's time to consider its prognosis in the marketplace with a new point of view.

No longer a future possibility, HD Radio's deployment and penetration targets are being set. Although every new technology introduction is different, history can provide helpful background to predict the road ahead for U.S. digital radio. Although George Santayana's oft-quoted maxim has become clichéd, it aptly applies in this case: those who don't know broadcast history are condemned to repeat it.

Consider the AM-to-FM transition.

Similar to today's situation with HD Radio, all existing (AM) broadcasters were given the opportunity to provide an FM service after the 88-108 MHz band was introduced for such broadcasting in 1941. Also like HD Radio, new receivers were required, and the new service's signals were simulcasts of the older service, at least for the first 30 years of FM's existence.

During those three decades, FM was not considered a success. After 30 years, FM had barely reached 20 percent of the listening audience, and although it was widely considered to be technically superior to AM, it still lagged far behind AM's commanding 85 percent receiver penetration.

Some broadcasters gave up on the service, donating their FM stations to nonprofit organizations as tax write-offs.

FM grows up

But most broadcasters stuck with their FM service through these lean years, and their tenacity began to pay off in the fourth decade. This was the result of a fortuitous confluence of events, but perhaps most influential was the FCC's landmark decision in 1965 to require the phase-out of AM-FM simulcasting.

Other contributing factors were the approval of the FM stereo multiplex in 1961, the saturation of the AM band in major markets around the same time (leading all new applicants to the FM band), and the FCC's new FM allocation and assignment processes of 1962-63, which provided more stations in some areas and reduced interference in others. Congress subsequently chipped in with its all-band legislation, which mandated that most radios sold in the United States had to include both AM and FM tuners.

By the 1970s there were more FM stations, able to be heard by more listeners, over more and cheaper receivers, and in stereo. All of these components helped, but what many analysts feel most powerfully drove the transition was the existence of the compelling new radio services required by the non-simulcast rule.

Because most broadcasters weren't willing to spend good money after bad on their poorly performing FM service, the cheapest methods possible were used to fill the hours required for unique FM programming. For some stations this involved installation of early automation systems or playing long classical sides, but for others it meant hiring young, hungry DJs to spin records during late-night hours, and thus the progressive or "underground" FM radio movement was almost unintentionally born.

Following this environmental change, it wasn't long before the long-dormant FM band became the predominant radio medium, transformed from loss leader to killer app in a few short years. Specifically, the years 1973 to 1985 marked the core of the transition, with FM's audience share rising from under 30 percent at the beginning of the period to over 70 percent at its end. A similar reversal in receiver penetration took place from 1965, when 85 percent of radios sold were AM-only, to 1984, when 86 percent were AM/FM or FM only.

Interestingly, in 1986, the FCC repealed the simulcast prohibition, and commonly owned AM and FM stations in the same market were once again allowed to simulcast 100 percent of their programming. This was testimony to the strong dominance enjoyed by FM at that (pre-consolidation) time, which had begun to threaten many AM stations' continuing viability as discrete services. By then the rule had served its purpose; yet were it not for its establishment in 1965, such an inversion of listener preferences may never have happened.

The long-dormant FM band was transformed from loss leader to killer app in a few short years.

Retrospectively, the FM transition serves as a good laboratory, because the new broadcast service existed for extended periods both as a purely qualitative advance, and then as a qualitative-plus-quantitative expansion, with significantly different results in each case. While the qual/quan variable was not held in total isolation over this period, it was arguably a dominant influence in the transition.

The lesson: without the right confluence of circumstances, including plentiful new and desirable broadcast services, HD Radio may also fail to reach critical mass in an ever-more diversified media marketplace. It remains unclear whether or to what extent such new services will develop in the HD Radio transition, and as a result, the new service's success remains in doubt.

Skip Pizzi is contributing editor of Radio World. RW welcomes other points of view.

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Boston Students Invest in Future

by Scott Fybush

If you looked carefully at the badges at last spring's NAB convention, you would have spotted several that read "Emerson College," under some very young-looking faces.

The Boston school's communications and journalism programs are regarded as among the region's finest. One reason, says Marcia Della Giustina, chair of the journalism department, is the annual pilgrimage students make to the Radio-Television News Directors Association convention, now held in conjunction with the huge NAB show.

Della Giustina said that's the goal of educators at RTNDA. Having NAB exhibition halls and seminars next door does help.

"It's fantastic having it with NAB, because technology is so important with TV and radio news," she said. "What I'm looking for is that they go to seminars for journalism and seminars for technology."

Chaperoned

Emerson students produce a TV newscast and operate WERS(FM), one of the most powerful college radio stations in New England. The 2002 RTNDA convention was the tenth that Della Giustina has attended with students; the conversations that start during the convention continue for months afterward.

Everyone knows everybody, which is kind of scary.

— Melinda Doyle
Student at Emerson College

"I do encourage them to come," said Della Giustina, "because it's inspirational. They meet professionals in a professional setting."

The RTNDA event will again be held in conjunction with NAB next April.

Out of some 200 students in Della Giustina's program, more than 20 made the cross-country trip to Las Vegas this year — and on their own dimes. It's worth it, they say, for the potential connections and experience.

"It definitely gives you an advantage over students who just go to class and hang out with friends," said graduate student Marsha MacEachern. "You always want something that's going to put you ahead."

For those who can't spare the time or money to make the trip, Emerson offers other opportunities; many students who made the trip to Vegas, for example, had also attended the annual New England regional RTNDA convention.

In Sin City, faculty chaperones keep a close eye on the students, enforcing a curfew to protect their charges against the temptations Las Vegas has to offer — most of them are, after all, too young to gamble — and making sure they mingle. At convention banquets, no more than two Emerson students are allowed to sit together at each table, ensuring that they talk to industry professionals.

"Everyone seems really friendly," said Melinda Doyle, an Emerson junior attending her first national convention. "And everyone knows everybody, which is kind of scary."

The importance of networking is reinforced each year at a dinner Emerson hosts for alumni and friends attending the convention. In addition to reuniting college friends and their teachers, the dinner gives students easy networking opportunities.

"The hardest thing to do is to go up and talk with the professionals," said junior Elizabeth Kravitz.

When they do break the ice, a major topic of conversation is the job market. A year from graduation, Doyle said the job search already was on her mind.

"It's petrifying," she said. "It scares me to death."

For grad student MacEachern, employment was an even more urgent concern. The realities of the job market were reflected on a bulletin board in the RTNDA hallway covered in résumés and headshots.

Could RTNDA and NAB lead to a job?

"That's always in the back of our minds," she said, "but actually being here, you realize that may not happen."

Doyle, who served as vice president of Emerson's RTNDA chapter, has intern experience at WATD(FM) in Marshfield, Mass. She says a career as a TV reporter is her likely course.

But Della Giustina says don't assume these students aren't thinking about radio as well.

"These kids are TV babes," said, "but they love radio."

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DIGITAL NEWS

Vendor Phones Ring for HD Radio

But Whether That Interest Will Translate Into Sales Remains to Be Seen, Suppliers Say

by Ken R.

Item: In a release dated Oct. 10, 2002, the FCC selected in-band, on-channel as the sanctioned technology standard and allowed AM (daytime only) and FM stations to begin interim digital transmissions.

Item: Ibiquity Digital has offered licensing fee waivers to stations ordering digital transmission gear by the end of this year.

Is IBOC — or HD Radio, as Ibiquity calls it — finally ready to take off? It depends on whom you talk to.

Virginia Lee Williams, Harris Corp. director North American sales for radio, says IBOC equipment orders are surging.

"We have been overwhelmed, and interest is coming from not only group owners but small owners," said Williams. "This includes commercial and public stations, too."

She said clients seem attracted to the potential for HD Radio.

"It's about more than just the improved audio quality," said Williams. "Data features may include customized traffic reports, location-specific ads and other extras. Here we have a local, mobile, free medium that can touch us wherever we are. and the data allows us to be more powerful than we can imagine."

One member of the Harris sales staff reported that his phone was ringing with three or four inquiries per day about IBOC/HD Radio.

Sam Lane, general manager of RF Specialties of California and CEO of RF Specialties of Washington, has a somewhat more conservative view.

Virginia Lee Williams — Sam Lane

Bob Cauthen — David Davies

"I haven't yet seen any big demand for digital equipment," he said. "But people do tell me they want their new equipment to at least be compatible with IBOC, especially in the transmitter category.

"As far as AM is concerned, IBOC must be full-time, not just daytime, before a lot of people will justify the capital expenditure."

At SCMS, President Bob Cauthen described the situation succinctly: "Massive interest, not massive orders."

Cauthen said the savings to be realized through Ibiquity's fee waiver is almost enough to buy the equipment.

Decisions ahead

"But I don't see small markets being able to go digital right away," he said, "because of the high cost of the Ibiquity signal generator and potential fees. That box is a very cumbersome, Pentium-based system with a crude design. I know that there are plans to create a DSP card-based technology that will plug into the existing IBOC exciters and make it more affordable."

ERI is a supplier of antennas and RF hardware. Engineering Manager David Davies noted much interest in digital equipment at this fall's NAB Radio Show.

"But it hasn't turned into many orders yet," he said. "There are two factors responsible. One is the administrative procedure in the larger corporations to get the funds; and the other is that the independent operators are still deciding if they need to go digital right now to remain competitive in their markets."

At Broadcast Electronics, Tim Bealor, vice president of RF systems, said his company has been pro-active in moving IBOC implementation forward.

"We've been sending out information to stations to let them know what's going on." Sales began to come in to BE in late October.

He said he gets as many reactions to digital broadcast from general managers as there are general mangers.

"Many are excited about the world of digital, but others take a more 'dollars and sense' view, analyzing how implementation will affect revenues and expenses," Bealor said.

"We think it's an exciting time, and probably the biggest development in radio since FM."

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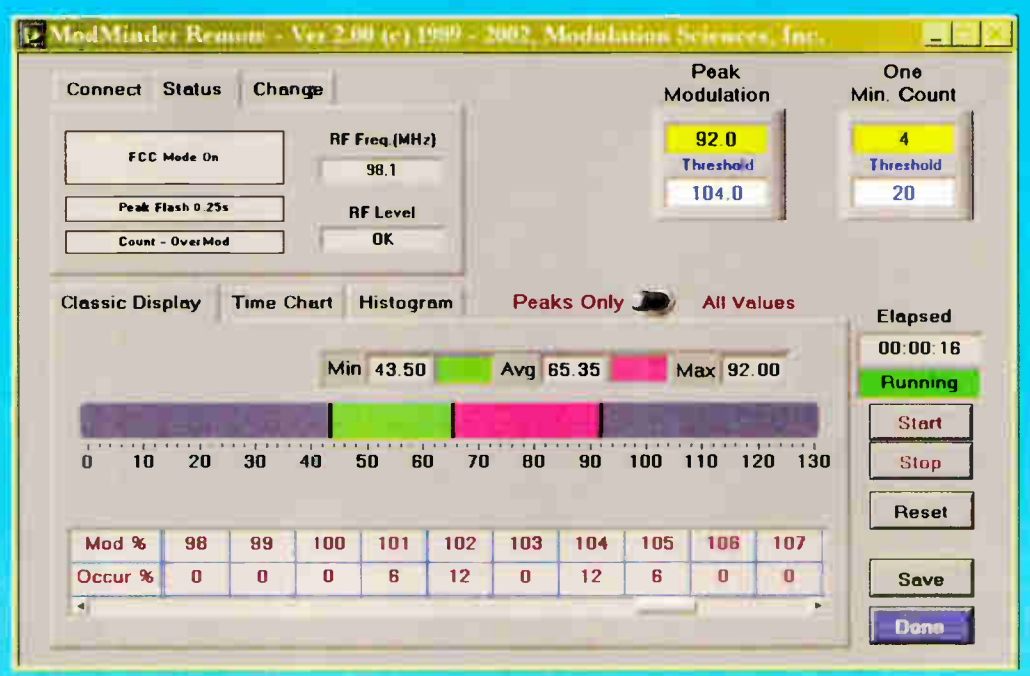

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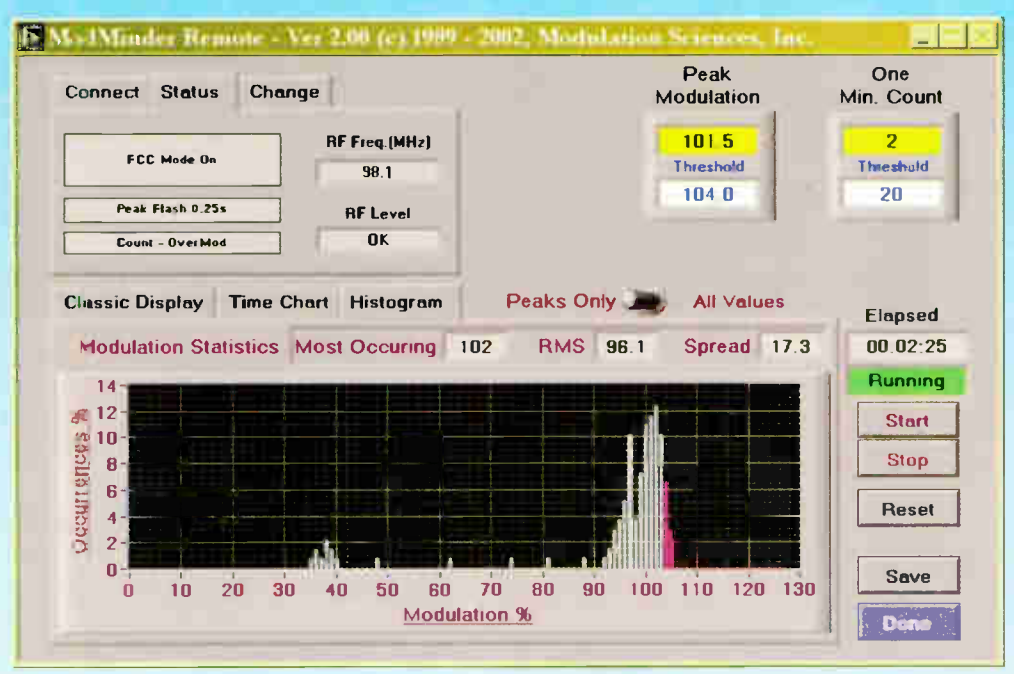

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Nothin' But Net for Radio One

by Paul McLane

The Valley View Center shopping mall in north Dallas is the new home for Radio One stations KBFB(FM), "97.9 The Beat," and KSOC(FM), "K-Soul, the Soul of the City."

George Laughlin, general manager of the stations, said, "We designed our new space with our listeners in mind. We want them to feel like they have direct access to our stations, our on-air personalities and our musical guests, and our new location allows us just that."

Tom Joyner helps Radio One employees cut the ribbon on the new facility.

The facility houses two broadcast and two production studios, a mix room, a newsroom and office space in 14,000 square feet. Also included is a small auditorium for concerts and events. It even includes a half basketball court "for the entertainment of listeners, fans and employees," the company said in its announcement of the project.

The space previously housed a two-screen movie theater. The station converted the seating areas to office space and the projection booths to studios.

The mall is at the busy intersection of LBJ Freeway and Preston Road. The station lobby and studios can be seen by shoppers.

"The demographics match the target demos of the two stations very closely," said Garry Leigh, program director of KSOC.

Studio design and construction were done by Chief Engineer Don Stevenson and Assistant Chief Steve Walker of Radio One. Contract engineers were used to assist in wiring and special projects.

Among those on hand for the grand opening last winter were Radio One COO Mary Catherine Sneed, syndicated host Tom Joyner, boxer Roy Jones, musician Glenn Lewis and athletes Eric Strickland, Kevin Smith and Leon Lett.

The stations had been housed in separate office buildings, neither of which met the company's needs. "It made for many extra trips for the engineering department," said Stevenson.

The new studios have put digital technology to work. KBFB already was using a Computer Concepts Maestro system for music playback; KSOC (formerly KTXQ) had used RCS Master Control.

"We ultimately settled on Maestro for both stations when we moved into the new facility," he said.

Other major vendors included Scott & Reid General Contractors and architects Merriman & Associates. Furniture is by Broadcast Construction Service.

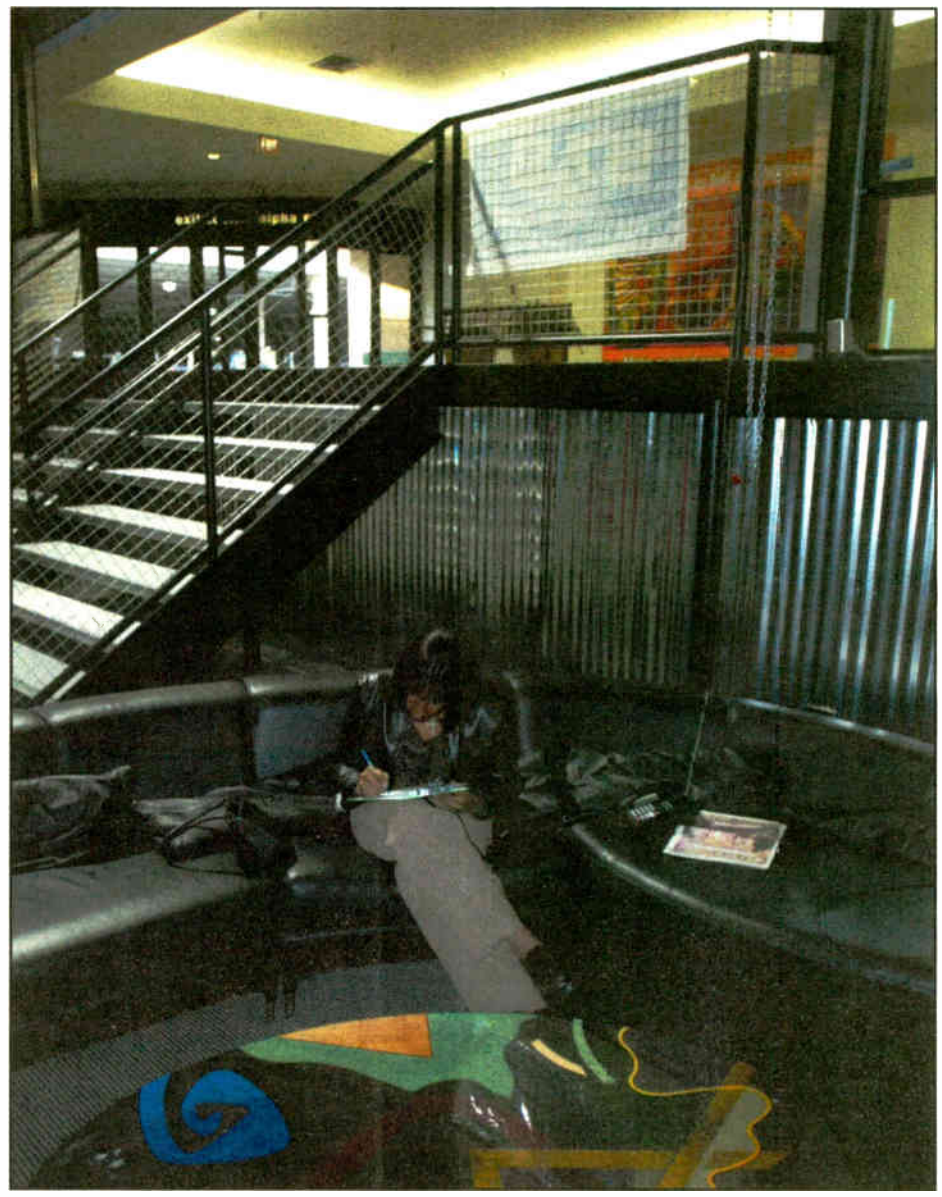
"We used Logitek ROC-5, ROC-10 and Numix-18 consoles," said Stevenson. "These consoles are basically control surfaces that communicate with Logitek Audio Engines in the Technical Operations Center via RS-232. The Audio Engines contain all the audio and control circuitry for the six studios."

Audio sources terminate in the TOC and are routed by the Audio Engines to their destinations. Outputs can be routed to any input via Logitek's optical network.

Control-room and production computers are located in the TOC and extended using Aten CE-220 KVM extenders. Aten MasterView KVM switches allow studio computers to be accessed and configured from one workstation located in the TOC area.

"We added a Telos Zephyr Xstream to give us a total of four ISDN transceivers online at all times for remote broadcasts and voice talent feeds," said Walker.

In keeping with the open, industrial architectural style of the facility, the designers used exposed cable trays to carry house cables from the TOC to the studio complex upstairs.



Lobby steps lead up to the mall.

"Particular attention was paid to keeping cables neat and orderly both for appearance and for ease of locating and adding cables," Walker said. "House cable is Gepco 5596 eight-pair digital cable. We used 3,000 feet."

To get their signals to the transmitters, the stations use Harris Intraplex T1 transceivers as primaries and Moseley SL9003Q microwave systems as backups. KBFB's site is 25 miles away in Cedar Hills; KSOC's is 40 miles away in Colleyville.

Radio One is the seventh-largest U.S. radio company as measured by revenue, according to BIAfn, and the largest primarily targeting African-American and urban listeners. It has 65 stations and programs five channels on XM Satellite Radio.

Gear List

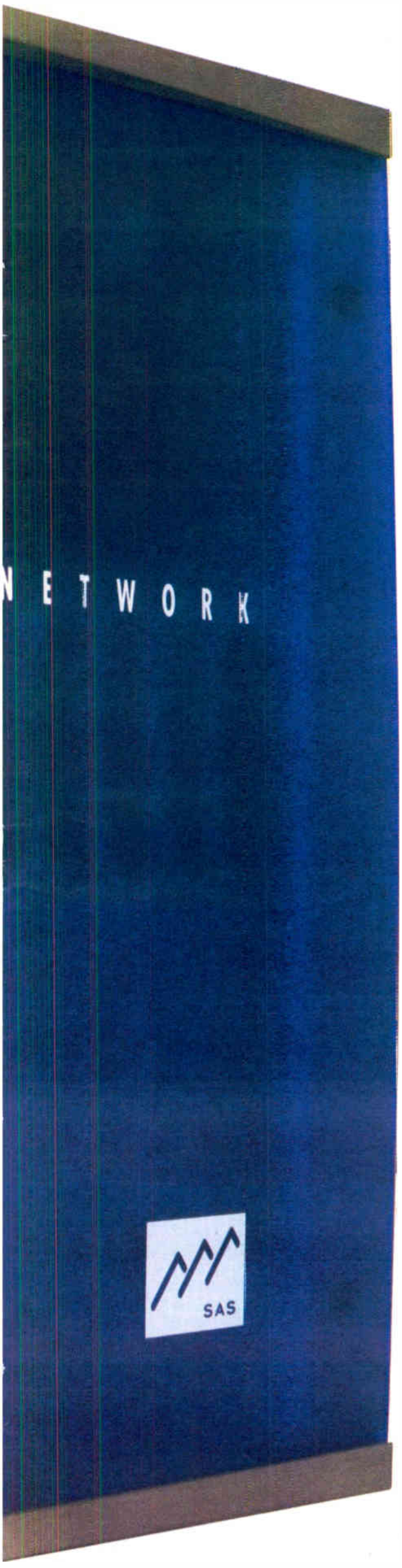
TOC
(5) Logitek Audio Engines
(2) Intraplex STL Plus
(2) Moseley SL9003Q microwave systems
(3) Telos Zephyr codecs
(1) Telos Zephyr Xstream
(2) Comrex HotLine codecs
(1) ESE ES-103 GPS master clock system
(1) Dorrough 1200B stereo signal test set
(2) TFT 930 EAS systems
(1) TFT 844 mod monitor
(1) Statmon/Axess remote control system
(2) Aten Masterview Pro CS-1016 KVM Switch
(3,000') Gepco 5596 eight-pair digital cable Satellite receivers

On-Air Control Rooms:
(1) Logitek Numix 18 console
(4) Electro-Voice RE-20 mics
(3) Denon DN-951FA CD players
(1) Denon DN-790R cassette deck
(1) Panasonic SV-3800 DAT machine
(1) Telos One-x-Six Talk Show System
(1) Audion VoxPro (PC version)
(1) TFT 911 EAS system

Production Rooms (each):
(1) Logitek ROC-10 console
(1) EV RE27 mic
(1) Audio-Technica AT 4050/CM5 mic
(1) Digidesign Pro Tools Mac System
(2) Denon DN-951FA CD players
(1) Panasonic SV-3800 DAT machine
(1) Denon DN-790R cassette deck
(1) Sony MDS-E12 MiniDisc recorder
(1) HHB CDR-850 compact disc recorder

Voice Booth
(1) Logitek ROC-5 console
(2) EV RE27 mic
(2) Denon DN-951FA CD players
(1) DAT Panasonic SV-3800 DAT machine
(1) Denon DN-790R cassette deck

'Mixin' Room'
(1) Logitek ROC-10 Console
(2) EV RE27 mics
(2) Denon DN-951FA CD Players
(1) Panasonic SV-3800 DAT machine
(1) Denon DN-790R Cassette Deck
(1) Rane TTM-56 DJ Mixer
(2) Technics SL-1200 turntable



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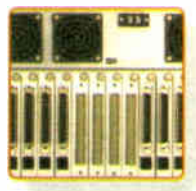

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Workbench

▶ Continued from page 10

Sterno, matches and a couple cans of hearty soup, stew or baked beans are wise additions. Add a gallon jug of water to round out your "meal."

An army surplus store offers great finds. When I was contracting, we picked up collapsible cots for under $10 each and placed them at the more remote transmitter sites of our clients. The surplus store has inexpensive blankets, and those "space" blankets that look like big pieces of aluminum foil and conserve your heat. These blankets are small and fit easily on a shelf until needed.

Fig. 2: 'Hey Ma, how come there's a tree growing in the air?'

If you stock your transmitter site with a traditional blanket, make sure you store it inside a sealed plastic bag. Otherwise, critters may take to nesting in the warm wool.

Of course, you can't go wrong with a flashlight with fresh batteries.

A box of trash bags and a garbage can are useful additions. If there's no workbench at the transmitter site, consider adding a folding table and at least two chairs. You can pick these up at second-hand stores like Goodwill and Salvation Army. If you can find the padded type of folding chair, you'll appreciate the added comfort at 2 a.m.

★ ★ ★

Fig. 2 is from our collection of "you gotta see this" pictures. Yes, those are tower guy wires, and it's no trick photography; there was a tree growing through the guy. The new owners of this site had their work cut out for them, playing catch-up to years of abuse and neglect by the previous owner. If your GM ever questions why you visit the transmitter site, put a copy of this picture on his desk.

It's true that trees this size don't grow overnight, but it's amazing how quickly shrubs, grass and trees can sprout up in places that can make your life difficult. So visit that transmitter site. Walk the property. Inspect, inspect, inspect, and correct the problems when they are small.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

Submissions for this column are encouraged, and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com.

·MARKETPLACE·

Products for the Radio Broadcast Professional

Mail info and photos to: RW Marketplace, P.O. Box 1214, Falls Church, VA 22041

Crown Broadcast Adds Omnia Processing

Omnia is making a digital audio processor designed to integrate with FM transmitters produced by Crown Broadcast.

The collaboration was announced by Frank Foti of Telos Systems, which makes the Omnia line, and Barry Honel of Crown Broadcast.

Honel had approached Omnia with the idea collaboration.

"I see this concept becoming commonplace as technology becomes more complex and diverse," Honel said. Few companies, he said, have the technical disciplines to meet all the demands of broadcasting; most manufacturers specialize in certain areas of the broadcast delivery chain.

"I see the need for non-competing companies to form alliances, taking the expertise and unique products each has to offer and combining them to create a new improved product."

The companies said on-board processing will give technical advantages such as improved audio resulting from close coupling of processor and exciter, and the convenience of integrated remote controls for transmitter and processor.

The processor is contained on a card that plugs into the chassis of Crown Broadcast FM-Series radio transmitters. It uses the power supply and control functions of the Crown transmitters.

For information contact Crown Broadcast in Indiana at (877) 262-8900 or visit www.crownbroadcast.com.

Russ Gentner Is 'Listen'-ing

Russ Gentner's new company Listen Technologies has developed a line of wireless audio products — transmission systems using stationary and portable transmitters and receivers. Typical range is 100 to 3,000 feet. Audio quality is 50 Hz to 15 kHz, 80 dB S/N, <2 percent distortion.

Broadcasters have used these for IFB, in-ear monitoring and remote cueing. These products also are suitable for tour groups and language interpretation. A typical system with transmitter and receiver plus options runs in the $1,000 range.

The LT-800 Stationary Transmitter will broadcast up to 3,000 feet on 216 MHz (specify 72 or 216 MHz bands). Antenna options depend on application; a rack kit is available. The LT-700 Portable Transmitter has a range of 100 to 300 feet. It accepts a direct microphone and line-level inputs.

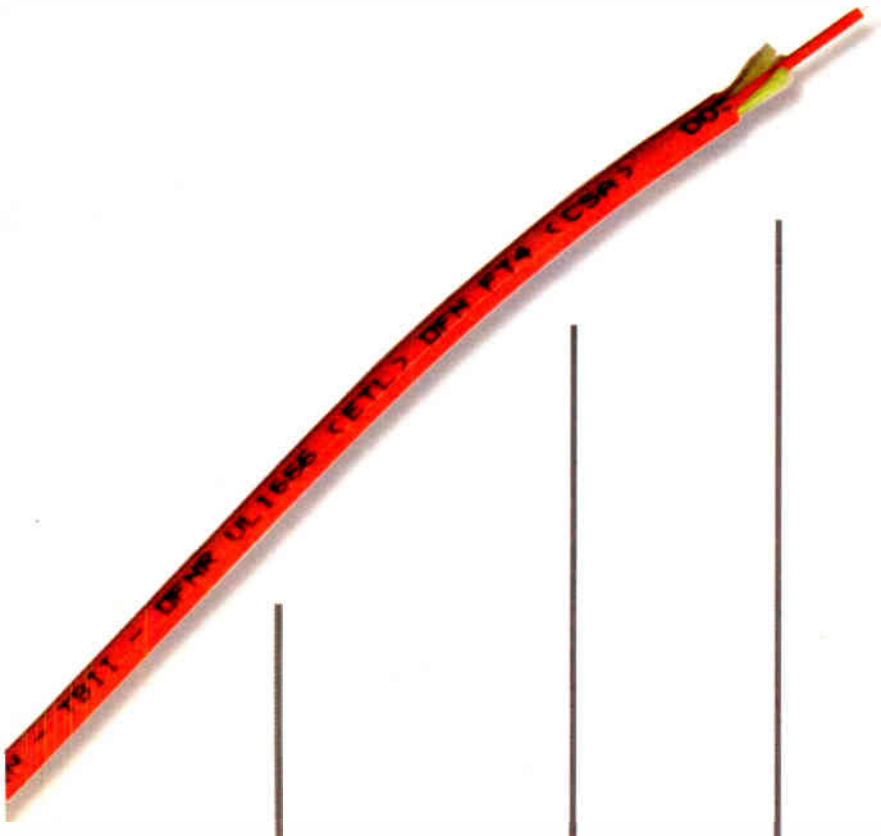
Listen has three portable receivers, the LR-300, -400, -500, and two new sound amplification receivers, the LR-600 and -100.

The LR-600 is a self-powered speaker with receiver. The company has introduced the LR-100 Stationary Receiver/Power Amp, a half-rack receiver with 44-watt power amp. Used with the LT-800 Stationary Transmitter, it can provide a high-quality audio link.

Also new is SQ technology, a noise-reduction process that takes S/N down from 60 to 80 dB, making the products suitable for lower-noise applications.

For more information call the company in Utah at (800) 330-0891 or visit www.listentech.com.

64 Channels of Digital Audio



would you rather pull this?

We'd rather do this...

This really would be easier...

64 Channels of Digital Audio

Or this?

...but we could do this.

...and this would be silly and much more expensive.

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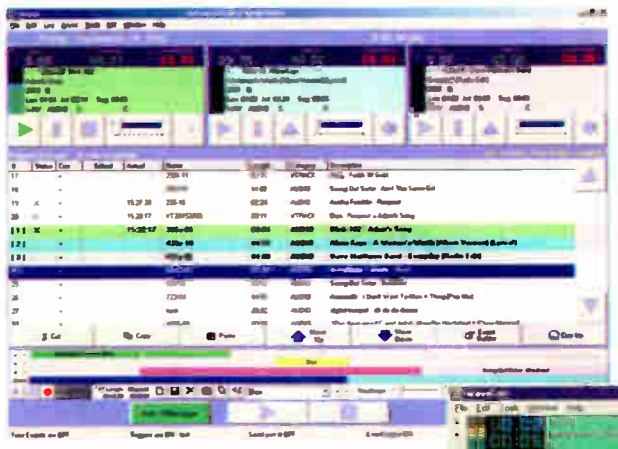
Any and all of our programs are available on our website for download. So install our software and play with it for as long as you want. Once you've decided that it's the software for your station, give us a call or order online.



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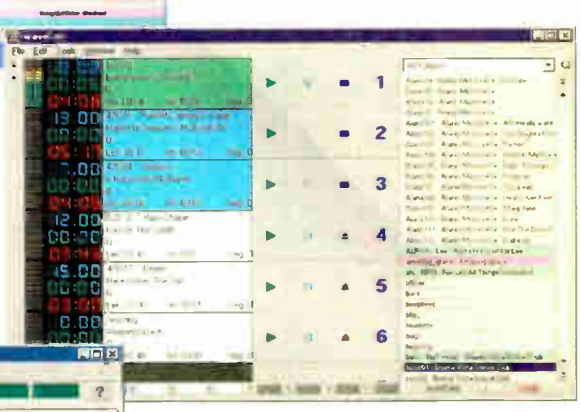

WaveCart
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Stinger
instant audio player
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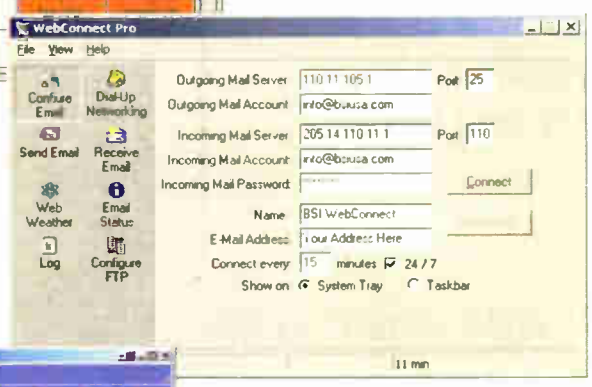

WebConnect Pro
email remote control
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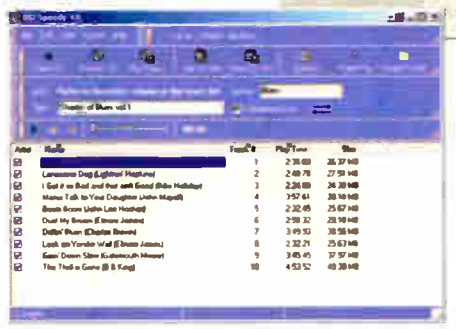

Speedy 4.0
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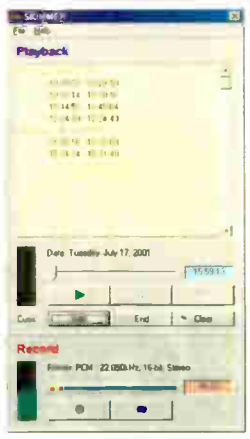

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GM Journal

Radio World — Resource for Business, Programming & Sales — November 20, 2002

A Refocus On Target Marketing
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Internet Broadcasters Pay Up

by Craig Johnston

Months ago, the U.S. Copyright Office established Oct. 20 as the deadline for retroactive copyright royalty payments for sound recordings streamed over the Internet. Despite appeals to the Copyright Office for a stay, an attempt to rush a last-minute bill through Congress, and efforts to get the courts involved, the 20th came and Internet radio paid.

Cash infusion

"The money is coming in," said John Simson, executive director of SoundExchange, the organization designated to collect the fees and see that they are disbursed to the appropriate singers, musicians and copyright holders.

Radio stations that simulcast their terrestrially broadcast programming as Internet streams have insisted the 1998 Digital Millennium Copyright Act does not specify that they are subject to the copyright payments. They have long been exempt from copyright royalties on sound recordings they broadcast over the airwaves.

The money is coming in.

— John Simson, SoundExchange

But broadcasters were unable to get relief prior to the deadline, and so they paid.

"Our legal counsel advised us to pay," said Brian Parsons, Clear Channel Radio Interactive's director of technology.

SoundExchange's Simson said at press time that while the organization had not yet taken a detailed look at payments, it appeared broadcasters paid on time. Representatives of large radio group owners contacted by Radio World confirmed that they had paid the retroactive copyright fees.

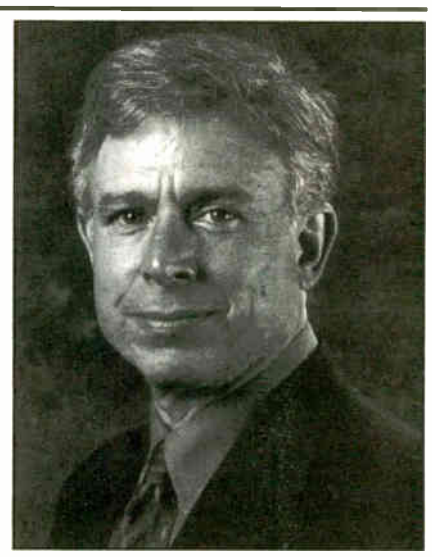
Entercom Communications Corp. Director of Internet Operations Amy Van Hook said she thought most broadcasters had been allocating funds for the copyright fee liability, as her company had done. "We were socking some money away each month," she said.

Streams cease

In response to the copyright fee situation, Entercom took the last of its stations' streams down from the Internet this summer. As to when they would return to Internet streaming, Van Hook said, "We'll continue to reevaluate the situation as time goes ahead."

The retroactive payments due on Oct. 20 covered streaming during the period from passage of the DMCA, Oct. 28, 1998, through Aug. 31, 2002. But some broadcasters were fortunate they were not liable for the fees for the entire period.

"We had a small retroactive liability because we had done most of our streaming (in the past) though Yahoo," said Dan Halyburton, senior vice president and general manager of group operations at Susquehanna Radio Corp.



John Simson

Yahoo had been making the copyright royalty payments for sound recordings for stations streamed through its radio channel. But the company announced in June it was shutting down that business, leaving stations to fend for themselves.

Just prior to the fee payment deadline, SoundExchange announced it would accept a minimum down payment on fees ($500 per calendar year in which an Internet radio station operated) from qualifying small Webcasters, and wait to see what the current Congress determined when it returned after the November election.

Few broadcasters qualify as small Webcasters, however, because their

See NET RADIO, page 35 ▶

Listener-Configurable Radio: A 'PD's Dream'

by Craig Johnston

One of the advantages promised by promoters of HD Radio/IBOC DAB is terrestrial radio that is interactive or somewhat user-configurable.

That day may be tomorrow over the airwaves, but it is very much today over the Internet.

Subscription services such as Listen.com now offer radio-like services that allow users to customize their channels to some extent.

And while many stations have been content to simulcast their terrestrial signal programming over the Web, one of the radio industry's familiar suppliers, Radio Computing Services Inc., has a turnkey solution for stations that want to offer a listener-influenced subscription channel.

Because neither subscription services nor interactive Internet radio services are covered under the statutory license outlined in the Digital Millennium Copyright Act, those wishing to offer a configurable channel need to negotiate an agreement with copyright holders, or partner with a party that already has such an agreement.

The DMCA statutory license provisions also outline a complicated series of rules about the number of recordings

See INTERACTIVE, page 32 ▶

Listen.com lets users customize their channels.

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The new Behringer UB1622FX-PRO is a 16-input, 2/2-bus mixer with premium mic preamps and a 24-bit multi-FX processor – at an amazing low price! It features 12 balanced high-headroom line inputs, 4 studio-grade IMP "Invisible" mic preamps and a 3-band EQ. There is also an integrated 24-bit digital stereo FX processor with reverb, delay, chorus, compressor, tube distortion, vinylizer and more; plus 2 aux sends per channel, 1 pre/post fader switchable for monitoring/FX applications, 1 post fader (for internal FX or as external send); 2 subgroups with separate outputs; separate control room, headphone and stereo tape outputs; balanced main mix outputs with jack and XLR connectors; rack mount brackets included.

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UB1622FX	List $249.99	$199.99
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CDR830PLUS	List $789.00	$699.00
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HHB's rugged Portadisc MDP500 minidisc recorder uses AT to ensure optimum sound quality. Sonic performance is furth a high-quality balanced microphone input circuit, which also switchable phantom power, limiting and ganging. Connectivit including balanced XLR mic/line inputs, RCA phono line outp and optical S/PDIF digital I/Os. It even has a USB interface for laptop editing systems. A memory buffer delivers glitch-free re second pre-record buffer ensures that you never miss a take.

MDP500R/KIT	List $1,769.00	$1,449.00
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The Sony MZ-N707 MiniDisc recorder will allow you to record MP3s, and utilize affordable MDs for storing over 5 hours of music or one 80-minute disc. This MD machine also plays back in ATRAC3 and supports multiple internet audio formats. Enjoy up to 56 hours of listening using one "AA" battery, and up to 20 hours of listening using the rechargeable battery (LP4 mode). Supplied accessories: charging stand; rechargeable battery and AC adapter; car kit remote control with editing functions; headphones.

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Koss makes great low cost headphones. This lightweight, sealed-ear TD61 delivers great sound, provide good isolation to help prevent feedback, and is very affordable. Get them in our exclusive 5-pack and save a bundle.

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This "classic" on-air light by CBT Systems has to be the coolest looking thing since your '55 Chevy two-door. Built using traditional sand casting methods, the aluminum housing is then buffed to a bright finish. Behind the plexiglass "ON-AIR" window is a long life lamp available in 120 VAC, 12 VAC/DC and 12 VAC/DC. The whole unit can be easily installed on a standard 2 gang j-box. Also available in APPLAUSE, RECORD and STANDBY. Dimensions: 14-1/4" L x 2-5/8" W x 4" H.

ONAIR List $295.00 **$269.00**

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MANAGEMENT CORNER

A Refocus on Target Marketing

Packaging Large Consumer Groups for National Buys

by Vincent M. Ditingo

The practice of target marketing has been redefined, or you could say refocused, thanks to the introduction of highly customized sales networks for national radio buys.

Drawing upon detailed research, Interep has implemented a series of "consumer lifestyle networks" designed to foster the growth of the national spot marketplace by facilitating the reach of desired audience groups nationwide.

Networks

Interep is offering advertisers and agencies seven such networks focused on the most frequently requested ad targets including affluent consumers, family shoppers, African-Americans, U.S. Hispanics, men, women and young adults. The networks cut across a variety of formats that deliver these consumer groups.

"By speaking with the heads of media buying agencies across the country, we saw the need for radio to realign its selling strategies to better match advertisers' marketing needs," said Marc Guild, president of Interep's Marketing Division, in explaining the company's strategic networking plan.

"Through careful media research we have developed a way to save agencies time and money by locating and packaging their heaviest consumers into easy-to-buy networks," Guild said.

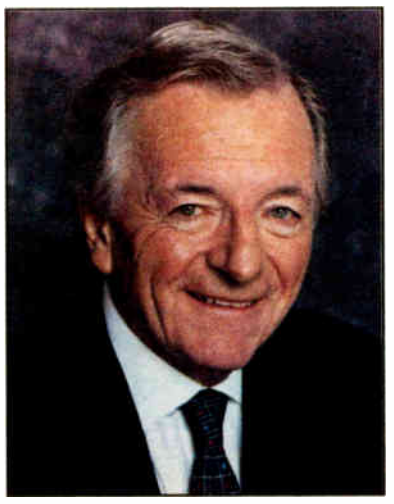
The concept of national spot sales networks is certainly not new.

The networks, once referred to as non-wired networks to distinguish them from conventional network buys before networks went to satellite distribution in the 1980s, have been implemented by the two large radio rep companies, Interep and Katz, for many years.

These spot networks were directed at ad agency executives and advertisers who complained that radio buying was becoming more complex as the radio industry grew. The networks eased the buying practice by offering the ad community one-stop shopping — that is, one contract for a package of select stations, usually with similar formats or similar demographics. The networks continue to be successful units at the major rep firms.

This latest remaking of spot sales networks is designed to make radio buying for a new generation of buyers cost-effective and convenient in reaching large defined consumer audiences. And many of these targeted consumer groups have evolved into active radio listeners.

For instance, according to Interep, research shows that affluent adults who typically have many time demands, spend most of their daily media time with radio (33 percent) followed by the Internet (27 percent), television (26 percent), newspaper (8 percent) and magazine (6 percent).



Ralph Guild

(The research source is Fairfield Research Media Consumption Trends 1995-2003. Interep defines affluent household incomes as $100,000-plus. Fairfield data is for household incomes of $75,000-plus.)

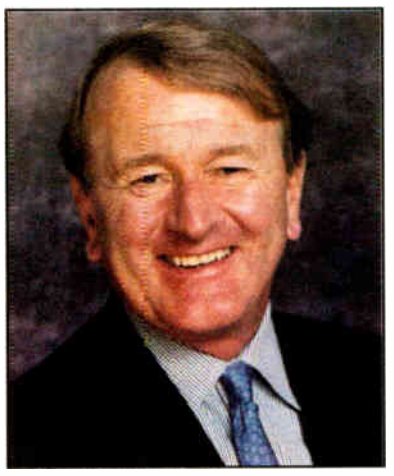
Proactive strategies

According to Ralph Guild, chairman and CEO of Interep, the seven consumer lifestyle networks will work especially well for advertisers unfamiliar with radio and its many format brands. Interep sales executives believe their new consumer networks will fit into many of today's cross-media multi-platform buys.

The new sales networks also are Interep's response to agency restructuring and media department consolidations in recent years, which have led to a new round of fiscal challenges and demands.

"Agencies are under increased pressure to justify their media choices to their clients as well as offer fresh ideas for reaching consumers. These lifestyle networks should help in both areas," said Guild.

The unveiling of the consumer networks comes at a time when national spot radio billings have begun to rebound significantly from their poor 2001 showing. In fact, they have been leading radio's charge back from economic doldrums.



Marc Guild

In July, for example, national business was up 16 percent and local dollars up 7 percent over July 2001. Year-to-date through July, national spot activity climbed 6 percent over the first seven months of last year. That compares to only a 1-percent increase in local spot dollars for the same time period.

New revenue

The company is in the process of targeting the top 100 national advertisers as well as low to moderate radio users. Additionally, Interep executives have begun to introduce these finely tuned sales networks to upper-level decision makers at the major agencies in key buying hubs including New York, Los Angeles, Chicago and Dallas.

"The networks appear to be a great door opener and often lead to more extensive discussion on how to link these networks with other tie-ins such as special events and targeted Internet promotions," said Deb Durban, who heads Interep's Marketing Group. The unit is made up of specially trained radio marketing experts.

Generally, advertisers allocate only 3 to 8 percent of total media budgets to radio, according to Interep research. Using $234 billion as the accepted ad industry benchmark for advertising dollars spent on measured media in 2001, Interep's chairman, Ralph Guild, estimates that if just one-tenth of a share point of this total figure was re-allocated into radio, the medium would reap an additional $234 million.

With the tough economic conditions of past 18 months, a sense of urgency has descended upon radio sellers, particularly national spot marketers, to increase both new and traditional radio ad dollars so that the industry remains competitive with other media well into the future. This latest network offering builds upon Interep's "Radio:20:20" marketing initiative, launched last year to direct new advertisers into the medium.

Vincent M. Ditingo is an assistant professor of communication arts and coordinator of the radio program at the New York Institute of Technology. Contact him via e-mail to Vditingo@aol.com.

Agencies are under increased pressure to justify their media choices to their clients as well as offer fresh ideas for reaching consumers.

—Marc Guild, Interep

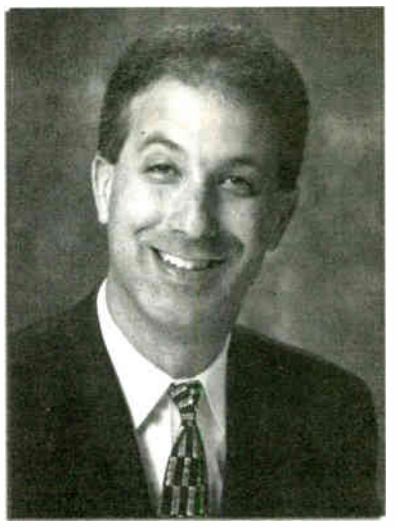
What's Your Station's E-Mail Plan?

"Your station sucks! You play the same songs over and over. Don't you know there are more than 20 songs in the world?"

"I heard your morning show guy say 'damn' around 6:20. If you think I'll listen to trash radio like that with my kids in the car, you're not very bright."

"Got any free T-shirts?"

Promo Power



by Mark Lapidus

"I've got a busted leg and can't get in my car this morning to buy Toby Keith tickets. Could you mail me some for free? By the way, I'd really like it if Toby could sign my cast, so it would be nice if you'd get me backstage."

Okay — these are not real e-mails; for one thing, the words are spelled correctly. But they do represent types of correspondence that radio stations receive daily.

R.B.E. ('Radio Before E-mail')

Before e-mail arrived on the scene, stations would occasionally receive letters via U.S. mail, or sometimes brave (or crazy) listeners would call stations and ask for a manager. But most listeners who wanted to ask a question or express an opinion would call the control room, and nobody in management would even know they had phoned.

Now e-mail has replaced regular mail and most phone calls — plus its ease and anonymity have enabled listeners to engage stations in far greater numbers with lots of frequency. E-mail's arrival as the main communication method between listeners and stations has happened so gradually that most stations have not devised a plan to deal with the larger amount of correspondence received.

How is e-mail delivered to your radio station? Your answer determines the basis for dealing with the flow. Most listeners likely are getting your e-mail addresses off your Web site, although some DJs no doubt mention their address on the air.

The more addresses you have on your site, the more likely it is that you are receiving multiple copies of the same e-mail from one listener.

For example, when a listener is irritated about something they feel is

See PROMO POWER, page 32 ▶

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HRS150
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HRS120
12" Active Subwoofer

HRS150 — Twice the output of the HRS120. Perfect for hip hop mixes or extra-large control rooms. Ideal for bass management applications.

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HR624
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The 6.7-inch, 2-way nearfield monitor that's more than just a smaller version of the HR824. The perfect monitor for those who need incredible midrange accuracy for lead vocal placement within the mix and for dialog replacement in post.

HR824
8.75" Active Studio Monitor

As the industry standard studio monitor, the 8.75-inch 2-way nearfield HR824 is ideal for those who need lots of bottom end, as well as comfortable sound for long sessions of general mixing.

HR626
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No matter what your application — from 7.1 surround to stereo monitoring, there's now a Mackie active monitor and subwoofer that will give you exactly what you want: unflinchingly accuracy. Our new HR626 has ten more square inches of active cone area than the HR824 for even mo' bass extension, yet is as tight and fast as the compact HR624. It makes a great main stereo monitor or center channel for surround mixing.

And speaking of mo' bass, the new HRS150 uses a 15-inch active driver, *two* 12-inch passive radiators and 950 watts of FR Series power to achieve frequency response that's only 0.5dB down at 10Hz. Yes, you read that right. Ten Hertz!

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Interactive

▶ Continued from page 27

by an individual artist that can be played in a given period of time (called the "recording complement"), and that outlaw pre-announcement of upcoming sound recordings.

While the copyright holder agreements are made outside the statutory license, those agreements generally have conformed to recording complement and pre-announcement provisions of the DMCA.

Listen.com was the first company to license sound recordings for subscription Internet play from all five major record labels. Listen also holds licenses from an array of smaller labels.

Subscription services such as Listen.com now offer radio-like services that allow users to customize their channels to some extent.

Listen, through its Rhapsody 1.5 service, offers Radio Plus, featuring CD-quality streams, 50 stations, no commercials and the ability to skip songs if desired.

The ability to skip songs without rebuffering is made possible because Listen caches upcoming songs on the listener's hard drive. (If the listener tries to skip too many songs, that button grays out until the caching system can get ahead and the function is available again.)

The Radio Plus product prevents a listener skipping songs from causing a recording complement violation.

"There's an algorithm that says what the song is, and even if you skipped a couple of songs it makes sure it implements correctly," said Listen CEO Sean Ryan. "Every time you hit skip, or every time the next song triggers, it takes a look at what you played and what time period, and knows what the next song can be. We find it hasn't been a problem," said Ryan. "People don't skip that often."

Licensing music from so many labels was a mammoth undertaking for Listen.

Creating 'my radio station'

Noting that such individual negotiations would tax the resources (and patience) of traditional radio broadcasters, Radio Computing Services Inc. has created iSelector service, a service to allow a station to offer a branded, user-customizable subscription service.

RCS announced at the NAB Radio Show that it had reached licensing agreements with four of the five major labels and many smaller ones to stream music on the subscription service. This will allow listeners to create modified online versions of their favorite radio stations by indicating artist preferences or blocking out certain cuts and artists. The station still controls which audio is available to the listener, who presumably has a more satisfactory listening experience.

"There is nothing for the radio stations to do other than promote the Web interactive radio on the air and provide us with their IDs, liners, promos, whatever they want to communicate to the listener," said Philippe Generali, president of RCS.

The station provides RCS with a copy of its existing Selector program schedule; RCS does the rest. It holds the recording company copyright licenses for the iSelector service and pays any fees. RCS collects the subscriptions.

The price for the iSelector service to the end user is $4.95 per month.

Because iSelector is a subscription service, "the radio station doesn't pay us," said Generali. "The listener will pay to listen to iSelector, to the customized channel of 'my radio station.' We'll share (the subscription fees) with the radio station."

The station doesn't even have to own an RCS Selector scheduling system, though Generali said, "If you're not a Selector customer, we're going to start by bugging you about becoming one, that's only fair. But that's okay; we can work with anybody."

RCS is content to stay in the background. As far as the listener can tell, he has linked to the station's subscription service from the station Web page. All the branding reflects the station.

"In iSelector the listener has the ability to ask for depth tracks, where the listener wants to listen to more album tracks from the artist," said Generali. "They might want to say, 'I want more, deeper tracks from Bruce Springsteen,' and we're going to be playing album tracks."

Despite the need to conform the iSelector service to the DMCA sound recording complement strictures, Generali said RCS left nothing out.

"We did not have to back off from any of our ideas. They're all very effective in terms of customizing the station for the listener. For example, we don't think playing the same song 100 times will be an interesting idea."

Research options

In addition to helping to brand and cross-promote the terrestrial radio station, Generali points to the research possibilities that a listener-customizable Internet radio channel offers the station and the labels.

"The listener will be able to send a message to the station by saying, 'I like this song. I don't like this one. This one I've heard it too much.' Not even expressing verbally but by clicking on the controls iSelector makes available, this information will be sent back to the radio station.

"It's going to be really a two-way communication with each individual listener. It's probably the dream of every program director."

That same information can be valuable to the recording companies as well, helping them feel the pulse of music customers.

Generali said RCS had pilot stations with many major radio groups testing the system, and that they have dozens of stations committed to iSelector once the service is launched publicly. RCS is awaiting some final negotiations to be completed with record labels before flipping the switch.

Philippe Generali

iSelector subscription fees will be collected from listeners by RCS.

RealNetworks Inc., the pioneers of Web streaming, in late August rolled out its own turnkey subscription service to Internet radio stations, allowing them to join its RadioPass subscription tier. KPIG, the first traditional radio station to stream its programming over the Web, has moved its station stream to RadioPass.

As Internet radio searches for the successful advertiser-supported free stream of programming, traditional and Internet-only radio stations are finding the subscription model attractive because it pays the incremental bandwidth and licensing costs as each listener tunes in.

Promo Power

▶ Continued from page 30

your station's responsibility, it's possible they'll send the note to one or two DJs and copy someone with a management title.

"Yeah, yeah, Mark," I can hear you saying. "I know this! Why are you making a big deal out of it?"

Why the big deal?

I point it out because the flow of the e-mail partly determines your policy on how to deal with it. A few questions to consider: Do you really want three different people responding to this same e-mail, perhaps with contradictory replies?

Does your market manager focus on an e-mail not for its content, but just because he received it? Are you wasting effort because everyone just does what he feels like? Is it possible that nobody is responding at all?

Here's a suggested plan:

1.) Have your DJs answer e-mails sent directly to them if the material is regarding something they would usually answer on the request line — like what year a certain song was recorded, or questions about event, or an opinion about music.

2.) DJs should not respond to complaints about anything. Unless they are exceptional writers and pretty good at playing the part of a politician, there is no upside in making on-air personnel become defensive about either their performance or that of your station.

DJs should forward all complaints to one designated manager who is skillful enough to validate the complainant's feelings, yet also understand when the issue is serious enough to warrant legal concern.

How is e-mail delivered to your radio station? Your answer determines the basis for dealing with the flow.

For example, suppose your station promised a listener a certain prize, but never came through with it. The winner then e-mails the station a complaint about never receiving the prize. This can become a matter that goes all the way to the FCC if you don't deal with it properly.

3.) If a listener has copied more than one radio station staffer, only one person should respond — and this would be that same person appointed to deal with the issues described above.

You may wish to have this person blind-copy those same station staffers, so you're all on the same page in terms of how you're dealing with any issue.

4.) Threatening e-mails should be taken seriously. Call your local police department immediately.

If you don't like this plan, I encourage you to devise your own. At least create an agreement between your programming and marketing departments on how to deal with e-mail.

Finally, look for trends in the opinions you receive via e-mail. If listeners consistently tell you they like or dislike something your station is doing, consider what this issue means to your future success. Happy reading!

Mark Lapidus is president of Lapidus Media. Reach him via e-mail to marklapidus@yahoo.com.

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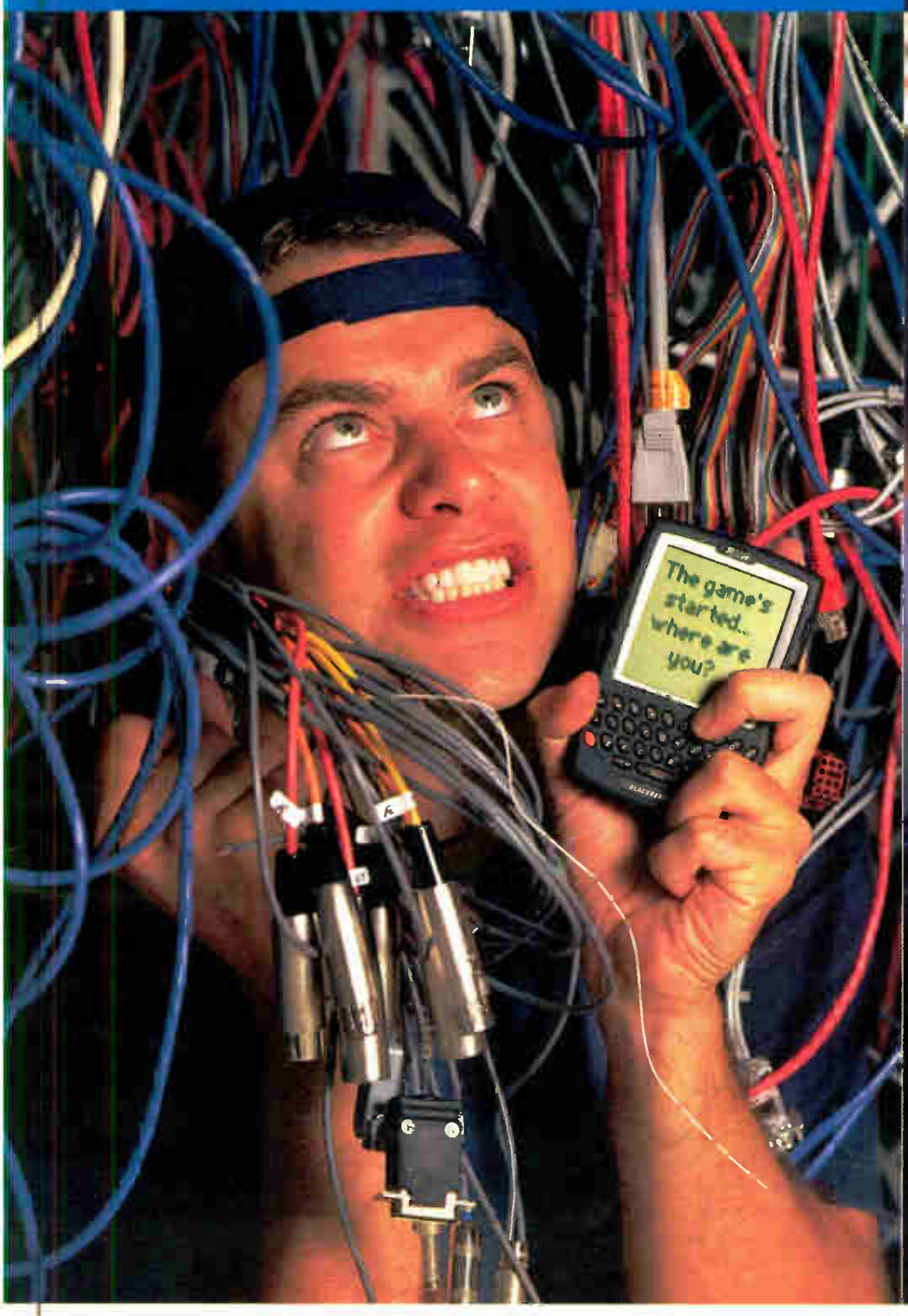

Is your digital audio delivery system keeping you from the big game?

Since 1984, over 500 radio stations around the world have trusted iMediaTouch broadcast automation software. With a host of award winning features designed to save both time and resources without breaking the bank, the iMediaTouch digital audio delivery system is easy to use and dependable time after time.

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omt technologies

Fox Agency Reps a Million Songs

by Ken R.

From the time a song is recorded until the time it is aired on your station, downloaded from the Internet or purchased in a store, many organizations touch it along the way.

Whether that song is created on a cheap cassette recorder in someone's garage to be sold to fans at local gigs, or direct to 96-track hard drive in a showcase facility in Los Angeles for worldwide distribution, the same rules apply.

One of the first steps in the chain is the U.S. Copyright Office, a governmental body that issues certificates to the composers of the music that prove ownership in case of dispute.

Most stations are familiar with ASCAP, BMI and SESAC, the organizations that license the performance of those songs on your stations. These are additional ways music makers assure they are paid for their work.

The Recording Industry Association of America, RIAA, is a trade group comprising dues-paying record labels. RIAA defends its members against piracy, tries to shape legislative policy on Internet matters and works to prevent censorship of music.

But who the heck is the Harry Fox Agency?

Mechanical licensing

Before we introduce this lesser-known but vital link in the musical chain, an explanation of licensing is in order.

Every song can be licensed in at least three ways. The performance organizations mentioned handle one aspect. For example, a tune is played on the radio or in front of an audience during a concert. In those cases, ASCAP, BMI or SESAC collects the money and distributes it to the publishing companies, which pay the composers.

Synchronization rights are invoked when the music accompanies a picture, such as a movie or TV show. These dollars flow between the production company and the publishers who are free to agree upon appropriate fees; a portion of this money filters down to the composers and musicians.

Mechanical licenses are written authorizations from the publishers to manufacture and distribute a sound recording on a CD, tape or vinyl record or in digital form over the Internet.

The Harry Fox Agency, Inc.

That is where Harry Fox comes in.

HFA was established in 1927 by the National Musical Publishers Association, NMPA. The latter negotiates rates, lobbies on behalf of its members and in some cases, litigates for its clients. The Harry Fox Agency is the licensing subsidiary of NMPA.

To discuss the function of HFA, Radio World spoke to President/CEO Gary L. Churgin.

***RW:** How and why does the money pass through HFA, and how much are we talking about each year?*

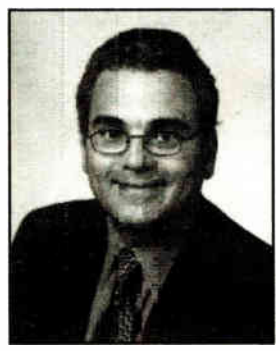
Churgin: We represent music publishers to the record companies and Internet subscription services in licensing copyrighted work. We issue licenses and then collect royalties on behalf of our publishers and audit manufacturers to make sure proper royalties are paid.

Last year we licensed about $450 million in royalties.

***RW:** Are radio stations involved in this transaction?*

Churgin: No. Stations are impacted through the performance-rights organizations such as ASCAP and BMI.

We get involved every time a record or CD is manufactured. A royalty is paid which we collect for the publishers who in turn pay the songwriters.



Gary L. Churgin

***RW:** What happens when an advertiser wants to use a pop song in a commercial?*

Churgin: That's between the publisher and the advertiser or producer of the commercial. We are not involved.

***RW:** How many publishers do you represent, and do they have to deal with your organization?*

Churgin: Right now we work with more than 27,000 music publishers, but they are not obligated to work with us. However, we add tremendous value to the licensing process since we are one entity that represents over a million songs. Thus, it's easier for the people paying out the money to deal with our organization than with all the members individually.

***RW:** How much does a mechanical license cost?*

Churgin: The statutory rate is 8 cents, or 1.55 cents per minute or fraction of a minute, whichever amount is larger, per copy of the song pressed. We take a commission and pass the rest on to the publishers.

***RW:** Do songs have to have mechanical licenses if they are downloaded onto a computer instead of sold in a store?*

Churgin: Yes. When a song is downloaded to a PC or onto a chip, that's known as a permanent download, and it must be licensed. The licensee reports back to us the number of these downloads, and appropriate fees are paid.

***RW:** How do you know you're getting honest reports of copies pressed or downloaded?*

Churgin: We audit all large record companies at least every two years, at times much more often if we see big swings in income. We are involved with as many as 50 or 60 audits at any one time. If a company is underreporting, it can lose its right to sell music and litigation may be triggered. These companies know that we audit frequently and it has a deterrent effect.

***RW:** Let's consider the case of a Las Vegas show, where the music was recorded once but is played back on CD or from a computer. Do you collect money for those shows?*

Churgin: We collect when the music is recorded onto the CD or digitally distributed to the public. The performance organizations such as ASCAP and BMI would handle the performance revenue.

***RW:** What is your biggest lobbying issue right now?*

Churgin: The NMPA is very interested in preserving mechanical rights in a digital environment. We are very concerned about unlawful use of copyrights. We would like to see music widely used on the Internet, but we don't want it stolen.

Visit these Web sites to learn more about how music is protected:

NMPA: *www.nmpa.org*
ASCAP: *www.ascap.com*
BMI: *www.bmi.com*
SESAC: *www.sesac.com*
Harry Fox Agency: *www.harryfox.com*
U.S. Copyright Office: *www.loc.gov/copyright*
RIAA: *www.riaa.org*

We are very concerned about unlawful use of copyrights. We would like to see music widely used on the Internet, but we don't want it stolen.

— Gary L. Churgin

Classical Listeners Like To Spend Online

Hint to Web marketers: Put classical music to work.

We already know classical is popular online, thanks to various listening statistics. Now Scarborough Research says classical radio fans love to spend online, purchasing goods and services via the Net at a rate "well above average."

They are 30 percent more likely to have made an Internet purchase in the past 12 months and they are 49 percent more likely to have spent $1,000 or more during the past year.

"Classical listeners prefer to purchase items online that are consistent with their well-educated, upscale reputation," the company stated, including airline tickets, books and computer hardware. They are 47 percent more likely to have a DSL broadband connection at home.

Interesting geographical info: Six percent of American adults listened to classical radio in the past week. In Washington, that number was 16 percent. West Palm Beach, Fla., Harrisburg, Pa. and Minneapolis were other cities with high classical listening.

Net Radio

▶ Continued from page 27

broadcasting-related revenues count a part of their gross revenues under the plan.

In the waning hours of Oct. 17, before the U.S. Senate adjourned to campaign for election, Sen. Jesse Helms, R-N.C., raised objections to the House-passed Small Webcaster Amendments Act of 2002, HR 5469. Because unanimous consent was necessary to pass a measure at that late date, without going through the normal legislative process, Helms' objection was enough to stop the bill.

No interest group has been identified as the source of Helms' objection to the bill, but the NAB, college radio stations, mid-size and large Webcasters, hobbyists and telecommunication firms all have voiced objections to HR 5469, saying that it may set dangerous precedents. They also worry that though it was written for a group of small Webcasters, the bill might give Congress the impression it had fixed the Webcasting problem.

Our legal counsel advised us to pay.

— Brian Parsons,
Clear Channel Radio Interactive

Helms and other legislators seem bent on a wider rewriting of the DMCA and its predecessor, the 1995 Digital Performance Right in Sound Recordings Act. Reps. Jay Inslee, D-Wash., and Rick Boucher, D-Va., introduced their Internet Radio Fairness Act in July, but the measure was lost in congressional activity over homeland security and the economy.

Any such major rewriting of the DMCA and DPRA is not expected to be acted upon until 2003, when a new Congress is seated. That leaves as an open question what happens to SoundExchange's plan to collect from small Webcasters whatever fees the current Congress determines.

Internet radio operators who don't qualify as small Webcasters have monthly copyright royalty payments due 45 days after the end of each month. The first such due date was Nov. 14, for streaming done during the month of September.

Broadcasters may still have their day in court coming. An appeal of the Copyright Office's determination that broadcasters are subject to those fees is scheduled for early December in the Court of Appeals for the Third Circuit in Philadelphia.

Interep/SBS Program Attracts Industry Execs

Radio's role in multicultural marketing was the focus of a recent symposium in New York City.

Interep and Spanish Broadcasting System's "Power of Hispanic Radio" event drew han 250 advertisers, marketers and ad agency executives. The program was part of Hispanic Heritage Month with a mix of speakers, panel discussions and Latin musical entertainment.

Conference discussion threads centered around the consumer power of the U.S. Hispanic marketplace, diversity within the Latino population, its escalating influence and the growth potential to companies that make an effort to reach out to this community.

Isabel Valdes keynoted the event. She authored the book "Marketing the American Latinos: A Guide to the In-Culture Approach."

A Webcast of the symposium is available at *www.interep.com* or at *www.thepowerofhispanicradio.com.*

STATION SERVICES

Maximi$er Plus Assists Stations In Targeting Consumers

Arbitron Inc. is releasing a national regional radio audience information service called Maximi$er Plus. The service offers access to ratings information based on custom clusters of stations located across multiple markets and countries from Arbitron-surveyed markets in the United States.

A full set of diary-level data can be accessed in one database, including demographic and socioeconomic coverage such as income, education, presence of children and race/ethnicity information.

Maximi$er Plus data sets are expected to be released semiannually following the spring and fall releases for local markets. Data can be assembled by radio groups or stations on a multimarket or county basis.

For more information visit www.arbitron.com.

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Studio Sessions

Selling Jingles On the Net
See Page 38

Radio World — Resource for Radio On-Air, Production and Recording — November 20, 2002

Glossary of Sound Quality Terms

by Bruce Bartlett

The sound of effects and equalization can be hard to translate into engineering terms.

For example, what sort of EQ should you use to get a "fat" sound or a "thin" sound? Does your station sound "meaty" or "squashed?"

This glossary may help. It is based on conversations with producers, musicians and reviewers over many years. While not everyone agrees on these definitions, they are common.

Airy: Spacious. The instruments sound like they are surrounded by a large reflective space full of air. Some leakage between microphones. A pleasant amount of reverb. High-frequency response that extends to 15 or 20 kHz.

Ballsy or Bassy: Emphasized low frequencies below about 200 Hz.

Bloated: Excessive mid-bass around 250 Hz. Poorly damped low frequencies, low-frequency resonances.

Bloom: Adequate low frequencies. Spacious. Good reproduction of dynamics and reverberation. Early reflections or a sense of "air" around each instrument in an orchestra.

Boomy: Excessive bass around 125 Hz. Poorly damped low frequencies or low-frequency resonances.

Boxy: Having resonances as if the music were enclosed in a box. Speaker cabinet diffraction or vibration. Sometimes an emphasis around 250 Hz to 500 Hz.

Breathy: Audible breath sounds in vocals, flute or sax. Good or emphasized high-frequency response.

Bright: Strong in the treble. High-frequency emphasis. Harmonics are strong relative to fundamentals.

Brittle: High-frequency peaks, or weak fundamentals. Slightly distorted or harsh highs. Opposite of round or mellow. (See *Thin.*) Objects that are physically thin and brittle emphasize highs over lows when you crack them. Bad A/D converters with low bit depth can sound brittle.

Chesty: The vocalist sounds like his or her chest is too big. A bump in the low-frequency response around 125 to 250 Hz.

Clean: Free of noise, distortion and leakage.

Clear: See *Transparent.*

Clinical: Too clean or analytical. Emphasized high-frequency response, sharp transient response. Not warm.

Colored: Having timbres that are not true to life. Non-flat response, peaks or dips.

Constricted: Poor reproduction of dynamics. Dynamic compression. Distortion at high levels. (Also see *Pinched.*)

Crisp: Extended high-frequency response. Like a crispy potato chip, or crisp bacon frying. Often referring to cymbals.

Crunch: Pleasant guitar-amp distortion.

Dark; Dull: Opposite of bright. Weak high frequencies.

Delicate: High frequencies extend to 15 or 20 kHz without peaks. A sweet, airy, open sound with strings or acoustic guitar.

Depth: A sense of closeness or distance of instruments, caused by miking them at different distances. Good transient response that reveals the direct/reflected sound ratio in the recording.

Detailed: Easy to hear tiny details in the music; articulate. Adequate high-frequency response, sharp transient response.

Dry: Without effects. Not spacious. Reverb tends toward mono instead of spreading out. Overdamped transient response.

Edgy: Too much high frequency. Trebley. Harmonics are too strong relative to the fundamentals. When you view the waveform on an oscilloscope, it even looks edgy or jagged, due to excessive

See SOUND TERMS, page 41 ▶

PRODUCT EVALUATION

Sound Forge 6.0: A Worthy Upgrade

by Read G. Burgan

It is the nature of software companies to create new versions. But is it in the best interest of the user to buy them?

Sonic Foundry has introduced the latest version of its justly popular two-track digital audio editing software Sound Forge Version 6.0.

In the years since it was first introduced, Sound Forge has found a home with broadcast producers, audio and video studios, streaming media producers and others who need a full-featured, professional-grade, digital audio editor.

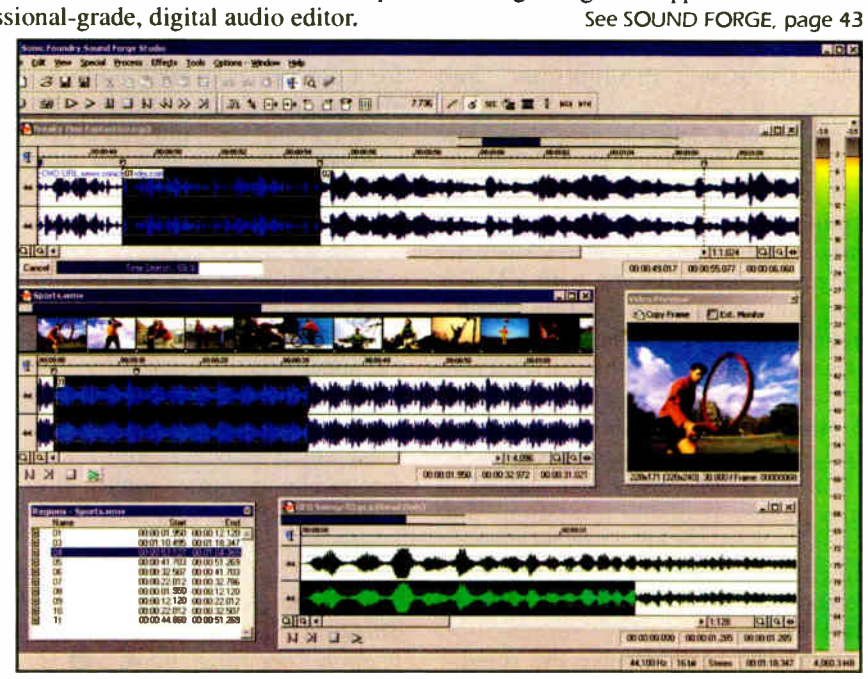
But should you upgrade to Sound Forge 6.0?

Sit back, put your feet up and let me take you on a tour of some of the features that I like best.

High on my list of improvements is nondestructive audio editing. In the past, whenever a process was applied to a sound file in SF, it was necessary to wait while the software made a second copy of the file in case you wanted to revert to the original.

Under Sound Forge 6.0, processing or editing changes are applied instantaneously;

See SOUND FORGE, page 43 ▶



The Dragonfly Has Landed

by Ken R.

Since the 1950s, ID jingles have been sold in the same manner. The process begins when the client radio station calls the jingle companies and requests demos of packages in the appropriate musical format. Demos originally were sent out on reels through the 1970s, then cassettes and reels until the late 1980s, now on CDs almost exclusively.

Step two: The salesperson calls back and handles the copious details of helping the program director select the right package and cuts. Then comes the haggling over price, nailing down lyrics, arranging for payment and finally scheduling the package to be produced.

A new approach

David Graupner, president and CEO of TM/Century, Dallas, thought this was tedious and expensive. He wanted to come up with a new approach.

"For the stations billing millions of dollars a year and which can readily afford $300 to $700 per jingle, the old way isn't a problem. But because of the labor-intensive nature of this style of sales, many smaller stations and potential international clients are left out of the picture," said Graupner.

"A station in New York might get $2,500 for each commercial they sell. Some stations in Nebraska, where I'm from, only get $12 a shot. I thought there had to be a way we could provide jingles less expensively for these people."

There were a lot of details to be ironed out for this new Internet operation to be successful. If TM/Century sold jingles for about half price ($150 for re-sings instead of $300), the company could not make money without having a full session. This meant the Dragonfly clients might have to wait until a group of others stations bought enough cuts to fill up a typical four-hour vocal session.

A different group of singers would have to be used. They still had to be excellent, but the traditional vocal group was paid by the hour and that was too expensive to carry as overhead.

The new singers would be younger, fresher faces who would be paid by the cut. This would encourage them to strive for excellence and not waste time.

The packages offered to Dragonfly buyers would not be the hottest, newest ones, but they would not be horribly out of date, either. Dragonfly packages would be from the last few years, material that has already paid for itself.

Clients would be politely barred from the studio.

"They tend to slow things down and want explanations of everything," said Graupner. "It's a luxury we can afford at TM/Century, but not Studio Dragonfly."

The company would still have to turn out a great product and stand behind it in terms of customer satisfaction, but the clients would get an additional break by being allowed to put down just 20 percent of the package price and pay the rest off over a year.

Wendy DeCrow and Joel T. Rutherford

From Left: DeCrow, Rutherford, Abby Holmes, Clancy and Steve DeCrow

Graupner analyzed where the money goes in a typical jingle purchase and discovered that a lot of the costs were unnecessary. In 2001, TM/Century sent out about 80,000 demo CDs. Add up those costs plus postage and handling and it is some serious money.

"Then it dawned on me that if we could move some of the legwork to the client we can get those costs down," he said. "I knew that the Internet had to be a key as I thought about companies like Travelocity and Expedia where the customer does a lot of the work."

TM/Century thus started a new division: *www.studiodragonfly.com*.

Jingle purchasing is still a complex process and some clients do not want to do the work themselves.

That is fine with Graupner, who compares it with the difference between flying first class and flying coach. The coach people still get there at the same time, but the first class people have comfier seats, free drinks and a movie. The coach customers, however, pay far less.

"We can afford to do this because IDs are a small part of our business," said Graupner. "We are heavily involved in library sales and Hit Discs (current music supplied on CD) which we sell by subscription. We have a good balance sheet."

Dragonfly clients would go to the Internet, select the category of jingles they need, listen to the demos, download the lyric sheets and design their own packages.

TM/Century put up the *www.studiodragonfly.com* Web site and customers soon began to order. They landed in capable hands.

The leader of the vocal group is Greg Clancy, who while still in his 30s has been singing professionally for 16 years. Clancy is in high demand for studio work in Dallas and he gets his skills honestly. His father is legendary jingle singer Jim Clancy, who began his career in the late 1950s and is who still sings today on a free-lance basis for companies such as JAM Creative Productions and TM/Century.

Greg Clancy does not sing those low bass lines like his father; his voice is better-suited to lead and tenor parts. Clancy certainly shares his dad's love of vocal music and his courtly manner. Clancy the younger speaks softly and with a Dallas twang you could hang a hat on, but his singing voice is clear and accurate.

He is one of the fastest sight-readers in town and is skilled at adapting, which is the process of writing variations of each jingle package as new clients order them.

"I think TM/Century just wanted to make jingles available to stations that couldn't otherwise afford to buy them," said Clancy. "They needed one experienced person in the vocal group and they asked me."

Dragonfly couldn't use the regular vocal group, so where would the singers come from?

Greg Clancy

"I use singers I know from my avocation which is ensemble and choral singing," said Clancy. "They are great harmony singers, just not as seasoned in the studio."

Is Clancy crafting the Dallas vocal group of the future? He doesn't think so.

"These people are good singers, but they have other jobs," he said. "I think they simply view this project as a creative outlet for their talents. I don't consider this group a 'farm system' for the 'A' group."

The group uses five singers, which means that for jingles requiring seven notes in a chord, extra layers of the same singers are added.

"We are trying to keep our costs down every way we can," said Clancy.

What does the product sound like? Very good. In fact, to the typical listener, it is nearly indistinguishable from the expensive packages of TM/Century.

Graupner sent this writer a group of the first few Studio Dragonfly packages to roll off the line for clients as diverse as KQLQ(FM), Monroe, La; B&V Publishing; Lelysted Netherlands and something called Party Planet, based in Providence, R.I. The singing is excellent and the stations still get all those extra mixes of each cut they buy, which are detailed on a colorful cut sheet.

Taking flight

Jingles, no matter how expensive or inexpensive they may be, are rather labor-intensive. They all have to be adapted, sung one at a time and they all have to be mixed and mastered.

"You can't make dough rise any faster so the toughest thing for us is to get the biggest bang for the buck," said Graupner.

The plan is to gradually offer products from companies in addition to those created by TM/Century through *www.studiodragonfly.com*. And that appears to be happening already with the addition of several packages from another Dallas producer, Gerald Stockton.

The name Dragonfly came about when Graupner was sitting out in his backyard having a drink, and a dragonfly landed on his glass. "I knew that was it," Graupner said.

According to the British Dragonfly Society, the life expectancy of one of these small insects is anywhere from a few weeks to a few months. It is likely that Studio Dragonfly will be around a lot longer.

Ken R. is a former ID jingle producer who writes frequently for Radio World. This article is adapted from his new publication "The Jingle Book."

Moody Broadcasting Network named **Mark Williames** national technical service manager. He was chief engineer for CBS/Infinity's WBBM(AM/FM) Chicago.

Three senior VPs at **Premiere Radio Networks** were promoted to executive VPs. **Lark Hadley** is executive VP of engineering and technology. **Martin Raab** is executive VP of marketing and chief strategy officer. **Eileen Thorgusen** is executive VP of affiliate relations.

Clear Channel Radio reorganized the corporate engineering staff. **Jeff Littlejohn**, senior VP of engineering services, adds engineering administration to his responsibilities.

Waitt Radio Networks hired **Erle Younker** as VP of affiliate relations. **John Krogstad** was added as regional manager for the Central states. **Michael Payne** was promoted to VP/regional manager. **George Pelletier** climbed from VP of operations to senior VP.

Dave Lebolt Brian Divine

Lark Hadley Allan Nichols

Jaques Tortoroli joined **Infinity and Westwood One** as CFO. David Goodman is executive VP marketing for **Infinity**.

Mickey Levitan is now senior VP of human resources at **Emmis Communications.**

Carla Griffin becomes **Radio One Atlanta's** director of marketing and promotions.

Dr. Paul Virts, executive VP/COO of **Leading the Way Ministries** with Dr. Michael Youssef in Atlanta, Ga., was named senior VP for media at **Northwestern College & Radio**.

Birach Broadcasting Corp. hired radio executive **Glenn Leeder** as executive VP for **AMF Radio Networks**.

ClearOne Communications Inc. named **R. Scott Newth** as VP of business services.

NPR News correspondent **Melissa Block** and journalist **Michele Norris** join Robert Siegel as hosts of "All Things Considered." **Steve Inskeep** recently became the regular weekend host.

Tyler Callis is covering the South Texas sales region for **Image Technics**, and continues to work with SCMS for audio and RF equipment, and Music 1 music scheduling software.

Pulizzi Engineering added **FTM Associates** as its manufacturer's representative.

Brian O'Connell moved up to VP of sales and marketing with **Belden Electronics**.

Digidesign promoted **Dave Lebolt** to senior VP of **Avid Technology Inc.** and General Manager of Digidesign.

Allan Nichols was appointed sales director for **Allen & Heath USA**.

Crown International appointed **Brian Divine** as marketing communications manager. **Nick Owen** was hired on as the sales director for Europe/U.K., the Middle East and Africa.

Kenwood USA named **Mike Bergman** director of R & D for digital broadcast products.

Encoda Systems Inc. appointed **Robin Adams** as president of its automation solutions division. **Robert Duncan** is now the president of Encoda's media management solutions division.

Richard Frank was named director of international sales for **Harris Broadcast Communications**. **Scott Berger** joined the company as an inside sales representative.

DK-Audio appointed **Peter Staal** to the position of project engineer in its research and development department.

Listen Technologies Corp. added **Jodi Reese** as an internal sales representative in its Utah Headquarters. **Frank Frombach** came on board as a regional sales manager.

LPB Communications promoted **Enrique Lanz** to director of low-power systems.

ITupside Inc., doing business as **Radio Web Network**, added **Edward Hardy**, a former Measurecast CEO, to its board.

AEQ has expanded its sales team with the addition of **Lars Beyer**, who will cover Northern Europe and project sales.

Matrix Solutions made **Dennis Grinberg** its director of software development. **Jeff Heleniak** was promoted to director of customer support. **Laureen Foster** is now the director of training services.

Christopher Conway joined **Eventide Inc.** as COO. **Anthony Agnello** returned to the company as the CTO.

Among research firms, marketers and consultants: **Michael J. McCarthy**, a new partner at **Wiley Rein & Fielding**, has joined its communications practice.

Henk Brands joins the law firm of **Paul, Weiss, Rifkind, Wharton & Garrison** as a partner in its Communications & Technology Group.

BIA Digital Partners LP added **Damien Dovi** as an associate responsible for providing analytical and transaction support, as well as identifying investment opportunities.

Knowledge Networks appointed **Steve Libroia** as its CEO.

Kirkegaard Associates elevated **Terrence M. Tyson, P.E.** and **Eric J. Rosenberg, P.E.** to senior consultants.

PRODUCT GUIDE

Mackie Monitor Features D'Applolito Design

The newest addition to the Mackie Designs line of HR Series Active Studio Monitors was unveiled at AES in Los Angeles.

The HR626 dual 6-inch active studio monitor is the first to use the D'Applolito driver alignment design (a speaker configuration in which a tweeter is sandwiched between two midrange drivers), which is said to provide outstanding bottom end and pinpoint low-level accuracy of the mid-range.

The symmetrical left-right soundfield of the HR626 has the correct shape for center channel applications in 5.1 and 7.1 surround systems.

The monitor is THX PM3 certified. HR active studio monitors use a high-frequency Waveguide-loaded 1-inch dome tweeter for crisp, evenly dispersed highs along with dual 6.7-inch low-frequency drivers that can provide extended low-frequency response while preserving the speed and accuracy of a single 6-inch design. Dual 6.7-inch drivers work with the rear-firing passive transducer to provide bass extension to 40 Hz.

For more information contact the company in Washington state at (425) 487-4333, fax (425) 487-4337 or visit www.mackie.com.

Sound Terms

▶ Continued from page 37

high frequencies. Distorted, having unwanted harmonics that add an edge or raspiness to the sound.

Effortless: Low distortion, usually coupled with flat response.

Etched: Clear but verging on edgy. Emphasis around 10 kHz or higher.

Fat: See *Full* and *Warm*. Also, a diffuse spatial effect. Also, smeared out in time, with some reverberant decay.

Focused: Referring to the image of a musical instrument, which is easy to localize, pinpointed, having a small spatial spread.

Forward: Sounding close to the listener, projected. Emphasis around 2 to 5 kHz. Also, loud in the mix.

Full: Opposite of *Thin*. Strong fundamentals relative to harmonics. Good low-frequency response, not necessary extended, but with adequate level around 100 to 300 Hz.

Gentle: Opposite of edgy. The harmonics — highs and upper mids — are not exaggerated, or may even be weak.

Glare, Glassy: A little less extreme than edgy. A little too bright or trebley.

Grainy: The music sounds like it is segmented into little grains, rather than flowing in one continuous piece. Not liquid or fluid. Suffering from harmonic or I.M. distortion. Some early A/D converters sounded grainy, as do current ones of inferior design. *Powdery* is finer than *Grainy*.

Grungy: Lots of harmonic or I.M. distortion.

Hard: Too much upper midrange, usually around 3 kHz. Also as with good transient response, as if the sound is hitting you hard.

Harsh: Too much upper midrange. Peaks in the frequency response from 2 to 6 kHz. Or, excessive phase shift.

Heavy: Good low-frequency response below about 50 Hz. Suggesting an object of great weight or power, like a diesel locomotive or thunder.

Hollow: Too much reverberation or when there is a mid-frequency dip. (Also see *Honky*.)

Honky: The music sounds the way your voice sounds when you cup your hands around your mouth. A bump in the response around 500 to 700 Hz.

Liquid: Opposite of *Grainy*. A sense of seamless flowing of the music. Flat response and low distortion. High frequencies are flat or reduced relative to mids and lows.

Low-fi (low fidelity): "Trashy" sounding. Tinny, distorted, noisy or muddy.

Meaty: A combination of *Crunch* and *Warmth*. Pleasant amount of low frequencies, perhaps with some euphonic distortion or compression.

Mellow: Reduced high frequencies, not edgy.

Muddy: Not clear. Weak harmonics, smeared time response, IM distortion. Too much reverb or leakage at low frequencies.

Muffled: The music sounds covered up. Weak highs or weak upper mids.

Musical: Conveying emotion. Flat response, low distortion, no edginess.

Nasal: The vocalist sounds like he or she is singing with the nose closed. Also applies to strings. Bump in the response around 300 to 1,000 Hz. (See *Honky*).

The sounds of effects and equalization can be hard to translate into engineering terms.

Neutral: Accurate tonal reproduction. No obvious colorations. No serious peaks or dips in the frequency response.

Papery: Referring to a kick drum that has too much output around 400 to 600 Hz.

Pinched: Narrowband. Midrange or upper-midrange peak in the frequency response. Pinched dynamics are overly compressed.

Piercing: Strident, hard on the ears, screechy. Having sharp, narrow peaks in the response around 3 kHz to 10 kHz.

Present, presence: Adequate or emphasized response around 5 kHz for most instruments, or around 2 to 5 kHz for kick drum and bass. Having some edge, punch, detail, closeness and clarity.

Puffy: Bump in the response around 500 to 700 Hz.

Punchy: Good reproduction of dynamics. (But note, some people call the sound of compression "punchy." Go figure.) Good transient response. Sometimes a bump around 200 Hz.

Raspy: Harsh, like a rasp. Peaks in the response around 6 kHz, which make vocals sound too sibilant or piercing.

Rich: (See *Full*.) Also, having euphonic distortion made of even-order harmonics.

Round: High-frequency rolloff or dip. Not edgy.

Sharp: See *Strident* and *Tight*.

Sibilant, Essy: Exaggerated "s" and "sh" sounds in singing, caused by a rise in the response around 5 to 10 kHz.

Sizzly: (See *Sibilant*.) Also, too much highs on cymbals.

Smeared: Lacking detail. Poor transient response. This may be a desirable effect in large-diameter microphones. Also, poorly focused images.

Smooth: Easy on the ears, not harsh. Flat frequency response, especially in the midrange. Lack of peaks and dips in the response.

Spacious: Conveying a sense of space, ambience, or room around the instruments. To get this effect, mic farther back, mix in an ambience microphone, add reverb or record in stereo. Components that have out-of-phase crosstalk between channels may add false spaciousness.

Squashed: Overly compressed.

Steely: Emphasized upper mids around 3 to 6 kHz. Peaky, nonflat high-frequency response. (See *Glassy, Harsh, Edgy*.)

Strained: The component sounds like it's working too hard. Distorted. Inadequate headroom or insufficient power. Opposite of effortless.

Strident: See *Harsh* and *Edgy*.

Sweet: Not strident or piercing. Flat high-frequency response, low distortion. Lack of peaks in the response. Highs extend to 15 or 20 kHz, but they are not bumped up. Often used when referring to cymbals, percussion, strings, and sibilant sounds.

Thin: Fundamentals are weak relative to harmonics. Note that the fundamental frequencies of many instruments are not very low. For example, violin fundamentals are around 200 to 1,000 Hz. So if the 300 Hz area is weak, the violin may sound thin — even if the violin mic's response goes down to 40 Hz.

Tight: Good low-frequency transient response. Absence of ringing or resonance when reproducing the kick drum or bass. Good low-frequency detail. Absence of leakage. Also refers to highly synchronized playing of musicians.

Tinny, Telephone-Like: Narrowband, weak lows, peaky mids. The music sounds like it's coming through a telephone or tin can.

Transparent: Easy to hear into the music, detailed, clear, not muddy. Wide flat frequency response, sharp time response, very low distortion and noise.

Tubby: See *Bloated*. Having low-frequency resonances as if you're singing in a bathtub.

Veiled: The music sounds like you put a silk veil over the speakers. Slight noise or distortion, or slightly weak high frequencies.

Warm: Good bass, adequate low frequencies, adequate fundamentals relative to harmonics. Not thin. Or, excessive bass or midbass. Or, pleasantly spacious, with adequate reverberation at low frequencies. Or, gentle highs, like from a tube amplifier. See *Rich*.

Wooly or *Blanketed*: The music sounds like there's a wool blanket over the speakers. Weak high frequencies or boomy low frequencies. Sometimes, an emphasis around 250 to 600 Hz.

Tell us about your special words to describe the sounds of audio and radio. Write to radioworld@imaspub.com.

Products & Services SHOWCASE

Sound Forge

▶ Continued from page 37

no more waiting while a new copy is created. Considering the large number of cutting, pasting, equalization and other processes applied to an average project, this results in tremendous savings in time.

All this is done nondestructively. You can access the "View Undo/Redo History" and revert to any previous level. Using SF 4.5, cutting one second of material from a one-hour 44.1 kHz WAV file required more than a minute. Using Sound Forge 6.0, the cut takes place faster than you can blink an eye.

Second on my list of favorite improvements is what Sonic Foundry terms "modeless audio plug-in chainer."

Pervious versions of Sound Forge also contained an audio plug-in chainer that allowed you to string together any number of DirectX plug-ins and preview them in real time. I frequently used the original audio plug-in chainer under Version 4.5 and found it to be a real time-saver.

Click activated

With Sound Forge 6.0, the audio plug-in chainer now appears as an additional button in the transport menu at the bottom of the screen. When you click on the button, it activates the plug-in chainer. At the same time, the plug-in button changes to a play indicator.

Clicking the chainer play button will begin playing the sound file from the current cursor location. What you hear is the result of all of the processes that have been included in the plug-in chainer in real time. Wherever you move the cursor in the sound file, the plug-in chainer will preview the selected processes in real time — up to the ability of your CPU to handle the load.

Again, this is a real time-saver. By simply moving the cursor around to various positions in the sound file, I can quickly get a feel for how the selected processes will affect the final product. The individual parameters of each of the selected processes can be adjusted and previewed in real time to tweak the final result.

Version 6.0 includes a new DirectX manager. While it improves the way you manage DirectX plug-ins, including the ability to rename them, the most important feature is one you cannot see.

Most new and newly upgraded DirectX plug-ins use a new management system, and they simply will not run on digital audio editors that use the older system. I found this out when I installed the latest version of the Waves Native Noise Reduction package and discovered it would not run on SF 4.5.

Unless you intend never to acquire a new DirectX plug-in and not to upgrade any current ones, eventually you will have no choice but to invest in an upgraded editing software that uses the new DirectX management system. Sound Forge 6.0 has the latest DirectX plug-in management system and it works fine.

Sound Forge 6.0 is faster, easier to use and more effective as a digital audio editor than its worthy predecessors.

Sonic Foundry has improved its zoom-in capability to a ratio of 24:1 allowing one to easily and effectively work at the sample level. If you have ever used the pencil tool that permits the user to actually redraw the WAV file, you will appreciate this improved zoom capability.

In the past, trying to redraw a very small sample accurately was like trying to thread a needle while wearing mittens. Now you can redraw the WAV form easily and accurately. Well done.

The new version also supports 32-bit/64-bit float resolution and 192 kHz sampling rates ensuring that you should be able to work in the highest quality that is supported by your soundcard.

For users like myself who did not upgrade to Sonic Foundry Version 5.0, there are some additional improvements: The Tool menu includes a repair utility that enables you to replace damaged samples by substituting sound from an area immediately adjacent to the problem. This is helpful in dealing with clicks and pops that are too large for the normal click filter to handle satisfactorily.

Sonic Foundry has created a separate Batch Converter program that allows applying multiple processes to multiple files. Earlier versions of Sound Forge included a batch converter as a submenu of the Tool menu.

While there were some advantages to that arrangement, there are more advantages to having the Batch Converter as a standalone program. As a separate program, the Batch Converter can apply various processes to selected files while you continue to work on yet other files in Version 6.0.

In addition, Sonic Foundry includes an impressive package of free software that had to be purchased in the past, including Acoustic Mirror, the XFX series 1, 2 & 3 sets of plug-ins, Batch Converter 5.0 and Vegas Video 3.0 LE Multitrack. At one time these software packages would have cost more than $500.

An unpopular decision

On the down side, Sound Forge 6.0 has only the most rudimentary CD-R burning capability. Back when Version 5.0 was released, Sonic Foundry announced it was discontinuing support of its popular CD Architect program and moving its capabilities into Vegas.

This has been an unwelcome decision among CD Architect users, and Sonic Foundry has announced that it will once again offer a new upgraded and improved standalone version of CD Architect. Look for a review in a future issue of Radio World.

Sound Forge 6.0 requires Windows 98 SE, 2000 or XP, a 200 MHz processor and 32 MB of RAM. A faster CPU and more memory will enhance performance. Price: $399.96 packaged; $349.47 downloaded from the Internet.

In my opinion, Sound Forge 6.0 has enough improvements to warrant upgrading. If you have yet take the plunge and purchase your first digital audio editor, Sound Forge 6.0 offers everything you need for professional digital editing.

I have been using 6.0 for several months and would not consider returning to 4.5. Sound Forge 6.0 is faster, easier to use and more effective as a digital audio editor than its worthy predecessors.

Read Burgan is a free-lance writer and a former public radio station manager specializing in digital audio restoration. Reach him at (906) 296-0652 or via e-mail to rgb@chartermi.net.

Product Capsule:
Sonic Foundry Sound Forge V6.0 Audio Editing Software

Thumbs Up
- ✓Nondestructive audio editing greatly speeds up editing process
- ✓Modeless audio plug-in chainer enables easy previewing and application of multiple processes
- ✓Modeless audio plug-in chainer enables easy previewing and application of multiple processes
- ✓New DirectX manager provides compatibility with the new generation of plug-ins
- ✓Improved zoom-in capability enables editing at individual sample level
- ✓32-bit/64-bit float resolution 192 kHz sampling rates for maximum quality

Thumbs Down
- ✓Limited CD-R burning support

$399.96 packaged;
$349.47 Internet download

For more information contact the company in Wisconsin at (608) 204-7703 or visit www.sonicfoundry.com.

PRODUCT GUIDE

PortaDrive 8-Track Recording On Removable Drive

For location work involving more than two tracks to capture sound from multiple mics, HHB is promoting its PortaDrive location sound recorder, which can record uncompressed 24-bit/96-kHz digital audio on eight tracks. The unit is housed the unit in a metal case with protective rubber surround.

Audio is recorded on a removable hard disk in AES31 or Pro Tools V5 session formats using BWF or SDII audio files, respectively. Recorded data can be transferred to Mac and PC workstations.

Front controls are arranged to provide access to frequently used functions. A five-position rotary transport control initiates recording, a lock mode prevents accidental changes to settings during recording and a stop lock prevents unwanted changes to existing settings while on the move. A review function permits the user to check the last audio take and a mark button provides ID of points within a session.

For more information contact the company in California at (805) 579-6490 or visit www.hhbusa.com.

EBU Lauds aacPlus Quality

According to Coding Technologies, a leading provider of audio compression technologies for broadcasting, the European Broadcast Union ran subjective listening tests on low bitrate audio codecs that showed the company's aacPlus to be the highest-quality codec for streaming audio applications.

The EBU report credited Coding Technologies Spectral Band Replication technology with the improved performance. SBR is a bandwidth extension technique that allows audio codecs to deliver the same quality at half the bit rate.

aacPlus is the combination of MPEG AAC and SBR technology, which, according to the company, allows excellent quality stereo audio programming at 48 kbps.

Coding Technologies also announced the establishment of a U.S. office in Mountain View, Calif. The office will handle technology licensing for the North American market.

Streaming media veteran David Frerichs has joined the company as vice president and general manager of U.S. operations. Prior to joining Coding Technologies, Frerichs was president and cofounder of IM Networks.

For more information contact the company in California at (650) 961-0106 or visit www.codingtechnologies.com.

Products & Services SHOWCASE

Buyer's Guide

Tech Updates Inside

Radio World | Signal Monitoring, Remote Control & Test | November 20, 2002

USER REPORT

Delta DTCA Ammeter Fits the Bill

by Mike Patton
Owner
Michael Patton & Assoc.

BATON ROUGE, La. This summer, on fairly short notice, I was asked to retune and measure an AM directional array that was located many hours away from my house.

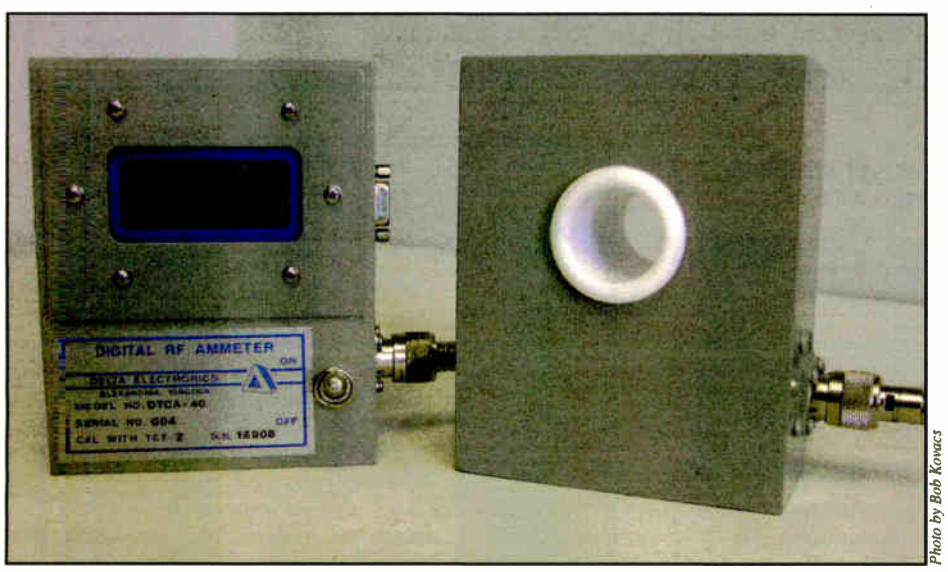


Photo by Bob Kovacs

Once on site, I found that the station's old thermocouple-type common point ammeter was not accurate by comparing it with the two (also thermocouple-type) base current ammeters — none of the three ammeters read the same when all were temporarily wired in series.

Options

I could not proceed without knowing the power into the array, and thus the common point current. Driving home to wait while a meter was ordered through normal channels was not an attractive option. As time was of the essence to the client, I called Joe Novak at **Delta Electronics** to see if he could help.

Joe did not have any TCA-series ammeters on the shelf ready to ship, but said he did have a new DTCA digital ammeter that he could loan us for evaluation at no charge. He even arranged for overnight shipping of the meter, and it arrived complete with calibration chart the next day.

Its mechanical dimensions are the same as the analog TCA-series, so there were no problems with mounting it. Because it was temporary, we simply ran an extension cord to run the wall-wart power supply required by the meter.

The new meter powered right up and settled in at 0.01A indicated. Our client initially was concerned that this small offset from zero might be a problem, but I pointed out to him that, at 50 ohms, 10 mA of current (0.01A) represented 5 mW of power — surely not a significant source of error for his 5 kW array.

We used the meter for about two weeks, and it performed flawlessly during that time. What particularly impressed me was the clear stability of the reading during modulation. While making some repairs to the transmitter one night to improve audio performance, I found that the indicated current on the digital Delta meter tracked the carrier shift indicated on a modulation monitor very well. When we repaired the carrier shift problem, we eliminated any change in current with modulation as indicated on the Delta meter.

The LCD display is large and readable, the power supply connector appears to be tough, and I was pleased with both the meter and the level of service that I received from Delta.

For any station that needs to measure both high and low RF currents, such as stations with low nighttime power levels, I recommend the Delta meter. It is certainly cheaper than buying two meters, and it gives good low-current resolution that no other meter gives, including the analog TCA-series. Joe Novak and the pros at Delta have a winner here.

For more information, including pricing, contact the company in California at (800) 8-DELTA-8 or visit www.deltaelectronics.com.

TECH UPDATE

ARC Plus Connects 16 Sites

Burk's ARC Plus, a transmitter remote control system, provides users with both automation and unattended operation. The system can connect to up to 16 sites with up to 256 channels each.

ARC Plus provides control from the front panel of the unit, a computer or a telephone. The front panel has a large VFD display with readings in real time or on a historical graph.

SmartSwitch command buttons display channel-specific labels, and tri-color LEDs provide configurable meter and status notification for system channels. AutoLoad Plus software lets users create macros that run from the ARC Plus for automative corrective actions or scheduled activities.

The ARC Plus has remote access through optional telephone and computer connections.

For more information, including pricing, contact the company in Massachusetts at (800) 255-8090 or visit www.burk.com.

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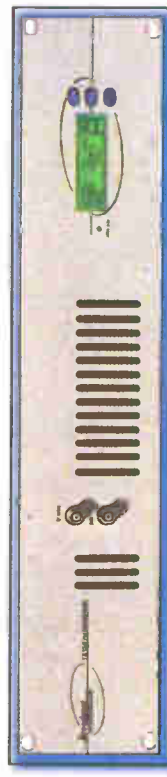

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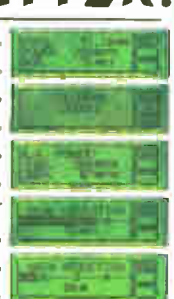

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One of the most requested FM broadcast products over the past year has been a "radio station in a box". Overseas customers, as well as some of the new LPFM licensees have a need to quickly "get on the air" at temporary locations or in the interim to their installed studio/transmitter setup. A number of overseas customers also had to originate short term programming from various remote origination sites for disaster preparedness broadcasts! Well, here you go...a radio station in a box!

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TECH UPDATES

Sine Releases Remote Controller

Sine Systems' RFC-1/B Remote Facilities Controller is a transmitter remote control system that can be accessed through a standard telephone or cellphone. Readings are reported with a natural-sounding human voice.

The basic system consists of an RFC-1/B and at least one RP-8 Relay Panel that provides eight channels of telemetry and raise/lower control. Eight relay panels can be connected for a maximum of 64 channels. Telemetry inputs can be used to indicate on/off status to deliver analog readings complete with decimal point and unit word.

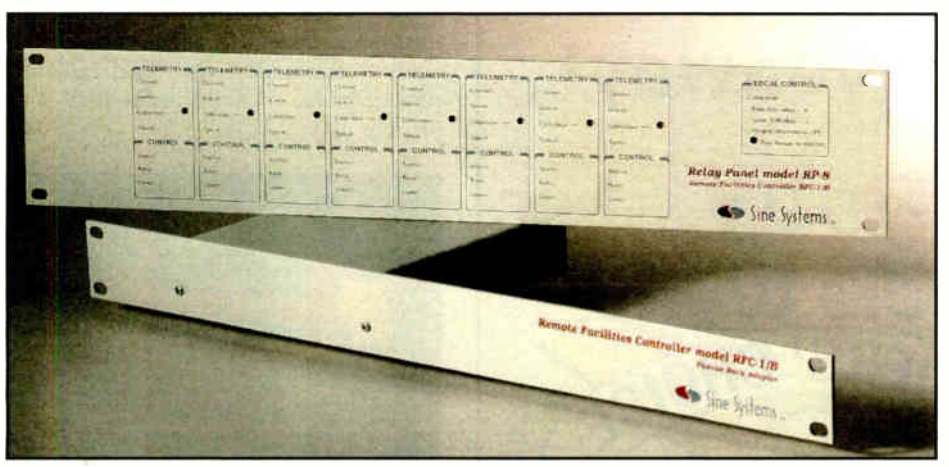
Any eight channels can be programmed with alarms to alert station personnel of an out-of-tolerance condition or to take corrective action. Up to six telephone numbers can be called when an alarm situation occurs.

The RFC-1/B can be programmed to perform power/pattern changes and take readings automatically. Depending on the system configuration, 80 timed events can be stored in memory so a year of pattern changes can usually be programmed in advance. Programming adjustments can be made on-site or from a remote location by calling into the system.

The RFC-1/B installs completely at the transmitter site and requires a single telephone line that may be shared with other devices. For rack installation, the RFC-1/B requires a single race space and each RP-8 requires two rack spaces.

Optional accessories include the SP-8 Surge Protector, PA-1 Parallel Printer Adapter, MA-2 Modem Adapter and RAK-1 Intelligent Rack Adapter.

For more information, including pricing, contact the company in Tennessee at (615) 228-3500 or visit www.sinesystems.com.



ModMinder Has Windows Software

Modulation Sciences Inc. has developed a Windows software package for the FM ModMinder modulation monitor.

The ModMinder Software Package with ModAnalysis Version 2.0 is capable of monitoring, capturing and analyzing modulation data in real time or off-line. The software runs on a host PC and connects to the FM ModMinder serially, via a COM port.

The Monitor utility can be used in one of two modes: Basic Monitoring or Advanced Monitoring.

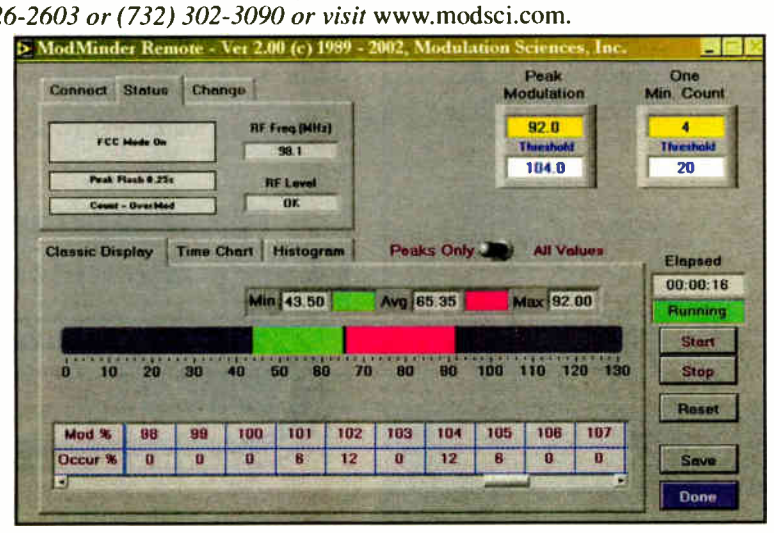
Basic Monitoring provides real-time display of peak modulation, overmodulation alarm status and a one-minute rolling count of overmodulation occurrences. The Basic Mode is configured for studio monitoring by the operator on duty and offers no control over the ModMinder's modulation threshold adjustments.

Advanced Monitoring Mode provides a continuous modulation bar graph display of average, peak and minimum modulation. Also available is a Cumulative Histogram Display, which shows peak modulation or all values of modulation on an X-Y graph. A Time Chart shows peak modulation over real time.

The modulation data can be logged into a time-stamped file for off-line review and analysis using built-in statistical analysis tools. Traditional histogram or 3D plots can be created to visualize modulation trends or spot disturbances. In Advanced Mode, the threshold settings for the FM ModMinder can be changed remotely.

Minimum system requirements are Pentium 200 MHz, 64 MB RAM, 15 MB hard-disk space, an RS232C serial port, Windows 9x or 2000 and a display resolution of 800 x 600.

For more information, including pricing, contact the company in New Jersey at (800) 826-2603 or (732) 302-3090 or visit www.modsci.com.



Conex Improves Cellphone Mixer

Conex Electro-Systems' FJ-500 is a cellphone remote mixer that extends the features of its predecessor, the FJ-10.

The FJ-500 has a three-channel mixer that supports two microphones with XLR connectors and a line-level input. Two 1/4-inch headphone jacks are provided with separate volume controls. A selector switch allows monitoring of Send Audio, Receive Audio and External Audio (such as off-air tuner) or for cueing on two of the input channels.

The model, which interfaces with most handheld cellphones, provides remote broadcasting using conventional microphones, headphones and auxiliary equipment. Barring cellphone reception, the FJ-500 can be plugged into the handset jack of a land-line telephone.

The compact FJ-500 (4 x 5 x 1.5 inches) uses three AA batteries or an external power supply. It is available through broadcast equipment dealers and has a suggested list price of $398.

For more information, including pricing, contact the company in Washington state at (800) 645-1061 or visit www.conex-electro.com.

Inovonics Updates FM Mod Monitor

Inovonics introduced its first FM modulation monitor in 1995. At the recent Seattle NAB Radio Show, the firm showed a successor to its Model 530, the Model 531.

Like its predecessor, the 531 includes a preselector for making accurate modulation measurements directly off-air. A set of seven station presets enables a comparison with other stations in the market.

Unlike the 530, which was varactor-tuned with a series of screwdriver-adjust trimpots, the 531 is digitally synthesized. This simplifies tuning and station memory entry, and eliminates any tendency to lock onto adjacent channels, as was sometimes the case with the earlier 530. Tuning presets may be remotely selected, a feature used if the monitor is located away from the studio.

In addition to bargraph measurements of total-mod, independent positive and negative deviation, demodulated audio and pilot injection, the 531 gives a readout of the incidental AM component. This measurement is used in fine-tuning the FM transmitter. The 531 also features injection readings for RDS and SCA subcarriers, allowing these to be set without having first to kill the main channel program signal.

A simultaneous display of incoming signal strength and multipath distortion aids antenna alignment, and balanced program audio is available for in-house monitoring.

For more information, including pricing, contact the company in California at (800) 733-0552 or visit www.inovon.com.

Belar's Wizard Uses Windows OS

Belar Electronics' Wizard for Windows Software uses the Windows operating system. This allows Belar's modulation monitors to be accessed over conventional RS-232 and phone line connections, as well as Ethernet and Internet connections.

The application generates a Java stream, which can be viewed in a Java-enabled Web browser. This approach provides a universal interface that is independent of the remote computer's operating system or hardware. Multiple users can access the same units from different locations at the same time.

The software provides virtual front panels of the units being accessed and allows control of their functions.

In addition, various data collected by the monitors may be displayed in bargraph, histogram or peak vs. time displays. Data collected can also be logged to the host computer, providing running logs or archived stored of a station's modulation data.

For more information, including pricing, contact the company in Pennsylvania at (610) 687-5550 or visit www.belar.com.

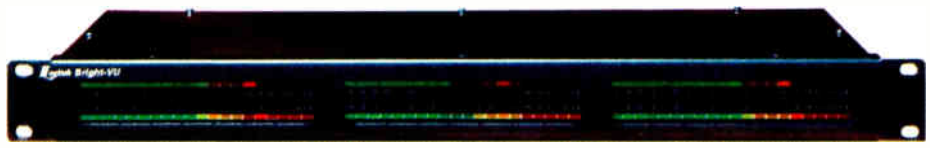
TECH UPDATES

Logitek Makes Cost-Conscious Model

Logitek Electronic Systems' Bright-VU Audio Meter is one in a line of meters that the company says provides cost-effective confidence metering.

The Bright-VU incorporates the DSP technology used in Logitek's high-end meters. Bright-VU meters conform to the international 300ms VU standard, with accuracy of 0.1 dB over the entire scale. The digital circuitry and self-calibrating data converters help the meter maintain its accuracy over time and temperature variations.

Bright-VU meters are available with one, two or three stereo displays. Each bargraph contains 20 LEDs, allowing a broad 53 dB range to be displayed. VU is represented as a solid bar, and peak is represented by a single dot at the same time. The user-adjustable zero point allows users to set the meter to any house standard.



An alarm output with user-settable over-level, under-level and alarm delay points are also provided in the unit.

The Bright-VU meter may be ordered with either analog or digital input. Analog inputs are bridging, while digital inputs loop through the unit. In the digital mode, users may monitor AES/EBU or S/PDIF serial inputs.

List prices for Bright-VU meters range from $470 (one stereo pair, desktop case) to $1,145 (three stereo pairs, rackmount, with alarms).

For more information contact the company in Texas at (800) 231-5870 or visit www.logitekaudio.com.

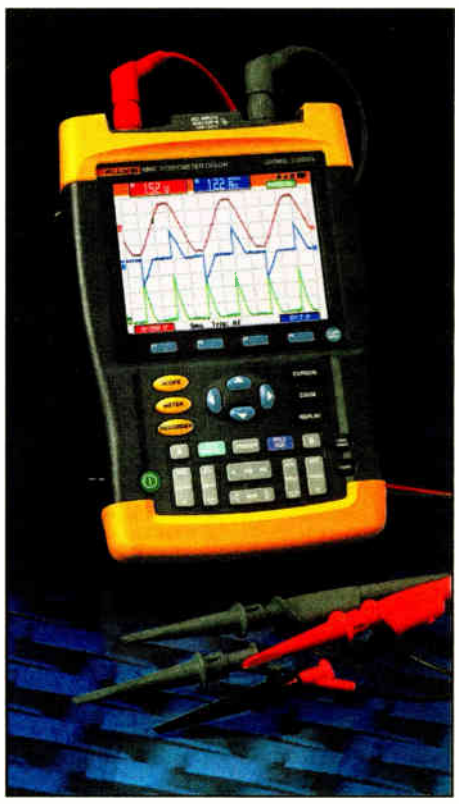
Fluke Takes Benchtop On the Road

Fluke's ScopeMeter 190C Series is a test tool that combines benchtop capabilities with portable, battery operation.

Fluke features a large color LCD and a fast display update rate. The instrument measurement includes automatic and cursor measurements; trigger functions include video triggering, waveform processing and logging of readings over time.

The ScopeMeter has single-shot bandwidth of 200 MHz (100 MHz on the 196C) and a real-time sampling rate of 2.5 GS/s (1 GS/s on the 196C). It can run for four hours on a battery charge. The update rate, assisted by a Digital Persistence function, allows for signal display and waveform decay, which is similar to analog oscilloscopes.

Cursors are provided to make measurements under manual control — modulation depth when working with AM systems, for instance — or automatic measurements of the standard parameters such as frequency, rise- and fall-time, power, phase or amplitudes in V or in dBm or dBV.



An automatic amplitude measurement is used with pulse-width modulated signals that read the effective output voltage after low-pass filtering of the signal, which Fluke feels is "difficult if not impossible with most other test tools available, yet a necessity when working with PWM-AM systems."

ScopeMeter 190C Series Test Tools range in price from $1,995 to $2,995.

For more information contact the company in Washington state at (425) 446-5500 or visit www.fluke.com.

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AM/FM antennas for low power radio station, used in good working order. Michael Cardillo, 151 Morga St., Cranston RI 02920. 401-942-8341.

ERI LPX-3E, tuned to 97.5, current model, 3-bay FM antenna with heaters. end feed, 6 year old, selling due to frequency change, $6500. Miles Carter or Larry Timmons,, KRLI, 102 N Mason St., Carrollton MO 64633. 660-542-0404.

Want to Buy

FM Isocoupler, 92.5 mHz, 2500W. Mike Rabey, WIOU, 671 E 400 S, Kokomo IN 46904. 765-453-1212.

AUDIO PRODUCTION

Want to Sell

Two ATI Distribution amplifier 2016, $500 ea "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Two Technics Quartz direct drive SC 1200 MK 2, one without needle "as is", $100 ea +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

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Want to Sell

Scott Studios AXS includes both studio & production room CPU's with Broadcast Tools 8x2 audio switcher, ideal for satellite control, new in 2000, $4500. Bruce Campbell, Dove Media, 598 Westwood Dr, #201, Abilene TX 79603. 915-677-3900.

CART MACHINES

Want to Sell

Audiocord cart machines. I have about 3 dozen. They have been refurbished and am asking about $150, but will accept offers. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

BE 10 spot, play 10 bays, never used, $600/BO. Joe Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

COMPLETE FACILITIES

CONSOLES

Want to Sell

ATI Vanguard Series sound board, eight channels, $300 "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Autogram 10-channel good working condition with telephone punch down blocks attached, $1500. Bruce Campbell, Dove Media, 598 Westwood Dr, #201, Abilene TX 79603. 915-677-3900.

BE 10S-150 console in excellent condition with many new spare pots, $1000. Herman Gibbs, WCWS, The College of Wooster, Box C-3177, Wooster OH 44691. 330-263-2212.

One five channel mono Cetec & five channel mono Sparta sound board. No power supply available, $40 each "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Radio Systems RS 12 channel audio board, $4200 new but will let go for $1900 "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Six AudioArts R-60 borads. Three have eleven channels, three have ten channels. The eleven channels will be available at the end of October & the 10 channels available at the end of November. I can send pictures, $2200 for 10 channels & $2250 for eleven channels "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Two Wheatstone A500a 16 channel audio consoles. I can e-mail pictures. Cost over $19,000 new but will sell them for $9500 "as is" each +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Broadcast Electronics Airtrak 90, 12 faders, 3 per fader, 9 yrs old, inputs, excellent condition, BO. Charles Smith, KLRC/KUOA, 206 N Anderson, Siloam Springs AR 72761. 479-524-7194.

LIMITERS/ AUDIO PROCESSING

Want to Sell

CRL audio preparation processor and spectral energy processor, $1000. Ken Lane, KVKP, Box 1118, Naskell TX 79521. 740-864-8505.

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, 972-271-7625.

MICROPHONES

Want to Buy

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922. E-mail: billbryantmgmt@yahoo.com.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

MISCELLANEOUS

Want to Sell

Gentner Extended transceiver EFT 900, $200 "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Inovonics Map II multiband processor, $750 "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Navco System Controller (The Brain). I have a picture but will accept the best offer "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

QEI Model ARC – 27 automatic remote control, $295 "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Three 25 HZ TP-XT Zercom dual tone detect & notch filter, $70 ea "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

MONITORS

Want to Sell

Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

RECORDERS

Want to Sell

Tascam 32, like new, used 5 hrs, $600/BO. Joe Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

Want to Buy

ITC 750 capstan pinch rollers. Anyone know of a source or have some used one's for sale? Tony Wortmann, WJAG, 309 Braasch Ave, Norfolk NE 68701. 402-371-0780.

REMOTE & MICROWAVE

Want to Sell

Marti RPT2 & RPT-15, FQ1 450.500 & FQ2 455.500, BO. Ken Lane, KVKP, Box 1118, Naskell TX 79521. 740-864-8505.

Telos Zephyr Express with soft-side carrying case, excellent condition, $2600. Brad Hildebrand, KSLQ, 636-978-4200, spots@kslq.com.

REPAIR SERVICES

Lighthouse Digital K Series router. TDM 32x32 audio cord with navigator software package, brand new, BO. John Belch, WYEP, 2313 East Carson St., Pittsburgh PA 15203. 412-381-9131.

Radio World Equipment Exchange

SATELLITE EQUIPMENT

Want to Sell

Four Zephrus analog sat receivers, $175 each "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Harris 6550, card included, BO. Ken Lane, KVKP, Box 1118, Naskell TX 79521. 740-864-8505.

Scientific-Atlanta AD-7550, card included, BO. Ken Lane, KVKP, Box 1118, Naskell TX 79521. 740-864-8505.

Wegener DN 86 digital audio receiver 3944.1 MHZ, $500 "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Classified Advertising Rates Effective January 1, 2002

	1x	6x	13x	26x
1-9 col inch (per inch)	$100	95	90	85
10-19 col inch (per inch)	$85	75	65	55
Distributor Directory	$125	120	115	110
Professional Card	$95	90	85	80
Station/Studio Services	$185	157	133	113
Classified Line Ad	$2/word			
Blind Box Ad	$15 additional			

Call Simone Fewell, Ext. 154, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.

STATIONS

Want to Buy

Looking to buy CP radio station in R.I., CT or MA area. Cash ready, 401-942-8341.

TAPES/CARTS/ REELS/CD's

Want to Sell

Various used carts $.50 ea, new $1.50 ea; 10.5" reels full, $2.50 ea, empty $1.00 ea. Joe Lalino, WLAL, 319 State Rt 29, Middleville NY 13406. 315-891-3110.

Want to Buy

Seeking compact discs, some LPs of various instrumentals, orchestras, coral groups, vocalists, 50s-70s, also, obscure cd's of all easy listening areas, 80s to now, variety, plus 45s, also needed for low budget non-commercial radio program. Airable condition. Low cost appreciated. Ellis, 7202 Leonard St, Philadelphia PA 19149, 215-338-0546.

TRANSMITTERS

Want to Sell

BE FM-30-B 30KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

Continental 814-R1 2.5 KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

Harris-Gates FM-5G 5KW FM & **Harris-Gates BC-5-H** 5KW AM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

McMartin BF-5K, 5kW FM. Factory rebuilt in perfect, like new condition, includes new tubes, tested & tuned on your frequency. Guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Enterprises Inc, 402-493-1886.

RCA BTF-20-E1 20KW FM. Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

BE FX 30 exciter, $4850 new but asking $2950, "as is" +shpg & handling. Michael Raley, Bible Broadcasting Network, 704-523-5555 or Mraley@bbnradio.org.

Broadcast Electronics RE-30, 1984, mint 3 phase 30,000W FM, tuneable to your frequency, $20,000/BO. Todd Noordyk, Great Lakes Radio, 2025 US 41 W, Marquette MI 49855. 906-228-6800.

CCA 20KW, 1978 3 phase 20,000W FM, can be tuned to your frequency, has all manuals, $14,000/BO. Todd Noordyk, Great Lakes Radio, 2025 US 41W, Marquette MI 49855. 906-228-6800.

Harris MW-1A 1kW AM transmitter. Marked down to $3995/BO. Transmitter was working fine when station went dark. Call Will at 321-427-3512.

Harris TH-3 solid statesman FM exciter, $350. Bruce Campbell, Dove Media, 598 Westwood Dr, #201, Abilene TX 79603. 915-677-3900.

Harris MW-10 10 KW AM xmtr tuned to 1080 KHz, $7500/BO. Bill Barry, WAMB, 1617 Lebanon Rd., Nashville TN 37210. 615-889-1960.

CONSULTANTS

DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

Exciter, 150 watts or more, used, in working order. Michael Cardillo, 151 Morga St., Cranston RI 02920. 401-942-8341.

AM transmitter, 250 or more, used, in good working order. Michael Cardillo, 151 Morga St., Cranston RI 02920. 401-942-8341.

TUBES

Want to Sell

EIMAC, AMPEREX, ED-COM, 3CX2500F3, 3CX3000A7, 4CX250B, 4CX300A, 4CX1000A, 4CX1500B, 4CX5000A, 4-400C, 811, 833C, ETC. WESTGATE 800-213-4563.

Want to Buy

4CX3000A duds. George McClintock, WWCR, 11300 WWCR Ave, Nashville TN 37218. 615-255-1300.

EMPLOYMENT

HELP WANTED

Washington/Baltimore area group radio owner seeks experienced Chief Engineer for local cluster. Experience with solid state and tubed AM & FM transmitters AND studio wiring skills a must. Must be computer literate and ready to transition to a digital environment. Full time preferred but will consider contracting for multiple weekly visits. Send resume and salary requirements to: Radio World, POB 1214, Falls Church VA 22041. Attn: Simone Fewell/Box 10-23-02-1.

WOSU Stations seeking experienced Radio Engineering Manager. Visit www.wosu.org/home/jobs.html for information.

POSITIONS WANTED

The new sound of Radio. Graduate of American Broadcasting School ready to be your newest on-air personality & take on your production load. James, 405-771-4403.

Recent ABS graduate! Trained in production, on-air DJ, as well as copywriting. This ambitious rookie will relocate. Call Brandon, 405-306-9622.

AM-FM combo sold! Former owner with 37 years in broadcasting – morning air personality – management sales. Available now in Utah. Call 435-636-0441 or cell phone # 435-820-0401. Ask for Mike. Resume available.

CE position wanted. Experienced with computers, transmitters, automations, DCS, UDS, digital studios. Robert King, 978-479-4855.

Friendly, industrious, FCC commercial-1st class w-Radar/amateur-extra radio licensed, CE, asst CE, seeking FT, PT, contract work, AM/Fm, cable, TV, within 75 mile radius of metro NYC area. 718-969-5224 or write: Mitchell Rakoff, 81-12 Roosevelt Ave #702, Jackson Heights NY 11372-6746 or email: MitchellRakoff@Yahoo.com.

Friendly, outspoken recent ABS graduate with knack for production seeks job in the OKC metro area. Has a love for rock music, but willing to work any format. Lauren, 405-255-7182.

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations *only*. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information:

Are you currently a subscriber to Radio World?
❑ Yes ❑ No

Signature _____ Date _____

Contact Name _____

Title _____

Company/Station _____

Address _____

City/State _____

Zip Code _____

Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a **paid** basis. Line ad listings & display advertising are available on a per word or per inch basis.

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Brief Description: _____
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Brief Description: _____
Price: _____

***Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.**

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 • Tel: 703-998-7600 • Fax: 703-998-2966

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24	Altronic Research	www.altronic.com
39	Aphex Systems	www.aphex.com
41	Armstrong Transmitters	www.armstrongtx.com
44	ATI	www.atiguys.com
20	AudioScience	www.audioscience.com
2	Auditronics/Wheatstone	www.auditronics.com
46	Autogram Corporation	www.autogramcorp.com
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Radio World, November 20, 2002

GUEST COMMENTARY

RFR Is Back in Full Fury

by Lee Granlund

The harmful effects of radio frequency radiation became a hot topic in the 1960s. For more than 25 years, inconclusive tests and conflicting opinions failed to settle the question, "Is radio frequency energy harmful to humans, and if so, under what conditions?"

Conflicting evidence included the fact that, between 1930 and 1960, many physicians used a device called a diathermy machine to pump RF energy into patients to cure them of all sorts of ailments. I am familiar with that technology because I have repaired diathermy machines for doctors and hospitals. (Truthfully, I have never seen evidence of anyone cured by this RF energy, but then I never saw anyone harmed by it either!)

On the other hand, most radio and television engineers know that you *can* be seriously injured, or even killed, if you stand in the aperture of a high-power radar or television transmitting antenna. (It works just like a microwave oven!) Somewhere between the megawatts of a TV station and the milliwatts of a cell phone is a logical answer to the RFR question.

Out of compliance

At the urging of ANSI and OSHA, the FCC adopted, then revised, a proposed "guideline" for safe levels of radio frequency energy at various frequencies, published as "Bulletin 65." This became part of the FCC rules for all types of broadcast and communications stations, as well as industrial and consumer electronic equipment containing RF energy sources.

Broadcast stations were required to comply with these "guidelines" by Sept. 1, 2000, but no enforcement plan was in place at that time.

Typical broadcast facilities have remained out of compliance with RFR guidelines, and many also create interference to radio and TV reception, and even telephones, through high RF levels on the ground in the vicinity of the site. Discussion of RFR limits has almost disappeared, and technical personnel at some stations aren't even aware of FCC rules on this subject.

As more and more stations crowd into fewer available tower sites, and new homes are built ever closer to towers, the RFR and RFI problems multiply and become more severe. This matter is fast becoming a crisis, intensified by new digital TV stations required by FCC mandate.

The FCC's first move to begin cleanup of this nationwide RFR "mess" came on July 12, 2002, with a surprise inspection of the Mount Wilson community broadcast site near Los Angeles, as reported in Radio World's Sept. 1 issue. During the inspection, field intensity measurements disclosed that RF energy level at some locations exceeded that permitted by the 1997 FCC rules. Further tests were run to determine which station (or stations) contributed to the total, and what action could be taken to correct the problem.

At this writing, stations using the Mt. Wilson site are awaiting the results of these tests, as well as any corrective action to be required by the commission. It is presumed that similar inspections will be made at all community tower sites, and perhaps individual sites as well, as time permits.

Cleaning the mess

I've devoted considerable time and energy during the past eight years to the resolution of RFR and RFI problems, and I am pleased to share some good news: a new type of FM broadcast antenna that puts more than 99 percent of transmitted RF power into the "main lobe" on the horizon.

Side lobes and downward radiation are reduced up to 40 dB, virtually eliminating the production of strong RF fields below the antenna. This same technology also reduces coupling to other antennas on the tower, often eliminating the cost of filters for IM protection.

The single lobe or reduced side lobe antenna has been produced by Antenna Concepts, SWR, TCI, Jampro and ERI, and should be available from any manufacturer who takes the RFR and RFI issues seriously. According to SWR, its Illumitron FM antenna is guaranteed to meet the FCC-mandated RF radiation standards (Bulletin 65) for controlled or uncontrolled locations when installed in accordance with manufacturer's instructions included with the antenna.

But why should a broadcast station invest thousands of dollars in new equipment specifically to meet new FCC regulations? The obvious answer is simply to protect the station license and investment. Not so obvious is the fact that the investment in a more efficient antenna will result in a cleaner signal with less multipath and a greater effective coverage area. (The degree of improvement will vary with the effectiveness of the previous antenna and other factors.)

Most broadcast engineers and managers are familiar with the latest programming tools and equipment, but the transmitter site is often "out of sight, out of mind." The antenna frequently is taken for granted or ignored. With the FCC forcing us to take a look at our aging transmitter sites in order to meet new rules, we have an opportunity to eliminate multipath, shadows and other problems.

A final suggestion for the chief engineer: Let the antenna upgrade be your idea! It won't hurt for the engineer to be the station's hero for once.

Lee Granlund recently retired as vice president of engineering for Z-Spanish Media Corp. He is consulting in advanced broadcast technology. Reach him at leegranlund@hotmail.com *or (916) 663-4160.*

Radio World, November 20, 2002

GUEST COMMENTARY

Understand RF Radiation Hazards

An RF Safety Expert Helps Clear the Air On the Proper Use of Protection Equipment

by Richard Strickland

Radio frequency (RF) radiation, RF emissions, electromagnetic energy — whatever you choose to call it, the FCC regulations and an increased awareness of RF radiation are hot topics today.

Although the FCC adopted new regulations in 1997 and all companies were supposed to be fully compliant by September 2000, many organizations still have a long way to go. With the FCC poised to issue its first-ever fines for RF safety violations, many companies are giving more thought to what they should be doing to improve safety. The reasons for doing so should be obvious: protection of personnel, compliance with regulations and reducing liability.

RFR hazard control equipment for broadcast has only been available for about 10 years. Judging by the industry buzz, there is a lot of confusion about its use.

Hazard control equipment has been an essential tool of industrial hygiene and safety professionals in many areas for decades. But RF radiation (RFR) hazard control equipment has only been available for the broadcast industry for about 10 years. And, judging by the industry buzz, there is a lot of confusion about its application and use.

There are basically two types of RFR hazard control equipment available: RF personal monitors and protective garments. What are the important things to consider when selecting and using an RF personal monitor? What level of protection do RF "suits" provide? Can personal monitors be used with protective garments? These are important questions. Anyone who uses or is considering the use of RF PPE should know the answers.

RF personal monitors

Personal monitors are designed to sound an alarm above a preset threshold. There are several factors that should be considered in selecting a monitor:

Frequency range: The first monitors developed for the military covered the microwave band only. The latest designs are very broadband. One design operates from 100 kHz to 100 GHz. A monitor should cover all the emitters where you are going to work.

Frequency response: Monitors can have a "flat" frequency response or a "shaped" response. A sensitivity of a shaped sensor varies with frequency.

For example, the FCC's Maximum Permissible Exposure (MPE) limit for Occupational/Controlled exposure at VHF frequencies (30-300 MHz) is 1 mW/cm2. Below 3 MHz it is 100 mW/cm2.

Take a simple site with one AM and one FM antenna, and you can see the advantage of a shaped sensor that responds in terms of "Percent of Standard." With a flat response, if the total field level from the two antennas is greater than 1 mW/cm2, you cannot determine whether you are exposed above the MPE. If you are exposed to a 20 mW/cm2 field, with 19.9 mW/cm2 coming from the AM and 0.1 mW/cm2 from the FM, you are only at about 30 percent of the MPE (19.9/100 + 0.1/1).

Of course, if half the field were coming from each antenna, then you would be at 1,010 percent of the MPE (10/100 + 10/1). Monitors are typically set to trigger at 50 percent of the MPE to allow for measurement uncertainty. Note that an average, ungrounded adult male makes a great Channel 6 or FM antenna, depending on his height.

Fields Detected: Monitors detect the E-field, the H-field, or both. At the lower frequencies, induced and contact currents are more of a threat than thermal affects. Both are related to the strength of the electric field.

That is why the most modern standards, such as IEEE C95.1-1999, allow much higher magnetic fields below 100 MHz. At AM frequencies, even a "heavy" magnetic field is never more than 10 dB higher than the electric field. Yet the IEEE limit is 10,000 times higher for the magnetic field at these frequencies. Yes, FCC MPE limits are the same for both fields, but the IEEE standard is biologically more correct. At 50 MHz to 100 MHz you might be in the near field 5-10 feet from the antenna.

So, unless you are essentially on top of one of these high-power broadcast antennas, an accurate E-field sensor works very well. But be careful, dipole electric field detectors do not work on the body below 50 MHz.

Once you have your RF personal monitor, there are a few things to consider:

Where to wear the monitor: Monitors are directional and should be worn on the torso facing forward. Your eyes and testes are the most vulnerable parts of your anatomy. It is not possible to make an RF personal monitor that works isotropically *on the body.*

Although the monitors do not detect what is behind you, they are generally very effective, providing you do not stay motionless. The problem is heating, so as long as you move occasionally, the monitor should pick up the field.

Among products on the market for monitoring RF exposure is the Nardalert XT Personal Monitor.

Where not to wear the monitor: Wearing monitors on your belt over the back pocket brings new meaning to the concept of CYA, but it is not the correct place to wear a monitor. And RF personal monitors *do not work* underneath RF protective garments. Wearing a RF personal monitor under a RF protective suit appears to make sense to those that are not familiar with the personal monitors and the suits. It would seem that the monitor would simply detect what is getting through to the wearer.

This approach — wearing the monitor under the protective suit — does not work, is potentially unsafe for the wearer and would never be recommended by the manufacturer of the personal monitor.

Personal monitors can tell you where you cannot go or should not remain, but what if you need to work in an area with significant RF fields?

Protective garments are often a good solution to this problem. These suits can be considered Personal Protective Equipment (PPE). As with personal monitors, there is often confusion about protective garments. These garments provide a substantial amount of protection, 10 dB minimum and often more, and work above 50 MHz. But there are limitations and cautions, especially at lower frequencies, such as in the AM radio band:

Protection is limited: Putting on an RF protective garment should not be equated with Clark Kent changing into his Superman outfit in a phone booth.

The manufacturers of these garments stress that you should *know the intensity of the field that you are entering*. Yet, most survey instruments are not usable at these high field levels, which leaves computer modeling as the most common method. The conservative, recommended approach is to assume 10 dB of protection — restrict your work to areas that are no higher than 1,000 percent of the MPE limits.

Suits must be worn properly: Suits should never be used without the hood above 800-900 MHz due to the potential for eye and brain damage at those frequencies. Hoods are generally not required below 400-500 MHz. At frequencies in between, the suits can be used at levels of 300-500 percent of the MPE.

Proper use

It is critical that the body of the suit makes intimate contact with the special conductive socks. The importance of making good contact between the main part of the suit and the conductive socks cannot be overemphasized, especially if you intend to work at lower frequencies, such as near an AM radio station.

The suits need to have a path to ground to work properly. If you leave the socks off, you not only do not have a good path to ground, but the currents into the suit pass through your ankles. The current density in the ankles can be very high due and can produce very high Specific Absorption Rates. If your ankles feel warm, something is wrong.

Other considerations: The coverall, gloves, socks and hood can impede mobility and add to heat stress, and the hood can limit visibility.

A new high-power RF personal monitor is now available for use on the outside of RF protective garments. This combination of suit and monitor is the ideal solution to working in high-level RF fields. Just remember, if the monitor sounds an alarm at 1,000 percent, it is time to back off and get the power reduced before you proceed.

Richard Strickland heads RF Safety Solutions and is former director of business development for Narda Safety Test Solutions. He led the team that developed the Nardalert XT, named as one of the world's top 100 new scientific products this year by R&D Magazine. Reach him via e-mail to rfsafety@optonline.net.

How to Submit Letters

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Letters should be 100 to 300 words long; the shorter the letter, the better chance it will be published in full. We reserve the right to edit material for space. Longer commentaries are welcome but may not reach print as quickly.

Include your name, address and contact information, as well as your job title and company if appropriate.

Send letters via e-mail to *radioworld@imaspub.com*, with "Letter to the Editor" in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.

◆READER'S FORUM◆

RF hot spots

I have been following, with interest, articles on the EMF measurements that the FCC has made at several locations across the country. The same thing happened on Lookout Mountain, just west of Denver, several years ago.

Our station is still running below-licensed power along with several other stations located at the site. We were forced to lower power because of "hot spots." Our station has spent over $80,000 trying to get rid of these isolated hot spots in public areas. At this time we are down to one spot that is about a foot square and about three feet from a metal fence.

There are several things that everyone should know when certifying a site. The FCC is specifically looking for anomalies (hot spots) in public areas; they do not and will not take into account time averaging. They do not and will not take into account spatial averaging in the horizontal plane.

This has been a very sore spot for me for quite some time now.

In the case of the hot spots, read IEEE page 65 5.3.3 and NCRP page 72 3.3.5. These are the two manuals referenced by the FCC. They both plainly state that, in the case of hot spots, a grid must be laid out and measurements taken vertically at grid intersections to get your spatial average for that location.

The NCRP specifically states that hot spots have little significance. Far more important is the prevailing average because "exposure" exists only when the location is occupied.

The FCC recognizes spatial averaging, but only in the vertical plain at a single point. This means that they are looking for and measuring only the standing-wave effects and the multiple-source field interactions, the perturbations, with no regard to what is actually happening in the area.

The FCC reasoning is that somebody might stand exactly in the hot spot, at some time, for 30 minutes. They do not take into account the possibility of areas where the movement of people through the area is likely to be random. They also do not take into account time averaging in public areas, which is obviously part of the standard.

Please be warned, if you have any doubts, and your site has a lot of adjacent public area, the only way to proper certify your site is to cover the entire area with a meter.

Robert Hensler
Vice President of Engineering
Colorado Public Radio
Denver

AM vs. digital

I am afraid that it will brand me as anti-progress or an old fuddy duddy, but I don't see the crying need that drives the conversion to digital.

I understand fully how the receiver manufacturers are drooling at the prospect of replacing a hundred million radios when analog is declared obsolete and is turned off.

But other than that, what I see it is as a horrible waste of effort at the present level of perfection. What is lacking most is not audio bandwidth but imaginative, enjoyable programming in most markets.

On the technical front, I find that few AM broadcasters have attempted to optimize their audio quality, signal or equipment, so I can't imagine how blindly buying new digital adapters that will degrade the audio quality to the millions of existing analog radios is going to draw listeners to the AM band.

Why would anyone now making their living on talk radio AM think that losing the remaining quality for the analog listeners is going to make a flock of new digital listeners rush in to fill the cash-flow gap?

I find myself listening to Clear Channel skywave rock oldies from KOMA(AM-FM) on long road trips, only to have it interrupted by several hours of talk radio some evenings. It is too far between cities out here to get solid night groundwave most places, and what is there is nearly all talk.

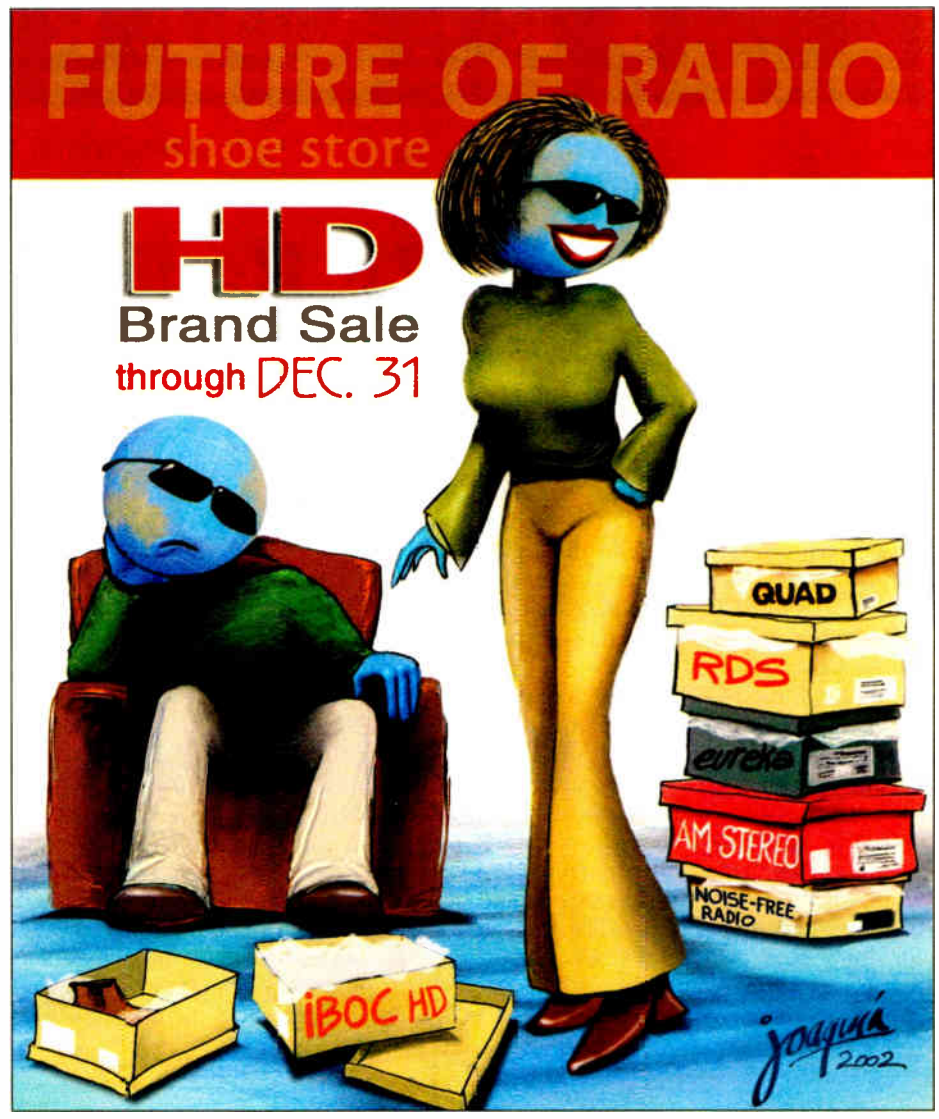
There is rarely anything on FM for people over 35 years old, so I spend far less time there. The nighttime introduction of wideband white noise is sure to further reduce the desire of listeners to endure the nighttime AM noises.

Let the station with no listeners be the first to try digital, because you are sure to alienate your present analog listeners — your bread and butter. Why not put some effort into making your analog AM the best it can be to please your present listeners?

The Kahn Powerside compatible single sideband system does indeed reduce both co-channel and adjacent channel interference and could make a dramatic difference nationwide in perceived quality, both daytime and nighttime. The FCC has been aware of compatible single sideband and its benefits for more than 30 years and, although they allow use of compatible single sideband to optimize your monaural signal, they are not interested in the benefits since *they* have decided that we are all going *digital* at the first opportunity.

AM radio is an old friend that has served and still serves the public very well in our country. The sure way to kill the AM band is to get people to shut off and discard their old AM radios before digital radios are ubiquitous.

Tim Cutforth
President/Owner
Vir James Engineers
Denver, Colo.



'Honey, this pair might just fit!'

RW good for business

I need to say this. Radio World newspaper has helped the Optilator take a life of its own. Not so much regarding my efforts in advertisement, but rather with people like John Bisset on *Workbench* and Jay Crawford, chief engineer with WVXU(FM) in Cincinnati and the X-Star Radio Network, who are willing to stick their necks out for something they believe in.

Because of professionals like these and what they had to say about the Optilator, the production of this product catapulted and sales went through the roof. I am grateful to Radio World. Because the Optilator has become a household word in the radio industry, I actually had to curtail my advertisements because the law of demand outweighed the capability of production. It doesn't seem to stop, even in the off-season.

Naturally, when things slow down a bit, I will advertise in your newspaper. But every time I am ready to advertise, John or someone else has something good to say about the product. Ka-boom, it happens again, and it takes months for it to slow down.

Word of mouth is excellent for business, but the ability for your newspaper to show professionals how to solve problems is priceless. Thank you for helping us stay in business.

John Pecore
President
Stormin Protection Products Inc.
Pinellas Park, Fla.

More Opinion On Pages 52-53

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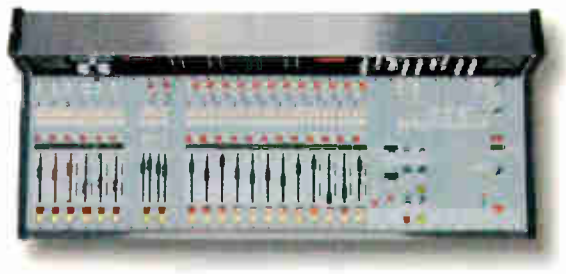

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