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Playing around with Vocaloid's Singing Synthesis Technology.
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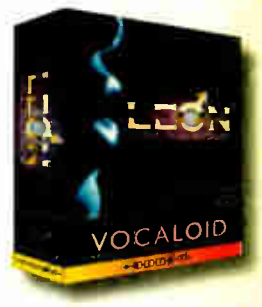

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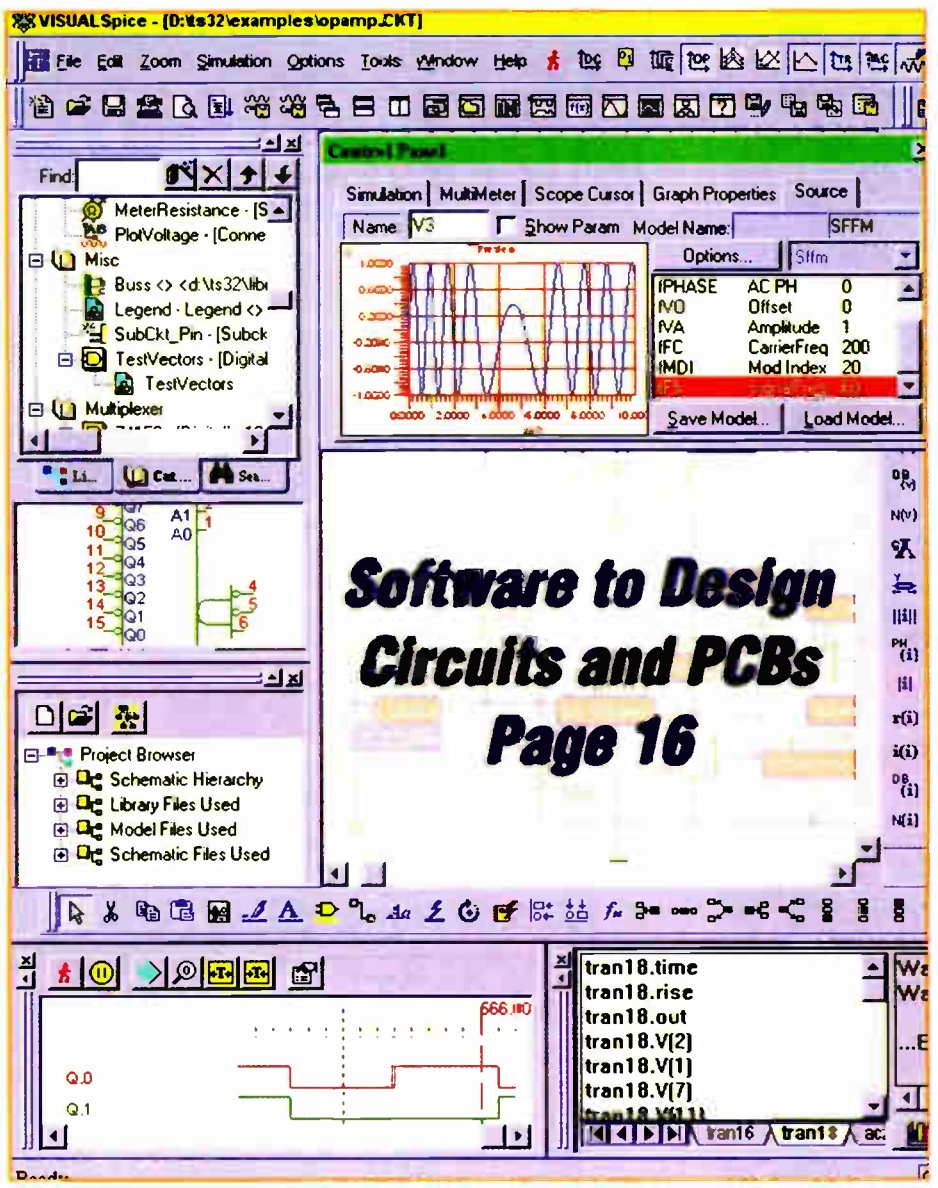


NEWS ANALYSIS

'05 Radio Trends: Connectivity, Portability

Making Car Devices 'Talk' to One Another Is Seen As Key

by Leslie Stimson

This year, consumer electronics experts predict, we'll see more receiver manufacturers debut HD Radios and add more capabilities, such as the ability to decode multi-channels. Prices also will start to come down on HD Radios.

The story in the satellite radio product category last year was plug-and-play; this year, expect portables to be hot.

For radio in the car, surround sound is on the horizon.

We're still waiting for the receiver that can also make coffee in the car. In the meantime, consumer electronics experts are working to manufacture car radios that have more capabilities than they do now.

In the big-picture sense for mobile audio, integration and connectivity are the overarching goals for the consumer electronics industry. Experts interviewed by Radio World say

See RADIOS, page 8 ▶

NEWSWATCH

Winter Book To Include Chinese-American Listening

NEW YORK Arbitron will survey radio listening of Chinese-American consumers using bilingual Chinese-English diaries in the Los Angeles and New York metropolitan radio markets in Winter 2005.

Arbitron is conducting the survey on behalf of Multicultural Radio Broadcasting Inc.

The audience ratings firm said this is the first time it would use the Chinese-language version of its radio diary to track the listening habits of Chinese-Americans.

Powell Questions Constitutionality Of Wider Enforcement

WASHINGTON Don't look for FCC Chairman Michael Powell to push for expanding indecency enforcement to satellite radio, TV or cable.

Historically, the agency treats subscription services differently than over-the-air broadcasting. And in an opinion piece in the New York Times in December, Powell reminded readers that the rules apply to broadcast radio and TV, but not to cable, newspapers or the Internet.

The Supreme Court affords those three stronger constitutional protections, he stated. Broadcasting is treated differently and has more stringent indecency rules "because it is uniquely pervasive, with children having easy access."

"I believe any effort that any effort to extend regulation of content to other media would be contrary to the Constitution," Powell wrote.

Presumably satellite TV and radio fall into this latter distinction.

Viacom/Infinity, FCC Settle Indecency Cases for $3.5 Million

WASHINGTON Viacom/Infinity and its subsidiaries have entered into a $3.5 million consent decree with the FCC to resolve several indecency cases.

The agreement includes the settlement of actions against 16 Infinity radio stations, among them the proposed $357,000 fine against WNEW(FM) in New York for the sex in St. Patrick's Cathedral bit on Opie & Anthony. The fines stem from cases opened in 2002 up to 2004.

The action resolves investigations into whether outlets — including Infinity radio outlets, Viacom TV stations as well as non-Viacom-owned affiliates of the CBS Television Network and UPN — aired indecent programming.

In a statement, Viacom said, "We have now resolved all outstanding matters before the FCC related to indecency except for the Super Bowl. This consent decree allows us to move forward and to focus our efforts in this area by serving our viewers and listeners with techniques to safeguard live broadcasts."

Viacom is still fighting a proposed $550,000 fine relating to the Super Bowl TV halftime show. This agreement excludes the Super Bowl case. Fox and NBC, meanwhile, also are appealing big indecency fines.

As part of the agreement, Viacom admits that some of its programming was indecent and it implements a company-wide zero-tolerance for indecency plan. Viacom/Infinity pledged to install delay equipment at all of its stations and make sure employees know the FCC's indecency and obscenity rules.

Should the commission begin a future

See NEWSWATCH, page 5 ▶

Index

'Largely Overpriced, Inferior Inventory'?

FM Auction Seems to Have Opened Doors, But With a Substantial Price Tag

by Randy J. Stine

WASHINGTON Broadcasters with winning bids in FCC FM Auction 37 are now busy rustling up subsequent payments for their new construction permits and scouting for facility and tower locations

Analysts say it looks like Auction 37 introduced new owners into the radio market while increasing diversity, which is what the FCC was hoping for.

"The new owner discounts certainly helped (them)," said Dick Blackburn, president of Blackburn & Company Inc., a media brokerage firm. "It looks like many took advantage of it."

Bidding credits were available for start-up groups and small broadcasters bidding on construction permits. A 35 percent credit was given to winning bidders who had no attributable interest in other media properties.

Richard Foreman

They got theirs

A total of 110 bidders gained 258 FM construction permits during the nearly three-week bidding period, which ended in late November. There were 62 rounds of bidding with 30 allocations held back by the FCC.

"I believe the FCC was largely able to infuse some new ownership into the business," said Richard Foreman, president of Richard A. Foreman Associates, a media brokerage firm. "There did seem to be a number of returnees, that is former and current owners, too."

Net bids in the auction will pump $147.8 million into FCC coffers. Analysts said they were surprised by the amount of money paid for frequencies in small markets, the majority of which were across the West.

Foreman and other brokers contacted for this story said they think many of the licenses were "overvalued." Foreman cited a "limited-service Cape Cod FM in Brewster, Mass., going for $3.9 million" as an example.

"This may have been the result of the very low and largely overpriced, inferior inventory of available properties recently. Supply and demand equation was the order of the day, I think," Foreman said.

Other analysts speculated that small broadcasters who overpaid for their licenses would struggle financially.

"Having a license does not guarantee business success. Some of these stations will never be built and others are sure to fail," said Larry Patrick, president of Patrick Communications, a media brokerage and media investment and banking firm.

"The bids were generally higher than I expected. Who would have thought that two stations in Cheyenne, Wyo., would go for a combined total of nearly $6 million?"

College Creek Broadcasting Inc. was the busiest of the successful bidders, securing 38 construction permits and spending more than $35 million on those winning bids. (It also withdrew bids; see sidebar, below.)

Former Clear Channel Radio CEO Randy Michaels' company, Radioactive LLC, was next luckiest with 21 new CPs and net bids totaling more than $8.5 million. World Radio Link Inc. followed with 16 new licenses.

College Creek Broadcasting paid the most for a single CP, with a bid of $7.1 million for Mesquite, Nev., which is approximately 80 miles north of Las Vegas.

Bigglesworth Broadcasting trailed only College Creek in the total dollar category,

Larry Patrick

with nearly $16 million in successful net bids for its 10 licenses. It paid $4.3 million for a frequency in Pacific Junction, Iowa, approximately 20 miles south of Omaha, Neb. Omaha-Council Bluffs is Arbitron market No. 74.

"I was surprised by the sheer volume of stations that some of the bidders acquired," said Jeff Warshaw, president and CEO of Bigglesworth Broadcasting. "There were many active and aggressive buyers."

More work underway

Warshaw founded Connoisseur Communications and sold the 37-station group to Cumulus in 2000. He said his new company expects to have the new stations on the air within six months of receiving their CPs.

"We are busy doing as much of the groundwork right now we can. We plan to put great radio stations on the air that will serve their communities," Warshaw said.

Some analysts predict there will be some movement of the new licenses as broadcasters work within the three-year window to get stations on the air.

"We have no interest in the present to sell any of the licenses. In fact, we are much more likely to be acquirers in each of the markets we are going into," Warshaw said.

Matinee Radio LLC is another start-up company that won CPs in five markets in Texas and New Mexico. The company qualified for a 35 percent bidding credit, which meant it spent just over $1.2 million instead of $1.9 million on its licenses, said Managing Partner Robert Walker.

"The bidding was very competitive. We did our homework in advance and had well-defined limits on high we could go. I did observe several bidders paying way too much for some markets," Walker said.

"That's good news for the FCC and bad news for investors in those cases."

Matinee Radio concentrated on small markets located just outside larger metropolitan areas. For instance, it paid about $278,000 for a CP in Magdalena, N.M., just outside Albuquerque.

"We know how we want to build and operate the permits but haven't yet selected or purchased equipment. We'll consider all options on how to operate the stations provided the options comply with FCC rules and restrictions," Walker said.

50 High Bids Withdrawn; Some Owe Big Bucks

Some auction participants owe the FCC money for withdrawing bids in the FM auction. At least one owes the FCC more than $840,000 for its withdrawn bids.

Out of 456 qualified bidders, eventually 110 won frequencies, with $147.8 million net winning bids. Nearly 30 frequencies went unspoken for and may be included in a subsequent auction, sources said.

But during the 62 rounds of bidding over 14 days, 50 high bids were withdrawn. Some participants withdrew bids for more than one CP. Steven R. Bartholomew and College Creek Broadcasting withdrew the most, with seven and five bids withdrawn respectively, followed by Cumulus and Fireside Media at four each.

They owe widely varying amounts, because under the auction rules, a bidder that withdraws a high bid during the auction must pay the difference between the amount withdrawn and the amount of the subsequent winning bid. College Creek is liable for $844,950 and Cumulus $115,020, while Fireside Media owes $17,318 and Bartholomew just $6,085.

The FCC won't charge withdrawers if the subsequent winner or any subsequent withdrawn bid equals or exceeds it. If a high bid were withdrawn for a CP that didn't sell at the auction, the bidder would need to make an interim payment of 3 percent of the net amount of the withdrawn bid. The bank would deduct this amount from upfront payments or down payments on deposit.

But none of the 50 who owe for withdrawing falls into this exemption.

Down payments on the frequencies were due from the winners at Mellon Bank in Pittsburgh Dec. 15.

— Leslie Stimson

Letters of Commendation

From the Editor

Paul J. McLane

Long-time readers know how proud I am of expanding Radio World's position in the industry as a "marketplace of ideas." Key to my concept are the many people whose ideas or words appear here. I wish to thank them for their contributions in the past 12 months.

Each year it gets harder to fit the names of those who wrote for us, wrote *to* us or were the subject of articles. And I don't have enough room to include the hundreds, if not thousands, who allowed us to quote them, sent research materials, served on our awards panels, took photos, e-mailed suggestions, met with our editors and otherwise helped make RW's written content what it is.

Whether your name appears here or not, you are a valued member of our editorial team.

Mike Adams, Stanley B. Adams, Dave Agnew, Bud Aiello, Cris Alexander, Jim Alexander, Scott Alexander, Kelly Alford, John Allan, Julio Alvarado, JT Anderton, Andy Andresen, Maria Antonucci, John Arndt, D.F. Ashton, Susan Ashworth, Norm Avery, George Badger, Michael Baldauf, James Barcus, Bruce Bartlett, Roy Baum, Fred Baumgartner, Terry Baun, Frank Beacham, Oliver Berliner, Dave Bialik, Walt Billings, the unbelievable John Bisset, George Bisso, Barry Blesser, Jon Blomstrand, Louis Bornwasser, Tom Bosscher, Craig Bowman, Jim Boyle, Bill Bracken, Kevin Branigan, David Bray, Julian Breen, the fabulous Kelly Brooks, Ed Bukont, Joel Bump, Bob Bundgaard, Dick Burden, Read Burgan, Peter Burk, Jack Buttram and Richard Byrne.

Also George Cabrera, Andrew Calvanese, Carl Campbell, James Careless, Kelly Carlson, David Carr, Paul Carvalho, Dave Casey, Naina Narayana Chernoff, Michael Chu, Steve Church, Glen Clark, Marguerite Clark, Paul Cleary, Scott Clifton, Bob Clinton, Bill Clough, Barbara Cochran, Mike Cofferon, Harry Cole, Chuck Conrad, Dave Corp, Paul Courson, Braden Cox, Fred Cresce, John Crigler, John Curtis, Marcus Damberger, Don Danko, Ken Dardis, Tom Davidson, James Davis, Edward De La Hunt, Bill DeFelice, Brian DeNicola, Ken Dicks, Jerry Donnelly, Mike Dorrough, Scott Dorsey, Ross Du Clair, Ed Dulaney, Jeffrey Dvorkin and Joe Dysart.

Also Bill Eisenhamer, Gary Ellingson, Andrew Elliott Kim, Bruce Elving, Howard Enstrom, Mike Erickson, Rich Eyre, Ray Fantini, Joe Farrington, Mark Fehlig, Joe Fell, John Figliozzi, Buc Fitch, Steve Fluker, Dennis Foley, Ty Ford, Dave Fortenberry, Frank Foti, Robert Fox, Al Franken, Tom Franklin, Clay Freinwald, David Frerichs, Ray Frieders, Mike Friedman, Richard Fry, Roger Furness, Scott Fybush, Philip Galasso, Pablo Garcia, Jack Gardner, John Gardner, Brent Gardner-Smith, Marco Gavini, Karina Gerardi, Dennis Gilliam, Mark Glaser, Neil Glassman, Elmer Goetsch, Bert Goldman, Bob Gonsett, Lyssa Graham, Mark Greenhouse, Paul Gregg, Bob Grubic, Frank Grundstein, Gregory Guise, Raghav Gupta, Peter Gutmann and Blazo Guzina.

Each year it gets harder for me to fit the names of those who wrote for us, wrote to us or were the subject of articles.

And Doug Hall, Lawrie Hallett, Chris Halm, Terry Hanley, Bill Harland, Dennis Hart, Allen Hartle, Tom Hartnett, Jim Hawkins, Winston Hawkins, Sandy Haynes, Bob Heckler, Michael Hedges, Michael Hedrick, Dale Heidner, Alan Heil Jr., Mark Heller, Paul Herrmann, Bob Hess, Mario Hieb, Rich Hill, Eric Hoehn, Jim Hoffman, Ralph Hogan, Jim Hoge, Milton Holladay, Andy Hollins, Ed Hollis, David Hollyer, Ralph Hornberger, Dave Howland, David Hoxeng, Dan Hughes, Laura Ingraham, Dennis Jackson, Jim Jenkins, Jeff Johnson, Marc Johnson, Rick Johnson, Craig Johnston, Tim Johnston, Elaine Jones, Lew Jones, Alan Jurison, Leonard Kahn, Paul Kaminski, Kathleen Karas, Vern Kaspar, Al Kazlauckas, Gary Keener, Chris Kelley, Don Kennedy, Randy Kerbawy, Alan Kilgore, Vern Killion, John King, John Wells King, Peter King, Vicki Kipp, Jim Kirstein, Gary Kline, E. J. Knight , Huub Kohnen, Craig Kopcho, Bob Kovacs, Alan Kraemer and Matt Krick.

Also Mel Lambert, Steve Lampen, Tom Lange, Mark Lapidus, Gary Lawrence, Michael Lawton, Paul LeBlanc, Michael LeClair, Neil Leibowitz, Matt Leland, Wally Lennox, Jim Lewis, Henry Leyh, Tom Leykis, Gary Liebisch, Glenn Liles, Carl Lindemann, Rolin Lintag, Jeff Littlejohn, Larry Lomax, Tony Lopez, Jim Loupas, Michael Lowery, Walt Lowery, Luis Luna, John T.M. Lyles, John Lyons, Kenneth MacHarg, Martin Macheiner, Marc Maes, Larry Magne, Daniel Mansergh, George Marshall, Marty Martin, Michael Martindale, Ralph McBride, Frank McCoy, the remarkable Tom McGinley, Doug McLeod, Tom McNally, David Meadows, John Merli, Kathy Merritt, Jess Meyer, Maynard Meyer, Ray Miklius, Michael Millard, Randall Miller Jr., Grady Moates, Len and Liz Mohnkern, Saad Mohseni, Francisco Montero, Darren Morton, Brett Moss, Greg Muir, Stephen Murphy, Tom Murray, Dirk Nadon, Jim Nedelka, Bill Newbrough, Benji Nichols, Tom Nornhold, Dave Obergoenner, Rogelio Ocampo, Nick Olguin, Mark Orchard, Richard Osborne, Tom Osenkowsky, David Otey, Phil Owens, Gary Palamara and Mike Pappas.

And John Pavlica, Art Pepin, Al Peterson, Michele Kramer Peterson, Rich Petschke, John Petter, Sharon Rae Pettigrew, Michael Phares, Anthony Pierce, Luther Pierson, Skip Pizzi, Robert Polhamus, Stephen Poole, John Poray, Christophe Poulain, Michael Powell, Les Proctor, Jack Quinn, Ken R., Rich Rarey, Carol Rassier, Fred Rathert, Tom Ray, Aaron Read, Tom Read, Robert Reams, Paul Reynolds, Mike Rice, Bob Richardson, David Richardson, Noel Richardson, Robert Richer, Ed Ripley, Ed Ritchie, Michael Roberts, Sam Roffe, Charlie Rohde, Johnny Rohrbeck, Jeff Rosenberg, Carter Ross, Jeff Rudisill, J.R. Russ, Stephen Rutherford, Bill Ryan, Paul Sagi, Noah Samara, Elaine Saunders, Robert Savage, Greg Savoldi, Brad Sayles, John Schaab, John Schad, Chuck Schaden, Don Schellhardt, Lou Schneider, Stephen Schott, Bob Schroeder, Jeff Schroeder, Jim and Larry Schropp, Jeff Scott, C. Park Seward, Aaron Shafer, Mike Shane, David Shannon and Gary Shapiro.

Also Fred Shetler, Paul Shinn, Paul Shulins, Wayne Shulmister, L.L. Shurtleff, Pete Simon, Mark Simpson, Allen Singer, Jon Sinton, Mike Sirkis, Ihor Slabicky, Daniel Slentz, Charlie Slezak, Edwin Slusarczyk, Jeff Smith, Jerry Smith, Lamar Smith, Milford Smith, Paul Smith, Bob Sneeringer, Gigi Sohn, A.J. Soliz, David Solomon, Gabriel Sosa Plata, Joe Soucise, Christopher Springmann, Tony St. James, Bill Stachowiak, Joe Stack, Don Stevenson, the indefatigable Leslie Stimson, Randy Stine, John Sullivan, Steve Sullivan, Dave Supplee, Bob Surette, Ray Tadry, Steve Tarter, Bill Taylor, Rolf Taylor, Stu Tell, Winston Tharp, George Thomas, Gary Timm, Scott Todd, Kenneth Tomlinson, Paul Trama.

And Conrad Trautmann, Travis the V/O Guy, Steve Truex, Kent Tuckerman, Stephen Turner, Harvey Twite, Dick Tyler, John Valenta, Marc Vallee, Carl Van Orden, Tom Vernon, James Viele, Bob Vinikoor, Rick Vogel, Peggy Volker, Gary Wachter, Judith Walcutt, Glynn Walden, Ken Wallace, Bayard Walters, Mark Ward, Jeremy Weir Alderson, William Weisinger, James Weitzman, Jeremy Wensinger, George Whitaker, Jeff White, Bill Whitlock, Hal Widsten, Bruce Wilkinson, Ed Williams, Aaron Winski, the irrepressible Guy Wire, Jim Withers, Roger Wood, George Woodard, Cliff Woodman, Tim Wright, Jonathon Yinger and Mike Zeimann.

Here's to a great 2005.

ɔsts to Record & Store Contested

Proposal to Mandate Changes Incites Small-Market Radio Over Costs, Personnel

This is the second is a series excerpting comments to the FCC about its proposal to require stations to record and retain programming for up to 90 days so the agency can better enforce indecency and obscenity laws.

Beth Auldridge, VP/GM Regency Broadcasting, San Angelo, Texas:

The owners of Regency Broadcasting Inc. have been in the radio broadcast business since 1959 — and owned stations since 1977. Their companies have never received a complaint related to indecency. ...

Our request to the commission is that it does not unfairly burden thousands of radio stations over a potential problem that very seldom occurs. Small-market radio stations, such as ours, are vastly different from large major-market operations. We operate with small staffs doing multiple jobs. The proposed recording process would have to be carefully supervised, since it would be a regulatory requirement, and the task would necessarily fall to an existing staffer, who is already stretched thin.

Other options would be to add a staff member *or* to add digital recording equipment (hard drives, etc,), which fail from time to time, thus defeating the purpose and intent of the rule making. Either of these options creates a larger problem for us — large expenditures that we cannot absorb easily and remain in the business.

needs to be done about the indecent actions of a few broadcasters, but this proposal treats the entire industry as guilty until proven innocent.

As a small minority broadcaster, the proposed rules will place an undue financial burden that will be very difficult. The investment in equipment to record and store programming along with the staff hours needed to process the recordings will make it even more difficult for small broadcasters to survive, let alone compete.

I hope the commission will realize that (the) majority of broadcasters are very responsible and serve their communities' best interest. To punish all for the transgressions of a few is unfair. Thank you for the opportunity to weigh in on the discussion. Punish the guilty, but not the innocent.

Marieke Wijtkamp, Chief Operating Officer, OMT Inc./Intertain Media:

For small-market stations — and many are still selling radio spots for as little as five or six dollars — this is more money than their budgets and limited capital funds can tolerate.

— Beth Auldridge, Regency Broadcasting

While Morality In Media agrees with the concept of the proposed rule ... we, nevertheless, suggest that it may not be necessary for all radio and TV licensees to 'tape every program' ...

— Morality In Media

For small-market stations — and many are still selling radio spots for as little as five or six dollars — this is more money than their budgets and limited capital funds can tolerate. The current focus on indecency is overblown and, possibly politically driven. I don't believe it is widespread in the radio industry, and especially not in small-market radio.

It seems to us that there have been only a few indecency complaints that have been brought, and those mainly targeted major-market disc jockeys and large broadcast companies.

Alex Snipe, Glory Communications Inc., W. Columbia, S.C.:

On behalf of Glory Communications Inc. licensee of WFMV(FM), South Congaree;WLJI(FM),Summerton;WSPX(FM), Bowman; WPDT(FM), Bowman and WGCV(AM), Cayce.

I am responding to the proposed regulations requiring broadcasters to retain recordings of their programming for a period of time. I realize that something

OMT Technologies (is) a broadcast solution provider specializing in broadcast automation software and 24/7 audio recording software (for audible affidavit) for radio broadcasters. ...

Item 9 in the discussion section of MB Docket No. 04-232 suggests that the proposed record retention requirements would affect the record keeping of radio stations. However, digital recording equipment like OMT's iMediaLogger Software is an affordable solution to maintain audible records (or logs) — minimizing the required time and costs. Outdated analog and tape based logging methods are easily replaced by digital logging, which is less labor-intensive, more reliable and more cost-effective. ...

Please also note: the requirement of storage of 90 days vs. 30 days does not impact the cost; as stated, hardware specifications can manage more than 90 days of content. ...

Numerous radio stations in Canada have found our product useful and necessary for the CRTC's (Canadian Radio and Television Commission) required 31 days of content logging.

Morality in Media Inc.:

(W)hile Morality In Media agrees with the concept of the proposed rule, we, nevertheless, suggest that it may not be necessary for all radio and TV licensees to "tape every program" and that such a requirement might violate the due process provision of the Fourteenth Amendment. ...

Due process requires that laws not be unreasonable, arbitrary or capricious and that the means selected shall have a real and substantial relationship to the object to be obtained. Applying this caveat to the FCC rule under consideration, we are met with the fact that a blanket requirement that all radio and TV licensees retain a recording of every program could be "unreasonable" and "arbitrary" and may not have a "rational relationship" to the object to be obtained. ...

We believe the rule should be subject to more tailoring and still achieve the FCC's objective and avoid being struck down.

In view of the above, it is the suggestion of Morality In Media that the commission carve out an exemption from the program recording requirement, which will comply with the Fourteenth Amendment requirement of due process, which could read as follows:

The requirement of retention by broadcasters of program recordings shall not apply if the programming (including advertisements) does not contain descriptions or depictions (actual or simulated or created by computer technology) of any of the following:

(Editor's note: The 39-item list includes

See RECORD, page 7 ▶

Correction

An article in the Dec. 1 issue, page 21, incorrectly stated that Nautel Maestro exciters do have to be matched to specific transmitters. That should have read: "Additionally, Maestro exciters do *not* have to be matched to specific transmitters."

GUEST COMMENTARY

5.1 or 2.0 Channels: Why Not Both?

Broadcasters Need a Surround Sound Option That Works With Existing Content and Equipment

by Mike Pappas

This is a rebuttal to a commentary by Steve Church of Telos Systems in the June 16 issue, one of a series of opinion pieces on surround sound technologies as applied to radio. Church stated the answer does not lie in matrixed systems, but I have first-hand experience with another approach that is ready to go today.

As someone who has actually broadcast 5.1 using the Harris Broadcast/Neural Audio 5225 system I thought I might comment on its supposed issues.

The Harris/Neural Audio 5225 is not a matrix system. Matrix systems can (and usually do) have severe image stability problems. Our broadcasts with the Neural 5225 system have exhibited rock-solid image stability even through multiple lossy codec passes, satellite up and down links and 2-channel DAW editing.

The Neural 5225 makes outstanding conventional stereo, with a watermark from 5.1 surround sound. Center channel, low frequency effects channel and rear surround are correctly handled and there are no surprises in the stereo mix.

The watermarking is extremely robust and we haven't been able to damage it.

The advantage of the 5225 system is that the watermarked stereo can be shipped via a conventional stereo broadcast plant using all of the conventional stereo equipment that broadcasters already have, including CD recorders, MiniDisc machines, ISDN codecs, analog STL, digital STL, air processor, transmitters and editors. It makes no difference whether the plant is analog or digital.

So how does the Harris/Neural 5225 system do this magic? Due to the pending patent applications in depth information on the system is limited, but here is the overview.

The Neural spatial compression is a new methodology that meets 2.0/5.1 broadcast challenges head-on and allows the distributor or broadcaster the ability to capture original source 5.1 content and "downmix" it (via the Harris/Neural 5225 surround production appliance) to a 2.0 channel format that survives aggressive lossy compression, editing (*yes, editing!*) and even conversion to analog.

Photo by Leslie Stinson

Mike Pappas

The interspersion of legacy 2.0 and 5.1 content is a reality.

Stereo editing systems will work just fine with 5225 downmixed 5.1 because it's not a bitstream (unlike certain other methodologies). Encoded content may be broadcast, stored or distributed through existing 2.0 infrastructures.

It may be rendered to 5.1 at any point for production or broadcast "confidence monitoring." After capture, it may be stored in the server and treated as any other stereo content.

Consistent, renderable audio

To broadcasters, this could be a godsend as the existing infrastructure, including production and storage, are 2.0. The stereo and 5.1 "mix" of content is 100-percent compatible with the Harris/Neural Neustar codec conditioner. This results in HDC-compatible content that is controlled, consistent and "renderable" to a 2.0 or 5.1 spatial environment.

While this is the attraction of 5:2:5 matrixes, matrix methodologies fall far short of what is possible regarding perceived discreteness. Matrixes are an excellent solution in that they solve transition compatibility issues and allow, to a certain extent, 2.0 content to co-exist with 5.1 content while extending the value of the ubiquitous 2.0 infrastructure.

That being said, matrixes do not satisfy the distributor's and consumer's expectation of what is now called "discrete" 5.1. The Neural Spatial Environment Engine rendering process allows the consumer to enjoy a consistent spatial environment with as many or as few loudspeaker elements as is available. It can spatially render content ranging from 5.1 original source digital to mono analog.

It is obvious that the interspersion of legacy 2.0 and 5.1 content is a reality. Unless this is handled on a system basis, the result will be less than transition-proof. In fact, inability successfully to integrate legacy content with "modern" content in such a way that meets the consumer's expectation is unfortunately naive and slows the adoption to 5.1.

The Neural SEE is a patent-pending programmable, transform-based spatial rendering system. SEE can render any two dimensional audio source — both 5.1 and stereo are 2-D, for example — to as many as 256 or as few as two outputs with a high degree of perceived separation.

During encoding of 5.1 original source material, the 2-D image envelope of the 5.1 content is imbedded in the two downmixed audio channels in the form of watermarking. Intensity/coherence watermarking is an excellent choice because of its similarity to the image construct of naturally occurring 2-D stereo and compatibility with already prevalent Lt/Rt matrix content.

This simplifies the inevitable integration of 2.0 and 5.1 content on both the broadcaster and consumer sides. Upon decoding, the image envelope of the original 5.1 content may be re-synthesized based on the intensity/coherence information contained in the watermark. Using this methodology, an impression of the original source 5.1 content is rendered from the two downmixed audio channels with a high degree of merit.

Doing the downmix

The decoder segregates spatial elements of stereo based on the image envelope naturally residing in the content; nothing is either created or destroyed. If you re-downmix the 5.1 rendering of stereo back to 2.0 stereo, the result is "perfect reconstruction" of the original stereo content with the stereo image completely intact.

Our extensive listening tests to both the reconstructed 5.1 and the watermarked stereo have shown that image stability is not impacted by the Neural SEE system.

The advantage of handling 5.1 as watermarked stereo is huge. Broadcast plants are stereo, not six-channel.

Upgrading a stereo plant to discrete is not a minor issue, and when we did a study at KUVO the cost ran into the tens of thousands of dollars. Many of the proposed 5.1 systems require the use of HD Radio transmitted bits. The number of bits these systems are proposing to use, 16 kbps, is sufficient bandwidth to support a voice-grade secondary audio channel. It is my feeling that giving up 16 kbps to support 5.1 is not a good use of a very limited amount of bandwidth.

Our empirically derived results indicate that the Neural 5225 system is robust, makes great audio, has rock-solid imaging and works today.

Pappas is chief engineer of Denver's non-commercial KUVO(FM). Reach him at mpappas@qwest.net.

RW welcomes other points of view.

Record

▶ Continued from page 5

profanity, obscenity, violence and all forms of sexual intercourse and nudism.)

"Nude" ... shall mean any one or more of the depictions or descriptions or simulations thereof included ... even if covered with skin-colored materials such as latex or paint. "Violence" ... is violence that is an intense, rough or injurious use of physical force or treatment with the intent to harm, which is outrageously offensive or outrageously disgusting. ...

The Notice of Proposed Rulemaking requests comment on whether or not the suggested retention rule should apply only to the period of 6 a.m. to 10 p.m. The obvious answer is that it should apply around the clock since it is designed to capture recordings of programs that may violate 18 U.S.C. 1464 which is *not* restricted to indecency, but includes profanity and obscenity 24 hours a day, including broadcast and cable.

The 6 a.m. to 10 p.m. statute does not apply to profanity or obscenity and has nothing to do with whether children will be in the audience. In fact, to exempt programming after 10 p.m. other than indecency, may very well run afoul of the conclusion in Action For Children's Television, 852 F. 2d 1332 (D.C. Cir. 1988) that the FCC, in its rule making, proceed in a "rational" manner.

There is no rationality in restricting recordings of programs relating to obscenity and profanity to 6 a.m. to 10 p.m. when the prohibition in the statute applies around the clock. It would also be at odds with the stated objective of the Notice of Proposed Rulemaking rationale and governmental purpose: "To increase the effectiveness of the commission's process for enforcing restrictions on obscene, indecent and profane broadcast programming."

Morality In Media agrees that the complaint procedure should be corrected to entertain citizen complaints "containing a general description of the relevant broadcast programming" since the recording could then be obtained from the station. It is not the duty of the consumer, but the FCC, to enforce the statute nor should he or she be obliged to make a prima facie case.

Section 1 of the Act gives the FCC jurisdiction over cable. Cable TV is subject to the obscenity provisions of Section 639 of the Cable Communications Policy Act of 1984 (now Section 639 of the Communications Acts of 1934). The final rule should make it quite clear that the rule also applies to cable TV, otherwise the commission may be faced with First Amendment or other constitutional challenges based on differential treatment if there is no rational reason for imposing the rule only on radio or broadcast TV stations.

◆ NEWSWATCH ◆

▶ NEWSWATCH, continued from page 2

investigation against one of the Viacom/Infinity stations for indecency, the employees involved would be suspended and taken off the air pending the results of an internal investigation. An FCC fine could lead to termination of involved employees.

Clear Channel and Emmis previously reached similar agreements with the commission over indecency for $1.75 million and $300,000 respectively.

Commissioner Kevin Martin said previous consent agreements signed with Clear Channel and Emmis required "more concrete actions" from the company to deter future occurrences. He said he is concerned this agreement may be less of a deterrent and that the agency may be treating other companies unfairly by requiring less of Viacom.

Commissioner Michael Copps is worried about the effect of the settlement on the agency's license renewal process.

"The totality of a broadcasters' record is pertinent and should be considered when licenses are renewed. (This) decision takes an entire part of the record off the table."

Suffa Leaves Clear Channel

SAN ANTONIO Bill Suffa has left Clear Channel to look for other employment opportunities.

For the past four years, he was senior vice president of capital management for the company. He was responsible for the capital, real estate and corporate level analysis of approvals on acquisitions for Clear Channel divisions, including radio, TV, outdoor and entertainment.

Previously, he has run a broadcast engineering consulting firm and worked at the corporate level on merger, acquisition and divestiture strategy.

Reach him at *wsuffa@commbiz.com* or (210) 735-4411.

International Bureau Turns 10

WASHINGTON The FCC's International Bureau is 10 years old. Don Abelson has led the bureau since 1999.

Since its inception, bureau officials said, the number of satellite television subscribers has grown from 2.8 million to 23.1 million; satellite radio services were launched and now have 2.58 million subscribers; and the average cost to U.S. consumers of an international call has dropped from 91 cents to 20 cents.

Radios

▶ Continued from page 1

they want to integrate all forms of radio — analog, and both terrestrial and satellite digital radio and their attendant text data displays — with entertainment options such as CD players and MP3s, and marry all that to a navigation system and a vehicle diagnostic display — and add telephony capabilities.

The idea is to incorporate all of these functions in the car, many in the dash.

While some of these capabilities are combined in vehicles now, the devices don't always all "see" each other.

'Digital ring' is big

"That's going to be our big campaign this year, looking at developing our standard to get this gateway so people can easily drop things in the 'digital ring,'" said Megan Pollock, the mobile electronics spokeswoman for CEA.

"CEA 2012" is the standard to help connect products. Currently, connections vary depending on manufacturer and product, she said. The idea of the so-called digital ring is to standardize connections so all digital products can connect to the same bus, without regard to product or manufacturer.

"So they can all see each other and realize what's going on in the car. Now, they don't see each other. So, you put your iPod in (the car connection) but you can't control it if some of those controls are in the steering wheel."

Pollock and Jack Morgan, senior director of automotive marketing and sales for Philips North America, said connectivity is a trend as manufacturers have begun to include USB ports on auto radios. BMW has an iPod connection in the glove box in some models, Morgan said, an example of how consumers can listen to their own songs over the car audio system.

A short-range wireless connection example available in some cars is Bluetooth technology. Some handheld PDAs and cell phones have this capability. A user could upload a phone list to a cell phone, take information such as an address and download into a navigation system. Or, he said, another possibility is to use Bluetooth for hands-free phone capability in the car using the audio system, mounting a microphone in the visor area.

Delphi has been delivering a Bluetooth system for Saab's automotive radios in Europe for two years. "It allows you to have an ear bud or headset and allows you to use voice recognition to dial numbers," said Dr. Robert Schumacher, business line executive for wireless for Delphi.

Automotive radio supplier Delphi sees "integrating everything into the radio" as its strategy. For example, a high-end Cadillac radio features AM/FM with a CD changer, a navigation system with a 7-inch color display, voice-recognition control and a diagnostic vehicle system.

"Going forward we'll add HD Radio, satellite radio and Bluetooth," said Schumacher. Delphi plans to show the concept at CES.

Taking a longer view, Delphi sees WiFi coming to the car radio as well. Schumacher predicts we'll see consumers downloading music, or movies for rear-seat viewing, then using WiFi to store that material on a hard drive in the car radio — not touching any media.

"Instead of going to a store and buying a plastic disc, you go to a high-speed Internet provider and download directly to your car."

In other words, goodbye CDs.

What trends are we likely to see in radio in the near term?

For satellite radio, expect to see more portables, which the consumer electronics world defines as a device carried by a person or in a docking station in the car, said Pollock and others.

Satellite radio has a 75 percent awareness rate among consumers polled this summer by the Consumer Electronics Association.

In that same poll, CEA notes that the "satellite radio subscription base equals 3 percent of consumers." Owning a satellite radio does not exclude analog AM and FM, said Pollock, because satellite radio is another option on the same headunit.

AM/FM radios are installed in 95 percent of vehicles, according to the trade group.

CEA predicts 6 percent of consumers plan to buy satellite radio within the next year.

Photo by Brian Spielvogel

The Boston Acoustics Recepter Radio HD is one of the first home radios to become available for IBOC and the first tabletop model. It ships to retailers this spring.

Further, of the 39 percent of consumers who indicated they would *not* purchase satellite radio, most cited subscription fees as a reason, the trade group said.

HD Radio is on a slower upswing, experts agreed. When the survey was conducted in July, 58 percent of those polled were aware of HD Radio before participating in the survey. That compares to 73 percent awareness of satellite radio.

The results are not surprising, CEA states, "given the presently limited availability of compatible products and the relatively small number of radio stations broadcasting HD Radio signals." Manufacturers and retailers need to beef up their consumer education efforts and more stations need to convert to support the technology to achieve "critical mass," states CEA.

But consumer interest may be higher for HD Radio. Almost half — 48 percent — of those polled were interested in owning an HD Radio-capable car stereo even if it meant buying new equipment. CEA notes a possible explanation is that HD Radio requires no subscription fee.

HD Radio needs more broadcasters

But a hardware purchase was a barrier for some 20 percent who said they weren't interested in IBOC at all if they needed to buy a new headunit.

Apart from aftermarket and home IBOC radios available, Boston Acoustics plans to introduce what it says is the first tabletop radio for HD Radio this spring.

"To the user, it will seem as if we adapted the Recepter," said Stephen Shenefield, senior director of product development for Boston Acoustics. However, while the acoustic design remained the same, the radio needed new circuitry, display and remote control, he said.

The Recepter Radio HD will be able to decode multi-channel HD Radio. "We're trying to make it transparent" for the user, Shenefield said. "We're going to come up with a straightforward way of doing it. You won't be able to choose 5,000 options."

Boston Acoustic also recognizes that stations that split their FM digital signal into two or more channels may not always want to program all of those channels, and may sometimes chose to use the full 96-kilobits-per-second FM bandwidth for the digital signal. In that case, if set to a supplemental channel, the Recepter would default back to the main station so the listener won't hear dead air.

Mobile surround is a trend

Surround sound is another trend to watch in the car.

"The prevalence of inexpensive surround systems, including Home Theater in a Box, have put surround systems into a huge number of homes," said Mike Bergman, director of R&D/Digital Broadcast for Kenwood USA. "Many cars have four speakers. You can do surround with four speakers. We're just waiting for content." Some of the recording labels are experimenting with surround content to see if the time is right, he said.

Schumacher agreed auto companies want to see the record companies put out more 5.1 content.

At least a few broadcast stations are doing just that, and four surround technologies are being adapted for the HD Radio transition in the hopes of attracting many more.

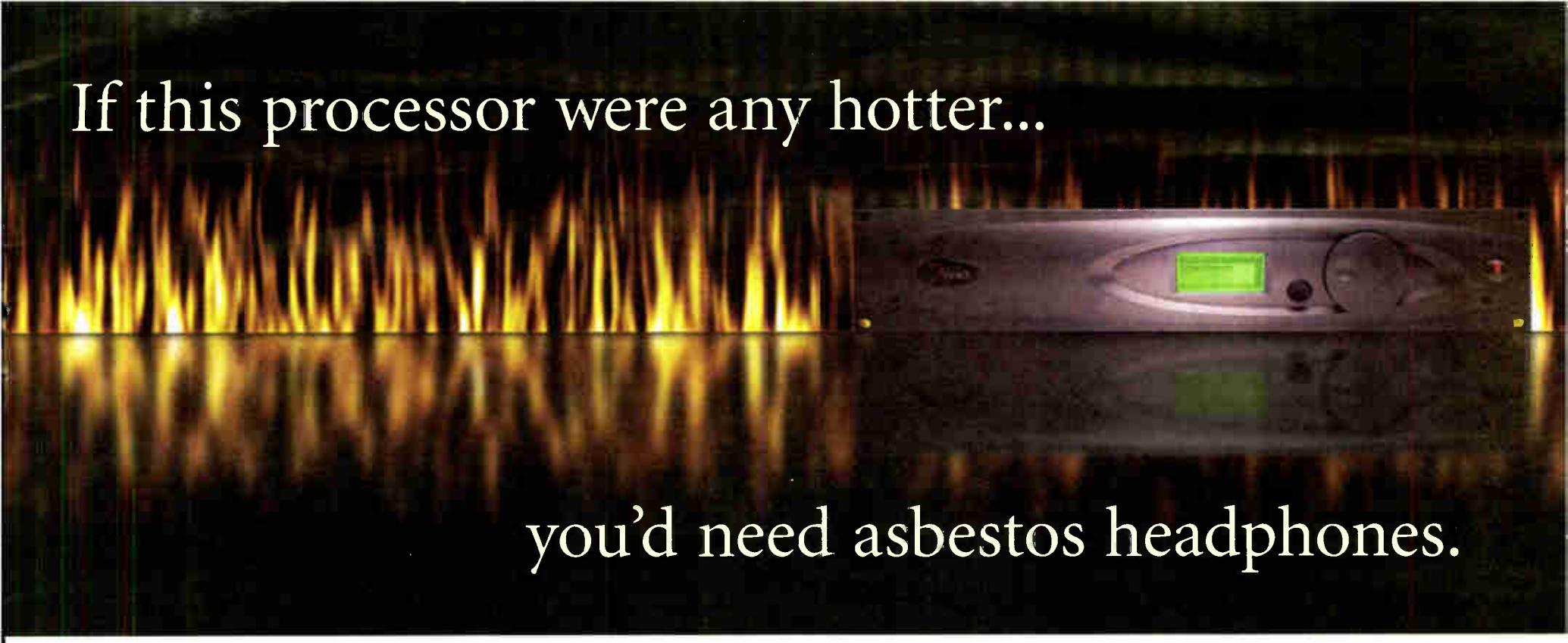
Yet, Schumacher notes the audio environment in a home theater is different than a car, where lots of glass and metal can create an environment he calls "an acoustic cavity," making speaker placement for optimum surround sound tricky.

Delphi is talking to the surround sound companies and keeping an eye on developments, he said.

The company has sold more than 3 million satellite radios. Delphi plans to integrate digital tuners to decode HD Radio in future models.

Another prediction: We'll see satellite and HD Radio technology migrating to cell phones and other personal devices. While Ibiquity Digital has long felt its technology could eventually be used in devices that include a radio such as a PDA or a cell phone, XM Satellite Radio President/CEO Hugh Panero now says satellite radio can, too, and recently predicted it could happen within five years.

The technology exists to make that happen, experts said, pointing to the so-called Microsoft theory of "invisible technology" in which you carry your watch, cell phone and key ring everywhere. Experts say that, according to this theory, manufacturers should place their technology in these devices in order to increase market penetration.



Announcing Omnia-3fm *Turbo*.

There's a reason we call it "Turbo." This new Omnia has more than enough DSP muscle to grab and hold button-happy listeners, and burn your brand into their memory. Omnia-3fm Turbo's 3 new bands of AGC, 3 bands of precision limiting, and distortion-cancelled clipping stage work in harmony to deliver bold, thumping low end, crystal-clear highs and the warm, natural, open feeling for which Omnia is famous.

The new Omnia-3fm *Turbo* gives you features you might not find even in processors that cost a lot more. Here's a small sample of what you'll get:

- Adjustable, oversampled three-band limiter and three-band Automatic Gain Control section for smooth, clean sound that's as loud as you want it to be.
- Omnia Bass Management System provides up to 12 db of bass boost using specially designed, time-aligned algorithms for the loudest, cleanest low end ever.
- Remote control your way: standard serial and optional modem and Ethernet connectivity let you tweak your sound from anywhere, any time.
- Famous Omnia non-aliasing, distortion-controlled composite clipper helps you achieve the clean, loud sound you've been dreaming of.
- Full-featured I/O with analog, AES/EBU and composite ins and outs.
- A double handful of format-specific presets to get you up and running quickly.

Clients rave:

"We raced Omnia-3fm Turbo against the Orban 2300 and DSP-X, and the Omnia was the loudest, cleanest and best box by far. This processor is incredible! It's like hearing the original Omnia again for the first time."
— Mike Oberg, WGMO-FM

"We installed two Omnia-3s... our competitors have noticed the change in the audio quality, and they are wondering what our stations have that they don't!"
— Allen Osborne Maldonado, Cocatel, Honduras

"We installed the Omnia-3 on KQAK-FM and noticed an immediate difference - so did our listeners! We sound louder, crisper and better than ever before.
— Keith Shipman, KQAK-FM

Omnia
A Telos Company
omniaaudio.com

The new Omnia-3fm Turbo has a US MSRP of $3,995.00. But for a limited time, you can get it for **only $2,995.00.** Call your Omnia dealer for details.

Want to really stomp your competition? Get an Omnia-6EX, the six-band, dual-path processor with twin processing paths for your standard FM and HD Radio™ signals.

For AM audio that peels paint off the wall, you want the flamethrowing Omnia-5EX HD+AM, with simultaneous processing for conventional AM and HD Radio™ broadcasts

Put the power of Omnia in your Windows® PC! Omnia A/X works seamlessly with Real, Windows Media, MP3 streaming encoders and audio production software to make your streaming audio sound fantastic.

Workbench

Radio World, January 5, 2005

Past columns are archived at *www.rwonline.com/reference-room*

Start the New Year Securely

by John Bisset

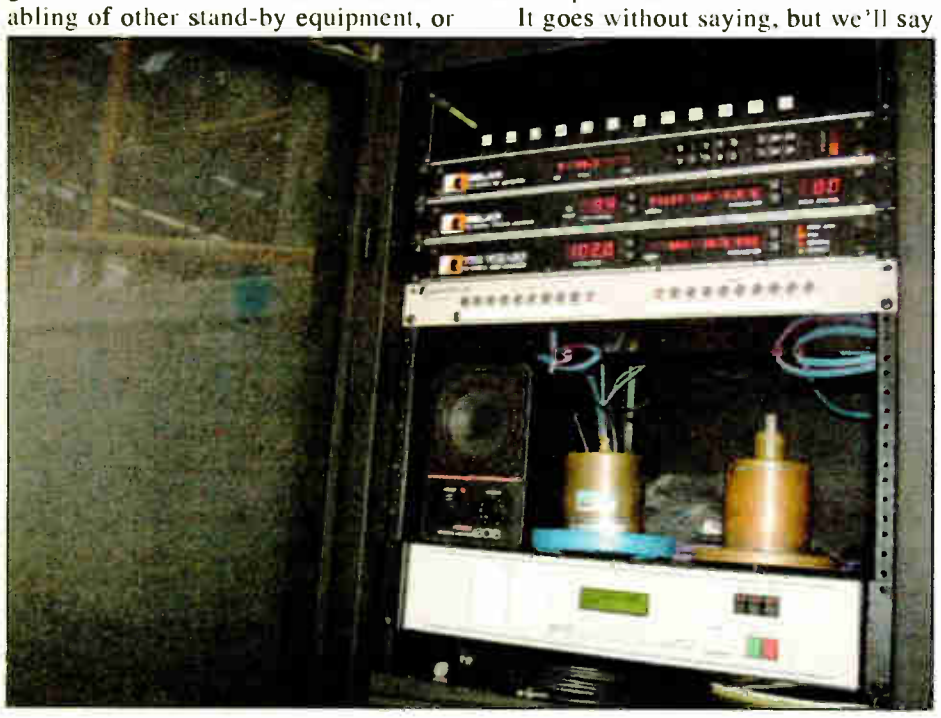
The recent rash of transmitter site break-ins has gotten readers' attention. Cell towers as well as broadcast facilities have been involved. Damage reports run the gamut: holes drilled in generator oil and fuel filters; the disabling of other stand-by equipment, or of building alarms; wires ripped from punch blocks; all breakers thrown to OFF; even removal of the station log book or technical manuals. Most of the break-ins have been on the weekend or on holidays, usually between midnight and 6 a.m.

Bob Clinton with the consulting firm Cavell, Mertz & Davis posted good information for his local SBE chapter. Should your site experience a "middle of the night" failure, keep these tips in mind:

It goes without saying, but we'll say it anyway, that if you go off the air on a weekend or in the middle of the night, call a local authority to assist you in visiting the site.

Now is a good time to make friends with your local police precinct or sheriff. Why not drop off station T-shirts, caps or key chains to help generate good will?

Make plans now so that you can always bring a second person when you visit a site, especially if it is in the middle of the night, in response to going off the air.



Use your remote control to monitor site entry.

Barbed wire adds additional protection. But check local statutes first.

You should have some kind of security system installed at the transmitter site that at least monitors unauthorized entry. Read on for a cheap means of achieving that end.

Lamar Smith, engineering manager for Entercom's Scranton, Pa., cluster, is a frequent *Workbench* contributor. Lamar has just the answer for engineers looking to monitor their transmitter sites inexpensively.

Frustrated with false alarms from security companies, Lamar bought sets of magnetic switches from Radio Shack and installed them on his transmitter site doors. The switches are tied into his remote control equipment and are set to alarm if broken. An alarm has been programmed into the remote control to dial Lamar's pager.

See SHROUDS, page 12 ▶

Bob Clinton can be reached at *bclinton@cmdconsulting.com*.

★ ★ ★

Commander G3

Modular Stereo POTS • ISDN • GSM Codec

Introducing the new Tieline Commander G3

At Tieline, we've taken a fresh approach to audio codec design. Now you can customize your audio codec to suit your exact needs for remote broadcasts and STLs. You only pay for what you need and we're the first to be compatible with most major ISDN and POTS codecs in your rack.

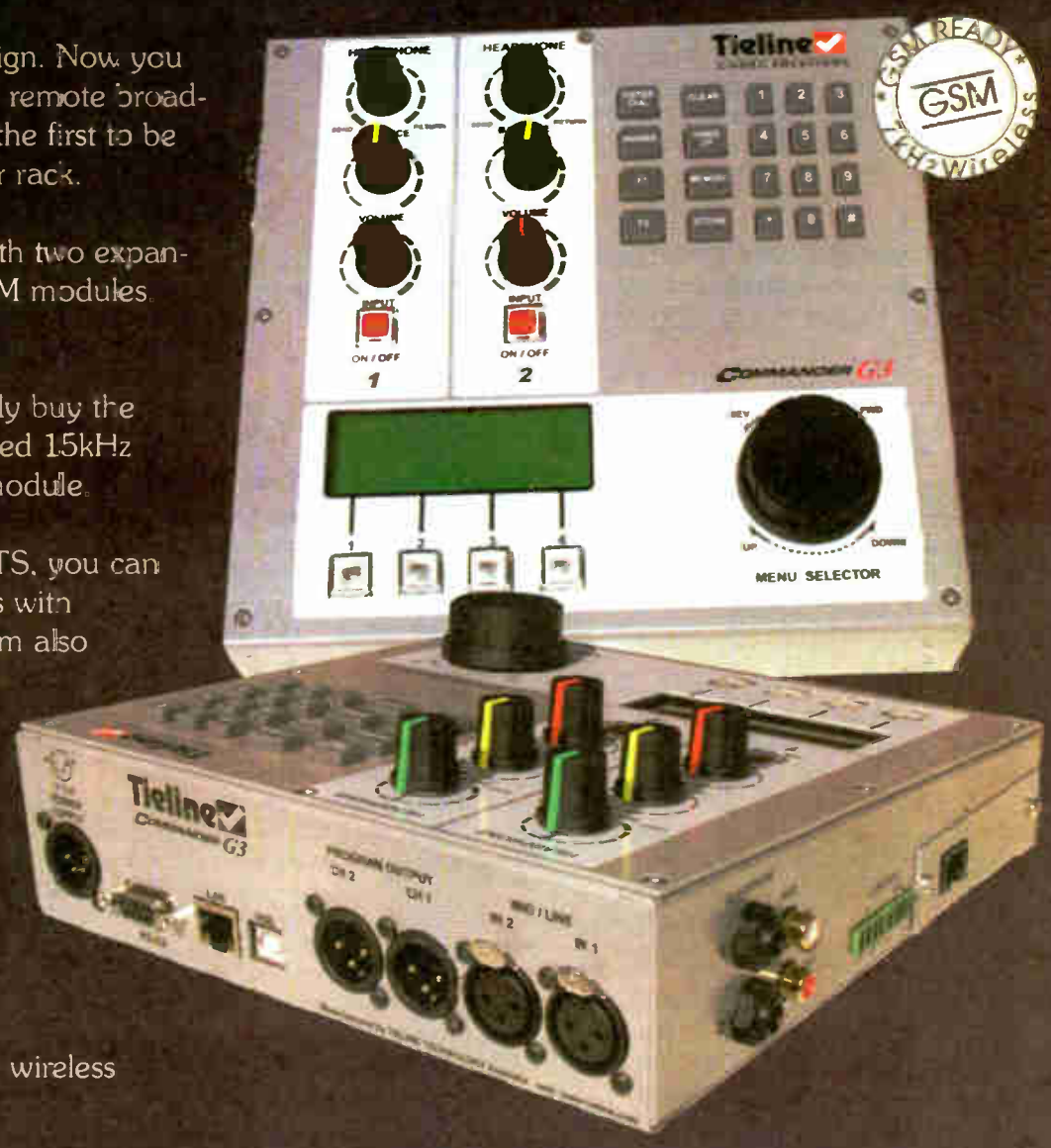
Think of the new Commander G3 as a codec foundation with two expansion slots which accept your choice of POTS, ISDN and GSM modules. You simply buy what you need.

For example, if you need a mono 15kHz POTS codec, simply buy the Commander G3 with a POTS module for one low price. Need 15kHz Stereo or dual mono over POTS? Just add another POTS module.

If you're looking for a mono/stereo ISDN codec without POTS, you can buy a Commander G3 with an ISDN module only. It comes with G.711, G.722, and Mpeg Layer 2. Tieline's "Music" algorithm also delivers an astounding 15kHz stereo over a single ISDN B channel! You can always add a POTS or wireless GSM module later if you need.

Need a stereo ISDN STL with automatic failover to 15kHz mono POTS? Buy the Commander G3 with POTS and ISDN modules plus Tieline's new Freedom Failover software kit.

Plug in the GSM module and deliver up to 7.5 kHz over GSM networks and up to 15 kHz over HSCSD wireless networks.



Control your remote talent's mic input gain from the studio and send simultaneous audio, serial data and relay activation in either direction

We've even created digital matrix router software which enables you to cue audio off air, create a local audio intercom, and talkback to the studio all without interrupting your broadcast.

The new Tieline Commander G3 is simply the world's most powerful, flexible and customizable codec. It's even compatible with your Comrex** Vector, Matrix, Blue and Musicam Liberty POTS codecs.

Every Tieline codec comes with a two year warranty plus the support of an experienced engineering team with more than 25 years in the broadcast industry right here in Indianapolis. That's why hundreds of stations, major radio groups and networks across America use Tieline to deliver audio every single day.

Hurry, free demonstration Commander G3's are limited. Call you favorite broadcast dealer or call us at 800-750-7950 to book your free demo.

Tieline TECHNOLOGY

** Comrex and Musicam are registered trademarks of each respective corporation

800-750-7950

www.tieline.com/rw

Shrouds

▶ Continued from page 10

With multiple sites, it's not uncommon to receive several pager alarms as he or his engineers visit sites during the day. Nighttime alarms are another story. They shouldn't occur, but the remote control is ready to send its notification should a door contact trip. The process is silent and cannot be disabled, as the switches are on the inside of the doors. It does not rely on a security company.

The system is not vandal-proof; if the telco or T-1 lines are cut, the system won't work. But it is better than nothing.

Lamar Smith can be reached *lasmith@entercom.com.*

★ ★ ★

E. J. Knight is a CPBE with KTAR(AM) in Phoenix. Regarding our column on locking fences, E. J. offers a suggestion.

Depending on the type of gate is involved, and whether you are using a chain or a metal gate, you can weld two flanges to any two parts of the gate opening. The flanges should have a diameter with opposing holes sufficient to accept a "shrouded" type Master lock. Such a lock does not expose any of the "shank" portion of the mechanism. This is the portion that is generally cut.

For more information on the various shrouded locks, go to *www.masterlocks. com.* Under Products, open the Group field and scroll to "shrouded padlocks."

If you're planning site security, check with your local lock shop or locksmith. Good ones have many creative suggestions for the gate, as well as site security. It costs nothing to ask.

E. J. Knight can be reached at *ejknight @ktar.com.*

Sam Roffe, an engineer for KBCS(FM) in Belleview, Wash., offered similar suggestions. He adds that there are locks that are almost impossible to cut, though expensive. Check with a local locksmith. Also ask them to provide an SBE program on site security. The locksmith company may well pick up several new clients; and the suggestions will be helpful for the engineers in attendance.

Sam can be reached at *sroffe@bcc. ctc.edu.*

Some engineers have topped their fences with razor wire or barbed wire. A cautionary note: Check with local statutes before proceeding. Some jurisdictions prohibit razor wire. Find out before you make the investment.

★ ★ ★

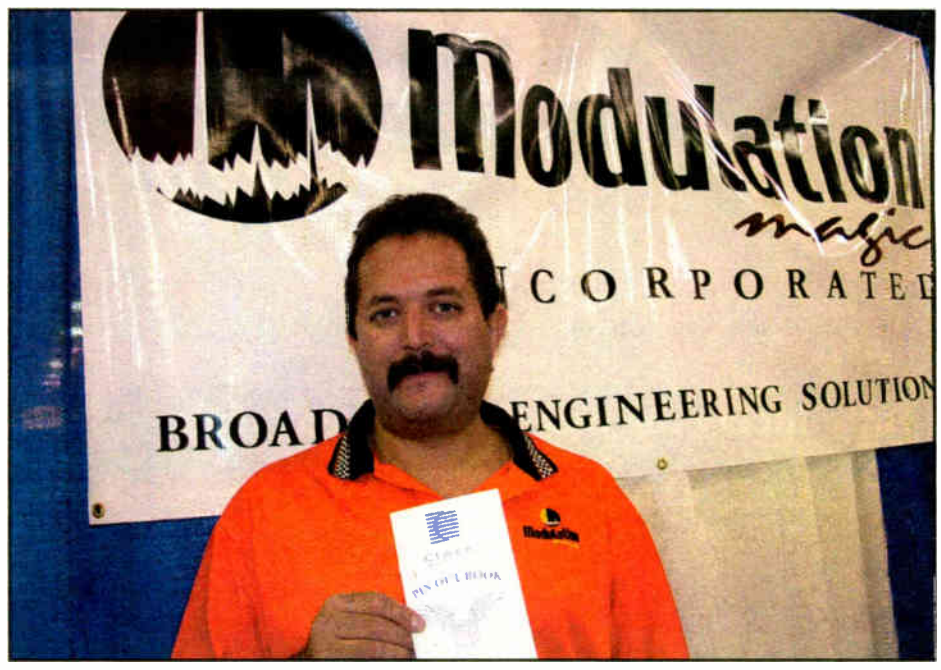
Les Proctor is with KNEB(AM/FM) in Scottsbluff, Neb.. Les would like some feedback from *Workbench* readers to solve a problem with generators and UPS systems.

Les writes that the stations purchased propane-powered generators with automatic transfer switches for both the studio and transmitter sites. As a part of the installation, UPS units were included for computers and other critical broadcast equipment.

The expectation was that the UPS's would protect the computers and critical equipment, and maintain uninterrupted power for this equipment during the half-minute or so between utility power failure and the generator getting online.

For short power outages, the system works flawlessly.

Unfortunately, the UPS units will not accept the generator power, due to the distortion of the sine wave output of the generators. Ironically, the distortion is caused in part by the uninterruptible supplies themselves, because they are non-linear loads. This means that the UPS's continue to run on batteries, even though the generators are successfully powering non-UPS "protected" equipment. Since the UPS will not accept the generator power, they will run only until their batteries run down.



Every engineer needs a copy of the free Clark Pin Out Book.

The makers of the generators and UPS's have suggested loading the generators with as many "clean" (linear) loads as possible, adding isolation transformers, or adjustable input UPS's.

They have yet to find a practical solution to the problem, and therefore request suggestions for cleaning up a generator's output so that the UPS is "happy" with it.

Write and tell us your ideas to *john.bisset @dielectric.spx.com.* Les Proctor can be reached at *lproctor@krvn.com.*

★ ★ ★

Jeff Rosenberg runs Modulation Magic, a broadcast engineering project and solutions company near Boston. At the recent Boscon trade show, Jeff was offering a neat pinout booklet, prepared by Clark Wire and Cable. It gives a quick reference guide to standard pin-outs.

Also covered is an explanation of normalled and half-normalled patchbay wiring, all the typical audio connectors, as well as pinouts for 9- and 15-pin Sub-D connectors, as well as modular plug wiring. The resistor color code is also included, along with a number of humorous mnemonics to remember the colors.

As Sue Clark writes in the preface, this is a "must have" for your back pocket or toolbox when handling a wiring project.

And remember, *B-efore B-ad R-atings O-vercome Y-ou, G-o B-uy V-ery G-ood W-ire!*

For your copy of the Clark Pin Out Book, send a request to *jrosenberg@ modulationmagic.com.*

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is the northeast regional sales manager for Dielectric Communications. Reach him at (571) 217-9386 or john.bisset@dielectric.spx.com.

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

BUSINESS DIGEST

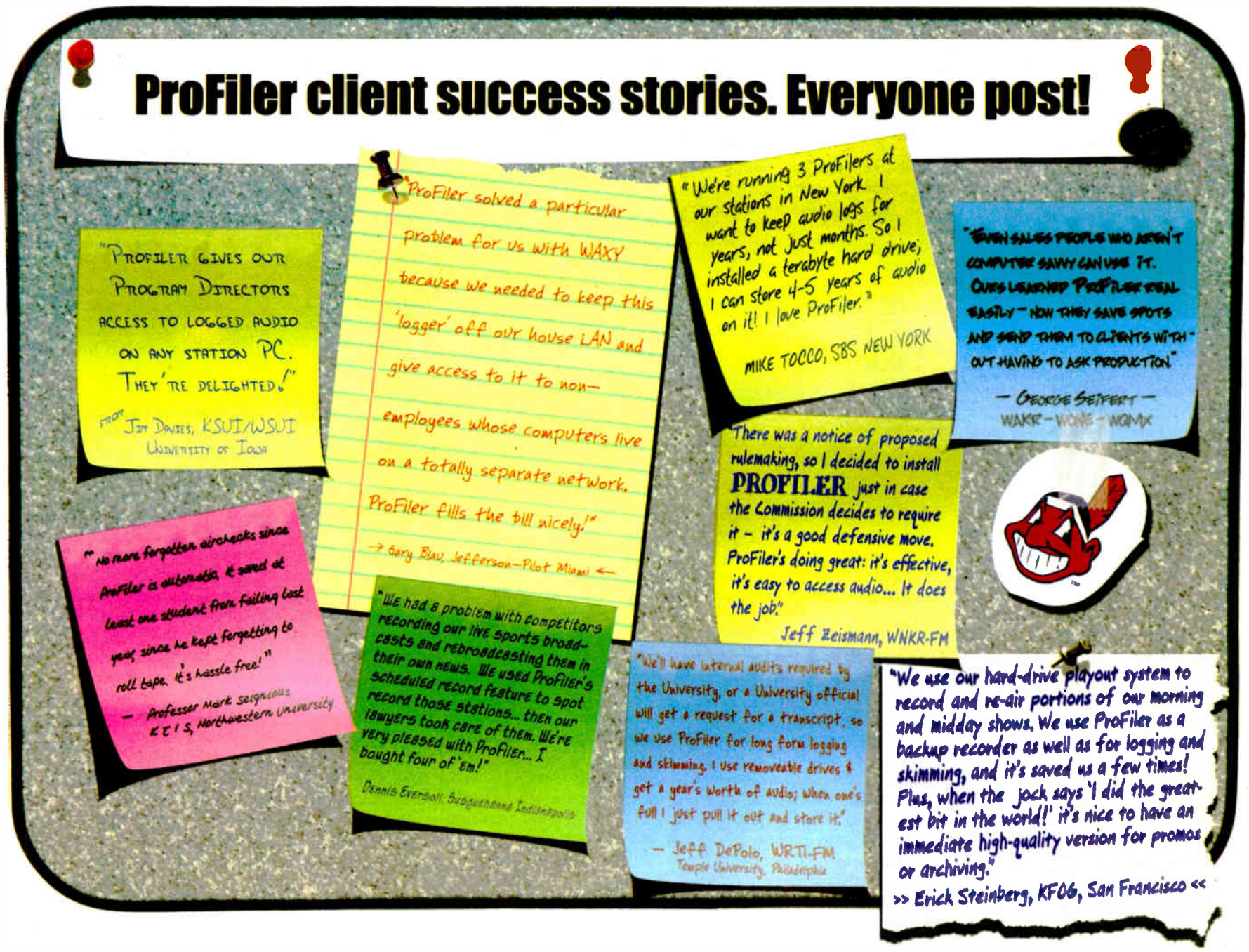
Burk Dealers Attend Training

Burk Technology recently hosted three of its broadcast dealers for a one-day training certification program.

Certified as transmitter remote control specialists were, from left, Matt Cauthen and Jim Peck of SCMS and Richard Downe of Broadcast Equipment and Services Brokerage.

The program covered the Burk Technology product line, with emphasis on transmitter remote control system options and configuration. Training was at Burk Technology's facility in Littleton, Mass.

Burk provides dealer training throughout the year. Dealers can contact the company at (800) 255-8090.



We call it ProFiler. Our clients call it indispensable.

What would you do with a **computer-based audio logger?** Telos ProFiler's MP3 audio logging features alone (expandable to capture up to **8 streams** one one PC) are enough to satisfy most folks, but ProFiler is loaded with other tools... like a **skimmer** that switches to a higher bit-rate when the mic is open, **export functions** that help you assemble great-sounding airchecks and composites quickly, and remote **access via IP.** But – as you can see – our clients tell us that ProFiler helps them do even more.

Now, it's your turn. Tell us how *you'd* use a software logging package this powerful and you could win your very own copy. First, discover all of ProFiler's capabilities by browsing **www.telos-systems.com/ProFiler/**. Then, tell us what problem ProFiler could solve for your station; e-mail your ideas to **ProFiler@telos-systems.com** by March 31, 2005. If yours is the coolest, we'll send you a **free ProFiler*** (plus, we'll use your idea in one of our upcoming advertisements).

Telos ProFiler. How will *you* use it?

Telos
AUDIO | NETWORKS

Raising the Digital Radio Flag

The Big Picture

Photo: Gary Hayes, BBC

There Is No Equivalent to the DTV 'Broadcast Flag' For Digital Radio, But This Could Change Soon

by Skip Pizzi

In the Dec. 15th issue, we considered the broadcast flag and its role in preventing Internet redistribution of content received via digital television broadcasting. FCC rules requiring consumer TV equipment to honor this feature go into effect on July 1, 2005, but no rules yet exist on such a process for digital radio.

As the IBOC format moves into deployment, the industry is still considering whether digital radio will get its own flag. Note that just because first-generation consumer equipment is already on the store shelves does not preclude this, as the DTV model shows. ATSC equipment is now considered to be at its fifth generation, with many thousands of units already in consumers' hands. These units will not honor the ATSC Broadcast Flag, but neither should flagged content cause them to misbehave (although a few errant ATSC receivers did, requiring a manufacturer's recall).

The key point here is that even as the IBOC rollout proceeds, the introduction of a broadcast flag for radio could still feasibly occur at any time over the next several years, so long as backward compatibility is assured. If a regime is established, legacy receivers will not observe protection rules, but future equipment will, and that's better than nothing from the content community's perspective.

Therefore radio may be in for a long discussion of this topic.

Why radio is different

The distribution environment differs in several important ways between music/audio and movies/TV, however.

By way of review, recall that in the previous column, we considered the unusual confluence of sentiment from TV content, broadcast and consumer electronics interests that led to the DTV flag. To wit, a primary concern of over-the-air (OTA) DTV broadcasters was that they would be increasingly left out of the distribution mix for premium content if they could not assure content owners that adequate protection from Internet redistribution could be offered to programming distributed via DTV broadcast. These broadcasters feared that such content would migrate to the inherently more secure digital cable and satellite services, and OTA broadcast would be left with low-value content only. Thus DTV broadcasters were predisposed to accept (and indeed, initially proposed themselves) such a regulatory regime.

Consider also that part of the Hollywood business process involves the well-known "distribution windows" system, by which cinematic content typically is released first only in theaters, then moves to DVD/VHS (and generally around the same time to PPV/VOD and airline release), followed by pay-TV (HBO, Showtime, etc.), and later to non-pay cable/sat (USA, TNT, Bravo, etc.), then finally to broadcast TV.

None of the above applies to radio distribution, at least not today. High-value audio content (i.e., newly released music and network programming) flows to a single tier of distribution, in which OTA broadcast outlets generally occupy the top spot. New music is made available to all radio broadcasters and record stores at essentially the same time ––if anything, broadcast radio occasionally gets a highly anticipated new release a bit *earlier* than the stores — and network radio content generally has nowhere else to go besides affiliate stations.

Radio is less likely than TV to accept any mandatory content protection on its digital services.

So radio broadcasters do not anticipate any imminent threat to their premium content supply, and are thus less likely than TV broadcasters to willingly accept a broadcast flag or any other mandatory content protection on their emerging digital services.

Change of venue

A couple of recent, major developments must be factored into this situation, however.

First, record companies believe that their bottom lines have been dramatically and negatively affected by music file-sharing via peer-to-peer on-line services (such as the original Napster, Grokster, Gnutella, KaZaA, Morpheus and the like). They feel that this problem is rooted in the CD release format's lack of any effective content protection, allowing easy capture of digital content by users who can then redistribute it in digital form. These record companies — generally represented by their trade organization the Recording Industry Association of America , or RIAA — are therefore wary of any new digital distribution format proceeding without such protection.

Second, consider also that satellite radio and, more recently, legitimate online music distribution, have now entered the audio distribution world. The conditional access (i.e., encryption) intrinsic to such subscription services could create an environment where multiple levels of comfort are provided to content companies, as they already exist in the DTV world. In other words, record companies could feel that distribution of new content via satellite radio or online services was more controlled than OTA digital broadcasting, and therefore prefer the alternative services over OTA stations for premium content distribution.

At present, satellite radio and other alternative distribution media do not hold sufficient market share to make this a particularly viable course, but this, too, could change relatively quickly. Consider that cable and satellite were also once marginal services, but grew to their current ~85 percent penetration within a couple of decades' time.

In fact, early movement toward this end may have already begun, most notably with the exclusive "pre-release" of U2's "Vertigo" album on Apple's iTunes service (and a heavy TV advertising campaign supporting it).

From a legal perspective, broadcasters could challenge record companies from withholding content under the rubric of compulsory license, but digital broadcasting might be carved out of this provision by subsequent rulings. (The simulcast nature of the IBOC system makes the latter a more cumbersome process, however.)

Additionally, the music industry could establish a system of multiple release windows, as in the cinematic world, of which the iTunes example cited above could be a harbinger. Naturally, OTA digital radio, absent any content protection, would occupy the lowest rung on such a ladder.

Clearly this is an argument that will not soon be quieted, and its business ramifications for radio's digital future may ultimately loom large.

Skip Pizzi is contributing editor of Radio World.

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BSI

Software to Design Circuits and PCBs

by Tom Vernon

Even in today's digital, IT-intensive radio plant, there is still a need to design and build one-of-a-kind electronic circuits.

Simple devices such as digital tone generators and small distribution amps aren't really profitable for companies to manufacture and sell. Other circuits may need to be created for requirements that are unique to your station. Control interfaces between an older analog console and an automation system come to mind. And sometimes it's cheaper or just more fun to design and build your own equipment.

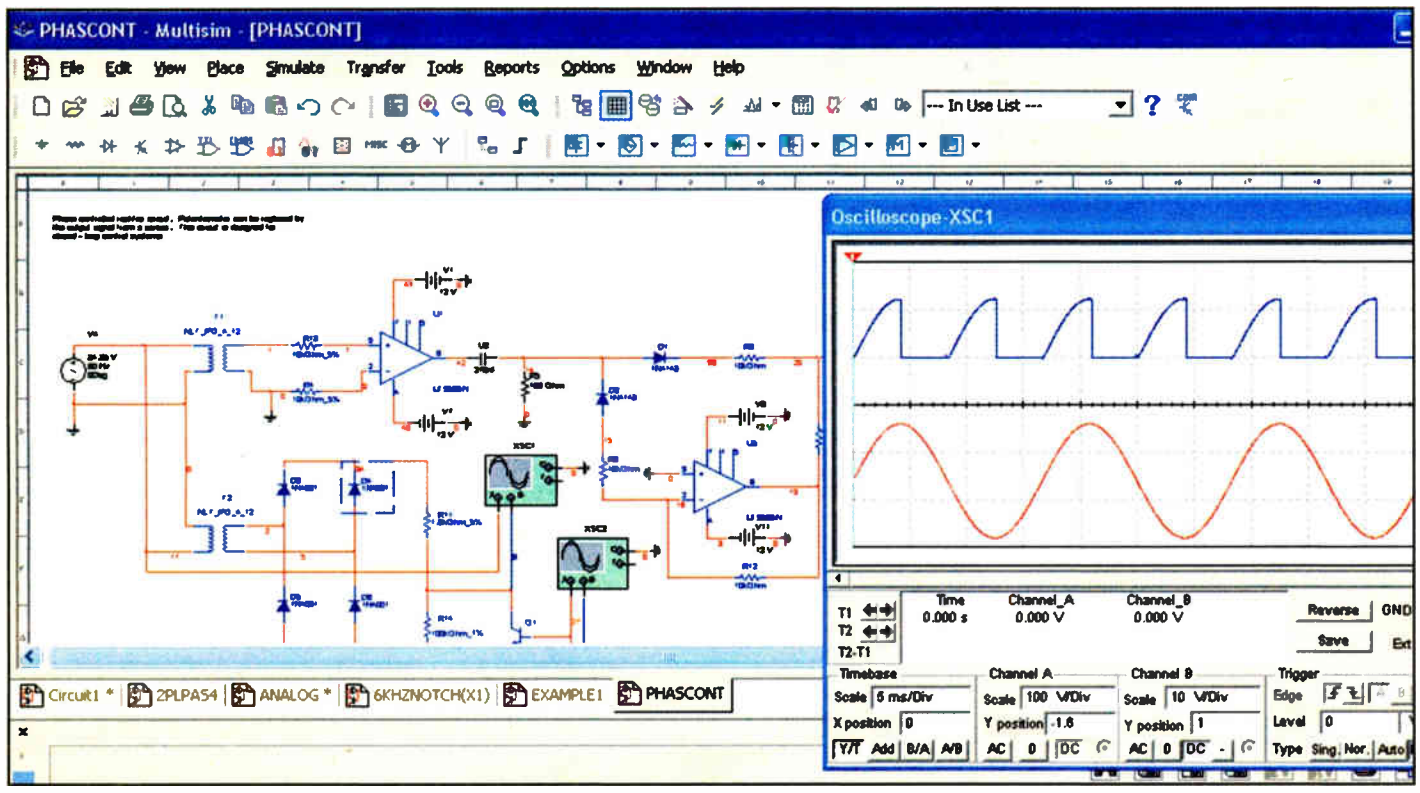
Sadly, the road between a sound schematic and a working circuit can have many detours and land mines. Lead capacitance and critical parts placement can be particularly troublesome in RF gear. Digital circuits can suffer from propagation delays, glitches, timing violations and bus conflicts. Getting a new circuit to work properly is usually the most tedious and time-consuming part of the process.

Fortunately, software is available to assist both with circuit design and PC board layout. Circuit simulation products range from simple packages costing around $49, to elaborate design suites costing up to $4,000, which can integrate with Computer-Aided Manufacturing equipment and work directly with PC board manufacturers.

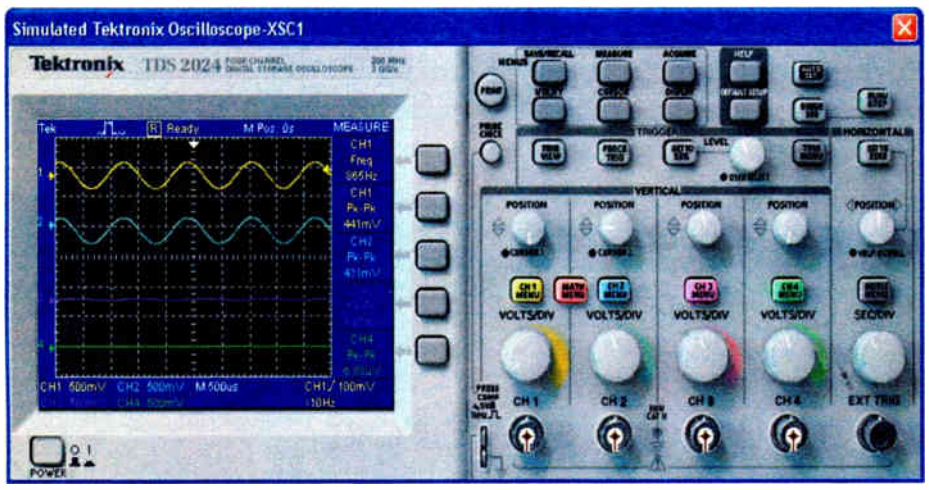
On the grid

Much can be accomplished even with low-end products.

Using Global Specialties ProtoLab 4.0, for example, users insert components on a grid similar to a breadboard. Parts are selected from libraries of active and passive devices. Additionally, there is a library of pre-designed circuits, including MOSFET and transistor amplifiers, LC tuned circuits, power supplies, current mirrors and oscillators.



Electronics Workbench makes high-end design products.



The company has software models of Tektronix oscilloscopes, which look and function like the real thing.

Once a circuit has been built on the virtual breadboard, users can adjust timing intervals, apply power and signal sources. It is then possible to test and debug the circuit by placing the probes from virtual test equipment at the desired nodes. ProtoLab includes a voltmeter, ammeter, ohmmeter, wattmeter and oscilloscope.

A basic circuit simulation program does have some limitations. Users are limited only to basic digital circuits in addition to analog. It is not possible to add additional libraries of electronic components. Finally, programs such as ProtoLab cannot turn the completed circuit into a PC board layout.

Global Specialties National Sales Manager Frank Menichello adds: "While there is a market for programs that design PC boards, there are still a lot of people who prefer to take a working circuit and build it using conventional breadboarding tools and test equipment."

Designing from scratch has been a part of the broadcast tradition since equipment was actually built on wooden breadboards. Circuit simulation software takes some of the time and tedium out of the process.

TECHNOLOGY FOR MANAGERS

He said some of the limitations of ProtoLab, such as the ability to add component libraries, will be fixed in the next version of the product, due this spring.

SPICE-y

Mid-range products offer more possibilities. IslandLogix's Visual Spice is a 32-bit analog, digital, mixed-mode simulator. SPICE — Simulation Program for Integrated Circuit Emphasis — is a general-purpose circuit simulation program for nonlinear DC, nonlinear transient and linear AC analysis. SPICE however, only allows simulation of analog devices.

Included in the software are a 64-channel real-time oscilloscope, logic analyzer and programmable signal generator. In addition to SPICE capability, Visual SPICE 6.0 provides XSPICE, which offers additional flexibility, as Nigel Smith, a software engineer for IslandLogix explains.

"With XSPICE, speed and accuracy is much faster, since devices are modelled at the C/C++ program level, rather than using macro models. XSPICE also allows plug-in devices to output text and graphics directly to the schematic, allowing results to be displayed during the simulation."

Smith said that with XSPICE, an entire module can be modeled, including items such as modems, proprietary ICs, USB ports or wireless devices.

Very simulating

High-end products such as Electronics Workbench can take a circuit design all the way from idea to manufacturing, and have more advanced features, including interactive simulation.

Said Ian Suttie, vice president of sales and marketing, "It's possible to make adjustments and changes to the circuit while the simulation is running, enabling real-time 'what if' scenarios to be developed. The simulation is embedded in the schematic capture part of the program, so simulations can be run early in the design process."

More advanced virtual test instruments are available. Through a partnership with Tektronix, Electronics Workbench has developed software models of Tek oscilloscopes, which look and function like the real thing.

See SOFTWARE, page 17 ▶

Software

▶ Continued from page 18

Both advanced analog and digital circuitry can be included on designs using high-end software. Lower-end programs cannot always handle both analog and digital in one circuit, or may require the user to purchase and add-on module for fully integrated design capability.

An add-on module for RF circuits can handle issues such as trace shielding, component spacing and lead dressing, which are critical in designing high-frequency circuits.

Once a circuit design has been finalized, another software module can handle the PC board layout.

"A nice feature of this software is that if you make circuit changes to tweak the PC board, those changes are propagated back to the schematic diagram," Suttie said.

The software can check for maximum current flow in parts of the circuit, and define the minimum trace width accordingly. Finally, Electronics Workbench can design the parts placement layout to be silkscreened on top of the completed PC board.

Also included is an entry-level CAD package to do faceplate and chassis design. Alternately, the data can be exported into a more robust program such as AutoCAD.

The market for circuit simulation software seems to be expanding. "A recent survey showed that about 60 percent of engineers now use some form of design software for circuits," Suttie said. "That is up significantly from just five years ago."

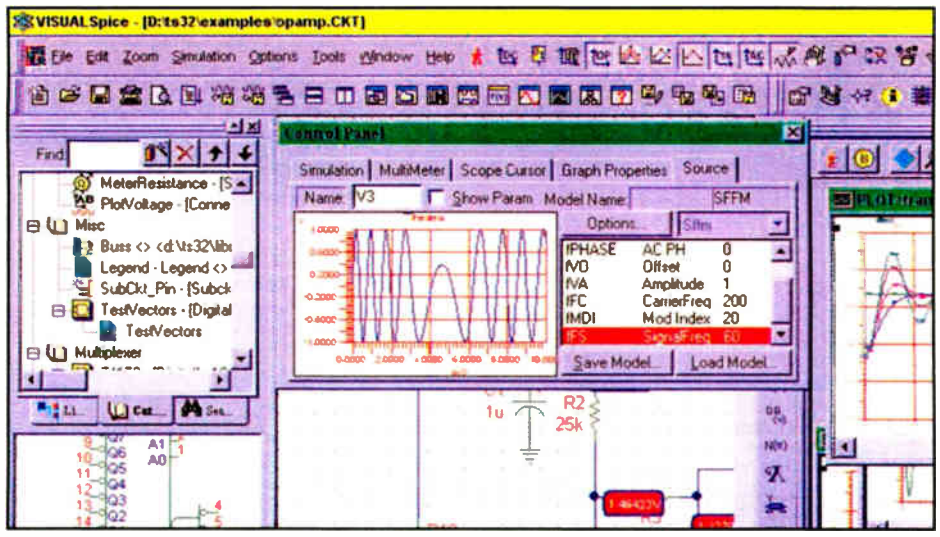
Closer look

Even though circuit simulation software use is on an upswing, it is does not appear to be seen on many chief engineers' computer desktops. Frank Foti, president of Omnia Systems, thinks it deserves a closer look by broadcasters.

"Engineers at the station level are too busy with other tasks to spend much time in the shop breadboarding circuits," he said. "Ironically, some of the long-range projects on their to-do list involve designing and building circuits, which could be completed quickly if they had this type of software. Not only could they build the circuits, they could probably take the extra steps to get them totally right in less time than it would take to get the basic circuit going with conventional tools."

Foti said that at the systems level, engineers might benefit from XSPICE by modelling devices such as modems, RDS coders and remote interfaces.

Designing and building equipment from scratch has been a part of the broadcast engineering tradition since equipment was actually built on wooden breadboards. Circuit simulation software takes some of the time and tedium out of the process, and may make it possible for engineers to get to some of those construction projects which have been on their to-do list for so long.



Visual Spice 6.0 is a 32-bit analog, digital, mixed-signal simulator from Island Logix Inc.

For More Info

ProtoLab 4.0
$49.95
Contains a library of ready-made circuits and five virtual test instruments
Global Specialties
(800) 572-1028
www.globalspecialties.com

Visual Spice 6.0
$99; professional $249
Advanced 32-bit analog, digital, mixed signal simulator
Island Logix Inc.
(954) 981-6998
www.islandlogix.com

Electronics Workbench
$2,000 - $4,000
A modular suite of products with software for schematic capture, simulation, PCB layout and autorouting and CAM preparation
Electronics Workbench
(800) 263-5552
www.interactiv.com

FIRST PERSON

Musings of an Auction Loser

Our Intrepid Correspondent Finds Himself No Closer to Challenging Clear Channel's Reign

by Jim Withers

Well, the fat lady finally sang in Round 62, but many of us didn't like her tune. FM Auction 37 has been a rousing success (for the FCC and the black hole of the Federal Treasury) and a tremendous letdown for a couple of hundred would-be owners, (of which I am one). Now that it is over, I am still a little dazed at how it went.

For background, after *Bechtel vs. FCC*, which did away with the comparative hearing process, the FCC had 351 allotments floating around from several years of rulemakings. Congress decided to start milking the spectrum cow in 1996, and eventually 288 of the 351 permits were put on an auction list and were bid on in Auction 37, which ended in November.

Opening bids, from a low of $1,500 to a high of $200,000, were determined by the FCC and were based on its judgement of coverage area and population. Some of the permits had upgrade/move-in potential and some were located close enough to medium markets to look like bargains. A lot of them, though, were out in the middle of nowhere.

In any event, it was with visions of being a "Group Owner!" that I filed for 11 permits, anted up, and got ready to bid.

As it turned out, though, this was not a bargain-hunter's paradise. I regret to say that I am today no closer than before to challenging Clear Channel for ownership dominance.

Blue Light Specials

Let me say here that regardless of what you think about the outcome, the FCC deserves kudos for putting together a slick auction setup.

It was with visions of being a 'Group Owner!' that I filed for 11 permits, anted up and got ready to bid. As it turned out, this was not a bargain-hunter's paradise.

The online bidding and results system performed flawlessly, as did the Auction Tracking Tool software. Tracking competing bids and standing high bids was simple and removed any uncertainty of who bid what, when, and on which permits.

In addition, the commission had a rapid response team standing by at "Auction Central" to answer any questions. I called in to the hotline and talked to Tom Nessinger at the Media Bureau a couple of times with quirky questions; he was responsive in getting me answers quickly.

The rules regarding proactive and automatic waivers, as well as bid withdrawals, struck a good compromise between being too intrusive or conversely, allowing a bidding free for all.

In any event, here's how it went down.

There were initially 456 bidders. The commission required all bidders to list the allotments on which they wanted to bid and then to submit an upfront payment equal to the number of permits on which they might want to bid in each round.

I know, I know, sounds confusing, but in practice, it made sense by basically limiting tire kicking and "shill" bidding.

The problem, though — at least for the guys looking for the Blue-Light Special — was that 50 or so bidders listed all, or nearly all, of the 288 allotments and submitted upfront payments of $1 million or more!

Uh, oh. Get out the checkbook, Martha.

Bidding initially was held to two rounds per day, then increased to four per day in the second week of the auction as bidders got accustomed to the system and as some dropped out, and finally went to eight rounds per day. Right away, though, as I downloaded and looked at the results of the first few rounds, the idea of capturing a Los Angeles signal for a Death Valley price evaporated. Prices on all but the most remote locations (ever heard of Lovelock, Nev.?) got bid up pretty fast.

$689,000/license

Still, even though I saw it happening, I must admit to being dumbfounded at the results.

Apparently this particular Federal Cow was *way* overdue for milking. The final tally was $178,001,500 ladled into the federal treasury for 258 licenses — $689,000 on average, for each and every license!

Now, I can tell you, I looked at every single permit and ran the contours and pop counts on quite a few. There weren't any in Chicago or Los Angeles and in fact, there weren't even any in Kansas City or Jacksonville (although there was one in Cheyenne, Wyo.; final bid $4,392,000, thank you very much). Cheyenne is nice and all, but $4,392,000? Why not pony up another million or so and just buy the whole town?

I am just shaking my head at the bidding.

For example, I targeted (and bid on for a few rounds) a little Class A in Carmel Valley, Calif. Ocean view and Northern California weather.

Now, this is not *the* Carmel of Mayor Clint Eastwood fame, but Carmel Valley, which is nearby (but not *too* nearby) and the tower cannot be moved to any great degree, by my figuring. In other words,

this station isn't going to show up in the San Francisco Arbitron any time soon.

Even so, I have lived in Northern California and thought, what the heck, if I win, I could retire there and push $10 spots for pin money. So I figured, maybe this thing goes for $50K. Maybe $100K since it is California and there is the location tax, but that's tops. Since it's only a Class A, figure maybe $150K to build it and the winner is at $200-250K, all in.

Well, hold on to those wallets, K Mart shoppers, because Carmel Valley drew a cool $1,720,000 in Round 16 and stayed there right through the final gavel!

So, not your average everyday garage sale price. Honestly, the whole auction reminded me of the dot-com deal several years ago. JunkForSale.com valued at 433 times earnings! Lovelock, Nev., valued at $433,000! On the surface, no way to make either thing work, but there you are, standing in line to climb that pyramid.

Not a total loss

In any event, when it all ended, the top three bidders collected 69 of the available allotments (after paying handsomely for the rights, of course). Another 107 picked up anywhere from one to several allotments and the rest of us went home empty-handed.

No sour grapes on my part, you understand; but I do confess to being just a little disappointed at not winning something. I even bid on Lovelock and couldn't get it!

The number one group, both in terms of allotments and price, got 38 permits. Since after grant, you only have 36 months to build a CP (and no extensions), that's one new station to build every 28.8 days! I might see if they need some consulting help.

For those interested in details, all of this is available at the FCC's Auction Web site, *http://auctionbidding.fcc.gov/bidding/results.htm*.

So "Let's Make a Spectrum Deal!" is over and here I sit, with nothing from Door Number 1, 2 *or* 3. Still, there might be a silver lining in all of this.

For those of us who own stations already, they are probably worth more than you think! I mean, look at the premium put on, for example, Ingram, Texas: a very affordable $692,000 (and another one I didn't get). Based on prices like that, now that I'm out of the auction business, I'm going to spruce up my little Mom and Pop 1 kW AM in Corpus Christi and wait for the buyers to line up!

What with the beachfront view and all, Corpus is beginning to look an awful lot like Carmel Valley.

Jim Withers is (still) a single station owner in Corpus Christi, Texas. Reach him at (314) 345-1030 or by e-mail to jim@koplar.com.

Recommended Studio Monitors

Behringer has developed a line of affordable new passive studio monitors, sold in matched pairs with individual response curves. The B2031P is a mid-size speaker with a 8.75" woofer, 150 watts power handling and binding post inputs. Priced as pair!

B2031P List $189.99 **LowestPrice: only $159.99!!**

Studio Interface for Your PC!

Designed to fit in the drive bay of your PC, Henry Engineering's StudioDrive provides the control, mixing, monitoring, and metering functions that are essential to a broadcast studio or production suite. StudioDrive accepts up to 6 audio sources via 4 mixing channels. A Process Insert jack accommodates external mic processing equipment, and there's a provision for an external 'cough switch'. There is also a built-in telecoupler for recording audio (news feeds, actualities) from a standard POTS line, broadcast monitoring system and much more.

STUDIODRIVE List $595.00 **LowestPrice: only $499!!**

DMK Deskmount Kit List $65.00 **$59.00**

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The Inline Patch hybrid connects between an analog or cordless telephone and the wall jack to give you more control over recording and playback. The unit's two back-to-back hybrids give you complete control of audio from both sides of the call. Audio input jacks let you mix sound bites into your conversation. One stereo output jack provides your voice on one channel and the caller's voice on the other. A second output jack contains a mix. Great for newsroom recordings.

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R55E-1812 18/12 modular console List $6,995.00

R55E1818 with fully loaded modules shown in photo.

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NEW!!

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NT2A List $699.00 RØDE

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Dual CD Player Only $199!

STANTON

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S550 List $599.00 **LowestPrice: only $199!!**

DIGITAL RECORDING IN THE PALM OF YOUR HAND!

Portable Digital Flash Recorder

NEW!!

Edirol's new R-1 portable Compact Flash recorder is capable of recording at nine different resolutions in MP3 and uncompressed WAV formats. Its built-in stereo mics sound nothing short of incredible. Export your audio to your computer via USB or to any S/PDIF compatible recorder!

R-1 List $550.00

EDIROL

LowestPrice: only $439!!

FREE! Sennheiser HD202 Headphone!

Incredible Value! 10-pack of XLR Patch Cables

Clean up the backs of your racks with these short 3' XLR-to-XLR patch cables, now on sale at BSW in the 10-pack for only $49! **SMM3PKG** List $89.90

LowestPrice: 10 for only $49!!

Lightning-Quick Digital Audio Editor

The Short/Cut audio editor offers fast, portable recording and editing of single- or dual-channel audio. It's perfect for real-time editing (cut, copy, insert, crossfades, fades and gain changes) and stores 12 hours of audio on its internal hard drive. With a high-resolution waveform display, one-touch instant record and built-in speakers, it's one of the most popular field workstations we have!

SC1B2 List $2,695.00 LowestPrice@bswusa.com OR CALL : 1-800-426-8434

NEW!!

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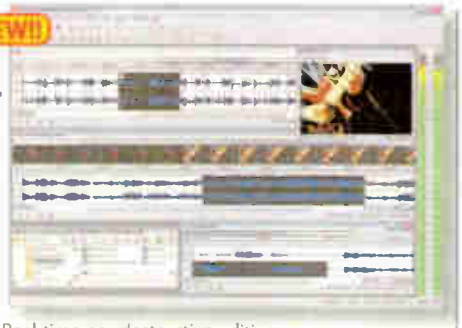

Audio Studio is an affordable and easy-to-use two track editor loaded with features including; Simple editing and navigation; Drag-and-drop operations; Real-time nondestructive editing; Unlimited Undo/Redo. Over 30 built-in effects & processes; 10 band EQ; Time Compression; Real-time metering. A great way to spend $69.00.

SONY

AUDIOSTUDIO **LowestPrice: only $68.95!!**

BSW'S Worldwide Sales Order Center... looks nothing like this stock photo we found. In fact, all BSW sales representatives' cubicles are much larger and have individual jacuzzis and mini-bars.

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360 Systems' Instant Replay redefined the term "Hot Keys", with an easy-to-use control panel that offers rapid fire playback of 50 cuts, ordered in 10 different banks. Up to 24 hours of stereo audio can be stored on Instant Replay's hard drive and now you can "top-and-tail" edit your sound files for increased flexibility. Store up to 1,000 audio cuts of various length. It can even print cut lists, bank maps, playlists and overlays (with a parallel printer attached).

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FIRST PERSON

Memphis Fan Keeps Radio Love Alive

by John King

"Tiger Radio is a labor of love ... of top 40 Radio, '50s and '60s pop culture, and a deep love for the city of Memphis, Tenn."

Visit Tiger Radio's Web site and you'll be greeted with that introduction. We asked John King to tell us how Tiger Radio — and its collection of 26,000 singles and 2,500 radio commercials — came to be.

Radio has fascinated me since I was a child, and I was fortunate to have grown up in Memphis, where great radio was abundant.

I was exposed to it when I was 8. I grew up on a farm, and our housekeeper and her husband lived with us. I could climb out of my window and into their house after my parents were asleep.

My days and nights were filled with the magic of Wink Martindale and Dewey Phillips at WHBQ(AM). WDIA(AM), the finest black station in the country and possibly the finest Memphis station ever, had Nat D. Williams, Martha Jean, Theo "Bless My Bones" Wade, Honeyboy Thomas, Rufus Thomas and A.C. Williams.

At night, WLAC(AM) barreled in from Nashville. From 9 p.m. to midnight, Randy's, Buckley's and Ernie's, area record shops, had programs touting various packages of several records for a few dollars.

John R. — John Richbourg, on WLAC — offered 100 baby chicks for $1, with promises of plump fryers and fresh eggs ahead. After they arrived, my father pointed out that there were only two hens in the lot. So much for my diving into the poultry business.

When I was a teen, there were Harry Chapman ("Harry with the hits") and Jack Parnell blasting the hits on WHBQ. On WMPS(AM), later Rick Dees' first Memphis station, engineer Harry Simpson used to do overnights from the transmitter site. Every time he opened his microphone you could hear the roar of the transmitter fans in the background. He also used to cart each week's playlist ads on the air, which provided rather startling "whacks" that helped keep you alert driving home.

The station I held in the greatest affection was WHHM(AM), where for 12 months in 1962, Bill Grumbles, former WHBQ general manager, sculpted some of the finest, frenetic top 40 radio I've ever heard. Given a boost in power to 1,000 watts, Grumbles sent out several hundred radios with their dials locked on 1340. He took the promotion one step further by having the radios playing in the package.

Great publicity. Alarm ensued as the Memphis post office first confiscated, then refused to deliver them.

The author in his studio. It is located in what he calls 'a beautiful old building in midtown Memphis.'

Studio Equipment

- LPB Signature III Console
- 360 Systems Instant Replay 2.0
- 360 Systems TCR-8 Master Recorder
- 360 Systems Short/cut 2000 Editor
- Manley Pultec EQP1A Equalizer
- Charles McHan Custom Tube Compressor
- Summit Audio DCL-200 Compressor
- HHB CDR800 CD Recorder
- Otari 5050B III-2 Reel-to-Reel
- Pioneer CDJ700S CD Players
- Tascam DA-20 MKII DAT
- Technics SL-1200 MKII Turntables
- Harris CB-1201 Turntable
- McIntosh MC 2005 Amp
- Denon DN-720R Cassette Deck
- Denon DN-680 CD Player
- Tannoy S1000 Speakers
- AKG Solid Tube Mic
- Shure SM7A Mic
- Sound Forge 7.0 Editing Software
- Vegas 4.0 Editing Software

Pitching in New York

WHHM was the epitome of scrappy radio. Unfortunately, even with brilliant programming and promotions, money problems plagued the station; in March of 1963, it filed for bankruptcy. Grumbles moved to New York state, where he had family. From time to time I'd call to tell him how much his station had meant to me. I don't know whether he understood my adoration, but he was always polite.

When I was 13, my parents took me to New York to see my sister graduate college. I brought several Sun records with me, and I took them by WABC(AM). They actually allowed me to meet with someone there, who listened patiently while I extolled the virtues of Sun Records.

While sharing my culture, I absorbed some of New York's. Sneaking out of the hotel at night, I would go to Colony Records on Broadway. They allowed me in the back where the 45s were kept; I pulled 50 to 60 songs by some of the greatest doo-wop artists on the East Coast.

In 1958, two friends, John Fry and Fred Smith, and I started our own record label, Ardent. We had a top-20 hit on WHBQ, "The Hucklebuck," by the Ole Miss Downbeats. Fry, civic and music leader, has made Ardent into one of the finest recording studios on the world. Smith founded Federal Express, the globe's largest shipping company.

At the ripe age of 18, Fry and I helped Jerry Scanlon, an established engineer in the mid-South, put on one of the first full-time black radio facilities in Arkansas. The FCC had given Jerry KJBS(AM). Fry found that the calls KCAT were available, and suddenly Pine Bluff, Ark., had Tiger Radio, patterned after the wonderful facility WQAM(AM) in Miami. An early CRC single package was ordered. We edited down several segments of 1 to 2 seconds and were off.

After several weeks of tweaking, KCAT was ready to hit the air. Before the first broadcast, John Fry and I left the station around 2 a.m., bone-tired, but set the alarm at 5 so we could hear the sign-on. At 5:30 sharp, the prerecorded sign-on came through loud and clear.

While John and I were congratulating each other, the announcer's mic opened with a loud *whack*. The announcer had turned his mic pot wide open. In the background we could hear birds chirping outside the studio. As soon as the announcer uttered his first words, the transmitter was blown off, shut down for over-modulation. The local paper mill wasn't the only thing stinking up the air that morning.

Later that week, a potentially harsh thunderstorm entered the market. While John and I were monitoring in the car, a record ended and the needle began rattling in the dead air. Off to the studio we went, where we found our afternoon man, afraid of lightning, hiding under a table.

We had two newscasts: Five minutes at the top of the hour, then news headlines and weather highlights at :30. This same announcer called them both "news headlights" — until one day Fry, in the middle of a newscast, got up and kicked open the door to the main control room and shouted at the poor man, "*Headlines!* It's called *headlines!*"

Our main competitor was KOTN(AM), where legend Buzz Bennett was program director. I know we amused him.

It is worth noting that KCAT has prospered these last 42 years, with its original owner, Jerry Scanlon, providing hands-on management.

An Ardent supporter

By 1966, my mediocre performance as a college student rendered me fit for a few courses in the U.S. Army. With the

See STUDIO, page 21 ▶

Studio

▶ Continued from page 20

Army's state-of-the-art Gestetner mimeograph, I started a music programming publication, the Gideon Matthews Record Report. This kept me in contact with both broadcasting and record companies while in the service.

I was stationed at Homestead Air Force Base south of Miami, where I got to hang out with Jim Dunlap and Lee Sherwood at WQAM and Mike E. Harvey at WFUN(AM). I was there when Jimi Hendrix was opening for the Monkees and when Jim Morrison of the Doors was exposing more than his pain onstage. I also loved to hang out at Henry Stone's Tone Distributors, where Howard Casie, later of K.C. & the Sunshine Band, was pulling record orders.

By the early 1970s I was back at Ardent. Fry had reactivated the label, which was distributed by Stax. With those financial resources, I was allowed to travel the East Coast and promote such great outlets as WBCN(FM), WRKO(AM), WFIL(AM) and WNEW(FM). What a blast it was buzzing in and out of those great stations, meeting with PDs and MDs and, if their time permitted, with engineers about which processing equipment they used.

One of our priorities was the band Big Star, fronted by Box Tops lead Alex Chilton. Their "#1 Record" and "Radio City" LPs are collector's items and have influenced groups like REM and the Rembrandts. I can still feel the tremendous rush the first time I heard their songs on WNEW(FM) and saw the Big Star Christmas poster (three wise men on camels pointing to a big neon star) on the control room wall at WRBQ(AM) in Tampa, where Scott Shannon was PD. Original members Chilton and Jody Stephens recently joined two of the Posies and finished a CD at Ardent that will be releases in early 2005.

Also during this time, in the tradition of scrappy promotions, we formed the National Rock Writers associations, an imaginary group comprising leading music critics in the country. One weekend we flew in writers from all over the world to see Memphis, enjoy barbecue and booze, and hear Big Star give what we thought would be their last concert. Richard Meltzer, Lester Bangs, Stanley Booth, Chet Flippo, Nick Tosches and Cameron Crowe, along with 100 or so other writers, danced to Big Star that Saturday night. Among many complimentary reviews was this headline from Jack Daniels of Rock Magazine: "Rock Writers Convene in Memphis, Find Each Other Absurd."

A dream realized

In 1984 I was in Manhattan when Shannon cranked up Z-100. With a bottom I hadn't heard since the 1960s, and compression, limiting and equalization that would make your ears bleed, WHTZ(FM) destroyed the competition. I guess the Lord really was in New York City.

The next year personal business took me to Houston, where I worked for Tune In Publications, a group of music and lifestyle magazines marketed through radio stations. I had the opportunity to work with every major record label and such illustrious stations as WJLB(FM) Detroit, KNIX(FM) Phoenix, KDAY(AM) Los Angeles, KKBQ(FM) in Houston, KKDA(FM) Dallas and WAVA(AM) Washington.

My record collection grew exponentially.

In 1995, I traded my boots for barbecue again. I moved back to Memphis and finally realized my lifelong dream of my own radio studio.

After several months of research and false starts, I got in touch with Broadcast Richmond, which has since been acquired by Richardson Electronics. The company guided me to a state-of-the-art installation that blended the best of old and new technology. They ordered everything, assembled the necessary support devices and sent a fantastic engineer to Memphis to install everything.

I now have a functional radio production studio. The cost of the studio was about $60,000. My library consists of more than 26,000 singles; 11,000 CDs; 2,500 radio commercials from the 1950s to early '70s; and Billboard on microfilm from 1955 to 1971. The value of my catalog, conservatively, is $390,000.

My labors can be heard at *www.tigeradio.com*, a tongue-in-cheek paean to that rough-and-tumble time when radio was fun and the only one who wore a suit was the GM.

I hope to find distribution for Tiger Radio via satellite. I'd also welcome an institution that would be interested in acquiring my library and equipment. I'm happy to consider donation to the right organization.

E-mail the author in Memphis at jkingiii@bellsouth.net.

My labors can be heard at www.tigeradio.com, a tongue-in-cheek paean to that time when radio was fun and only the GM wore a suit.

WIRED FOR SOUND

I'll Take Differential for $5, Alex

by Steve Lampen

I always like $5 terms. You can use these terms to browbeat unruly customers (or general managers). Just use a few of them and they're sure to leave you alone and realize that *you know your job!*

As we continue our discussion of basic wire and cable terminology, begun in the Nov. 3 issue, the first of our $5 terms is the word *differential*. Fig. 1 shows a microphone attached through a twisted pair to an amplified-speaker (yes, yes, there's a mic preamp in there too. Sheesh!)

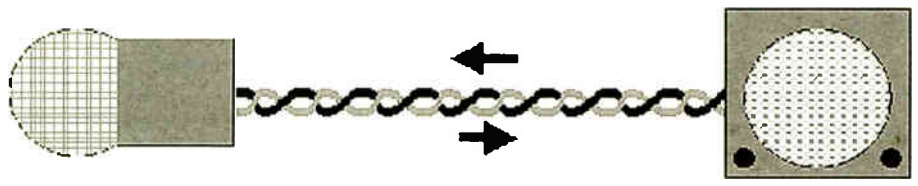


Fig. 1

Now if we graph the signal flow, this twisted pair is a circuit and the two signals on the two wires are equal but opposite polarity. If we stick the microphone in a piano and hit the key "middle A," that is defined as a note that vibrates the string 440 times a second (440 Hertz).

Fig. 2

This 440 Hz means the arrows on our pair of wires will change direction 440 times each second. And the amplified speaker will move in and out 440 times a second. We will hear that note. And, if the microphone, cable and amp-speaker are "perfect," it will sound as if your ear is inside the piano, exactly where the microphone is.

Because the signal on the two wires is always moving in opposite directions, it is called a *differential* signal. It also means that, if you could measure the signal on each wire at a specific place along the pair, at an instant in time, and if you could mathematically add them together, they would equal zero. Or maybe I should say they are *supposed* to equal zero. The more "balanced" the pair the closer we get to 100 percent noise rejection.

Noise

Almost all professional audio signals are differential signals, carried on balanced line twisted pairs. Most computers these days also work on balanced-line twisted pairs (Category 5 or 5e or 6, for instance). And the reason is noise. Differential pairs reject noise.

The secret is in the source and destination devices. They have a magic part that rejects noise called a transformer. In Fig. 2 you can see it at the end of the twisted pair.

Many devices these days don't have a transformer. They have a circuit that pretends to be a transformer, something called "active balancing." The question of which is better remains controversial. The active balaced circuit has been getting better and cheaper, like most silicon-chip devices. Wire-and-iron trsnformers have been getting better too, although there's not as much room for improvement. The real problem is cost. A good transformer is expensive.

Both devices are designed to get rid of noise.

I suppose we should define just what noise is. Noise is any undesired signal flowing down the pair. It could be a signal from an adjacent pair in a multipair cable (crosstalk) or from a pair in an adjacent cable (alien crosstalk). Noise could come from sources outside such as RF transmitters, motors, engines (spark plugs), ballasts for fluorescent lighting, SCR lighting dimmers, almost all electronic devices. Even the sun is a great source of noise, which is why this noise goes away at night. All of these are electromagnetic interference (EMI), and the higher-frequency noise we call radio frequency interference (RFI).

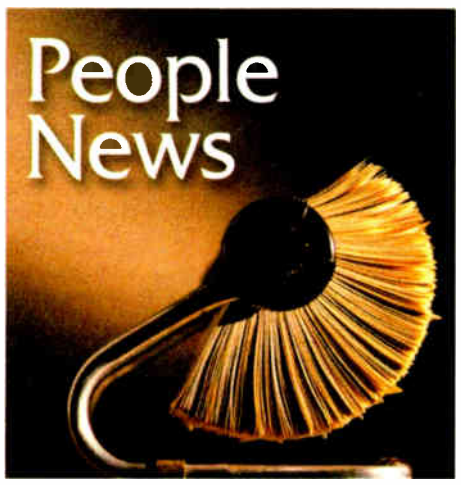
This electromagnetic noise, regardless of the source, hits the two wires in our balance line, shown as big arrows in Fig. 2. The insulation on the wires does nothing to stop this.

As some readers might remember from Electronics 101, any time a changing magnetic field is intersected by a wire, a voltage is induced on the wire. I've shown that "induced noise" in Fig. 2 with two little arrows on the two wires of our twisted pair. Since the same noise source hits both wires, the induced noise also is the same, and moving in the same direction.

The key difference between the signal on the pair and the noise on the pair is that signal is *differential* and moves in opposite directions on the two wires, while noise moves in the same direction (called "*common*"). Here we use another $5 term: "common mode noise." The two noise signals travel in the same direction until they get to the transformer, or active balanced circuit, where they meet each other and they cancel out.

More to come!

Steve Lampen's latest book, "The Audio-Video Cable Installer's Pocket Guide" is published by McGraw-Hill. Got a question for Steve to answer? Write to him at shlampen@aol.com.



Tell us about your job change or new hire. We're particularly interested in hearing news about radio engineers and managers. Send news and photos via e-mail to radioworld@imaspub.com or mail to Radio World People News, P.O. Box 1214, Falls Church, VA 22041

Tom Roalkvam

Jon Foreman

BSW promoted **Tom Roalkvam** to VP of sales. He had been sales manager for the company since 1998.

Broadcast Electronics hired **Jon Foreman** as customer service engineer for the company's digital studio line. He had been information systems director and assistant engineer for KSGN(FM) in Riverside, Calif.

David Casey joined **Neural Audio Corp.** as product line manager, providing customers with information on the transition to HD Radio. He had been assistant chief engineer/director of IT for Infinity Broadcasting Seattle.

Orban/CRL appointed **Patricia Humke** to production manager for the company's Arizona and California facilities. Her most recent position was senior site manager and director of operations for Harris' facility in Carlsbad, Calif. ... Orban/CRL added **Peter van Beusekom** as sales and technical support engineer for Orban-Europe. He comes to the company after 18 years with Royal Dutch Telecom, which operates the Netherlands' phone system.

ABC Radio Networks named **Donald Moore** to the position of VP of multicultural sales. He came from LEVAS Communications, where he was president and chief operating officer.

Arbitron appointed **Jane Shapiro** to product manager, National Radio Research Services. Shapiro had been senior director of research at ABC Radio Networks.

Adam Goldfein was named director of automotive sales for **Infinity Broadcasting**. He joins the company from Rick Case Auto Group, where he was group general manager since 2002.

MoneyRadio Inc. named **Brent Clanton** as station general manager for the recently formed group's money-oriented station. He had been director of programming at NewsTalk 550 KTSA(AM) in San Antonio, Texas.

Clear Channel Radio Houston appointed **Johnny Lathrop** to VP and market manager for its four stations in the Lufkin/Nacogdoches market. He had been director of sales for the company. ... **Michael Martin** was promoted to regional senior VP of programming for Clear Channel Radio's stations in the Northeast and Sunbelt regions. He had been regional VP of programming for stations in Northern California and the Pacific Northwest. ... **Don Pollnow** was appointed market manager for the company's five stations in the Little Rock market. He had been market manager for Cumulus in Topeka, Kan. ...

Raul Calvo was named VP/director of sales for Clear Channel Radio Sales Hispanic. He had been VP of sales for Clear Channel Radio Sales. ... **Julie Lane** was named VP/associate managing director with Clear Channel Katz Advantage's Marketing Business Development team in Dallas. She had been VP/manager of Katz Marketing Dimensions. ... **Pamela Godfrey** was appointed VP and associate managing director for Clear Channel Katz Advantage's marketing business development team. She had been VP and New York sales manager. ... **Jerry Del Core** was named regional VP/Atlanta. He had been regional vie president in the Central Valley (Sacremento) region.

Raul Calvo

Don Schellhardt stepped down as president of **Amherst Alliance**, a citizen's advocacy group for media reform in general, and low-power radio in particular. He is pursuing a Masters of Arts in Asia Pacific Studies at the University of San Francisco. Stacie Trescott, editor of Jamrag Magazine, stepped into the role.

John W. Jones

Radio One Inc. named **John W. Jones** VP and general counsel. He returned to the company where he served as associate general counsel for two years, before leaving to take a position with TV One in Sept. 2003. ... **Linda J. Vilardo** was promoted to chief administrative officer of Radio One. She had been general counsel since 1998.

Marty Sacks was appointed VP and chief operating officer of **Streamline Publishing**. He had been director of radio sales for Electronics Research Inc.

Sirius Satellite Radio tapped **Patrick Reilly** as senior VP of communications. He had been VP of corporate

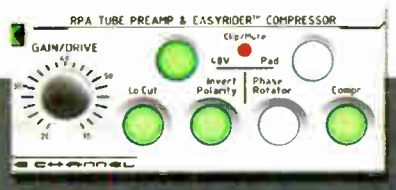
See PEOPLE, page 24 ▶

Looking to touch your listeners?

APHEX MODEL 230 MASTER VOICE CHANNEL

Introducing the Aphex Model 230 Master Voice Channel, the most powerful processor ever designed specifically for voice.

Voices will be bigger, more present, more intimate, more intelligible and more consistent. Its comprehensive complement of exclusive proprietary features brings these benefits to any voice – from a thundering bombast to a whispering waif – without changing its essential quality.



Every element of the Model 230 is superior to any other voice processor's similar function...

- The RPA™ tube preamplifier provides warmth, image and detail.
- The Easyrider® Compressor controls output levels without pumping or breathing.
- The Logic-Assisted™ Gate won't false trigger or cut off words.
- The Split Band De-esser effectively cuts sibilance without dulling.
- The Big Bottom® and Aural Exciter® add resonance, depth, presence and clarity.
- The parametric EQ takes care of any frequency anomalies with surgical precision.
- Post-processing insert point, -10dBV and +4dBu analog outputs, 24/ 96 digital outputs on AES3, S/PDIF and Optical, word clock I/O, and a cough switch with soft mute allow the Model 230 to be easily interfaced into any system.

So if you *are* looking to touch your listeners, you should be looking at the Aphex Model 230.

www.aphex.com

Genuine APHEX

Illustration by Jesse Cosser. Aural Exciter, Big Bottom, Easyrider, RPA, and Logic Assisted Gate are trademarks of Aphex Systems.

GUEST COMMENTARY

Satellite Radio: Smoke, Hype, Churn and Mirrors?

The following is excerpted from the December NAB Radio Rave newsletter.

Since launching in the mid-'90s, XM and Sirius have collected mountains of debt, and there's no end in sight. Both companies will lose hundreds of millions this year, according to Yankee Group analyst Dominic Ainscough. In the third quarter alone, XM lost a whopping $118 million; Sirius was in the red by $169.4 million (up from $106.7 million in the same period a year ago).

XM — the larger of the two ventures — missed its third quarter target of new subscribers by 23,000, which may explain why XM recently went to Wall Street with its hand out for another $300 million as it heads into 2005.

Moreover, four different investment firms have downgraded both Sirius and XM. Banc of America Securities analyst Jonathan Jacoby noted Sirius' "extreme" volatility and Howard Stern's "limited" impact on growth. He advised investors to sell Sirius shares. J P Morgan and Friedman Billings Ramsey both dropped their investment ratings to "neutral" based on the companies' valuation.

This week, Smith Barney advised clients to "sell" Sirius shares rather than "hold" them. The result? Share value fell by more than 25% in the first minutes of trading while XM fell nearly 5%.

Earlier this autumn, Sirius bragged that it had snagged both NFL games and shock jock Howard Stern. But The Wall Street Journal put those expensive acquisitions in perspective: "By overpaying for Stern and for ... NFL games, Sirius has started to crush its own windpipe." The piece notes succinctly in a headline: "Overspending on Stern, NFL Plus Too-Optimistic Assumptions Look Like Recipe for a Flameout."

Sirius is named for the brightest star in Earth's sky, and it seems appropriate, says The Journal. "Stars burn brightest before they flame out."

Sirius, which saw its market cap fall from $15 billion to $11.3 billion, is still overvalued, Journal columnist Jesse Eisinger told CNBC. Sirius would need 45 million subscribers to justify its market cap, noted Eisinger, "and it has only 800,000."

Hype meets reality

Is pay radio hype running into real-world reality? Consider that there are 1 billion "free" radios in circulation in the United States, compared to fewer than 4 million pay radios. Consider that 180 million Americans listen daily to over-the-air hometown stations, and that 225 million listen at least once a week. Compare that to fewer than 4 million pay satellite radios now in circulation, and one quickly sees why pay radio has zero impact on local radio listening.

Even under the most optimistic circumstances, pay radio will have limited impact on over-the-air radio. Deutsche Bank analyst Drew Marcus noted that "even if satellite radio penetrated 20 percent of vehicles, broadcast radio would only lose 4% of its revenues."

Churn, churn, churn

Finally, there's the issue of pay radio churn. As TheStreet.com's Scott Moritz recently noted, "153,325 customers somehow vanished" from XM in the first quarter of 2004, "putting the monthly churn rate at something like 3.8 percent, nearly three times the official count" claimed by XM.

Moritz dryly notes that XM counts promotional users — or, in his words "freeloaders" — as "actual customers," thus allowing XM to "pump up its subscriber growth." Moritz closed his column with a quote from an "XM company rep," who says XM "may be more open than we have in the past" in disclosing gross subscriber additions.

And you have to wonder how much of an increase in churn there will be when Sirius shocks subscribers by jacking up its monthly fee. Oh, you didn't hear about the rate increase coming?

"Does anybody really think that the price will stay at $12.95 (a month)?" responded Sirius Chairman Joe Clayton yesterday when asked by CNN Money if the monthly subscription price for Sirius will increase.

And there was no mention of tier pricing once Howard Stern arrives.

RW welcomes other points of view. E-mail to radioworld@imaspub.com.

People

▶ Continued from page 22

communications at BMG. ...

Border Media Partners made **RobinFlores** its operations director. He had been the program director/brand manager and morning show host for Clear Channel Austin.

Beth Freed was hired as manager of national sales and marketing for **Jones MediaAmerica**. She had been director of eastern radio sales/Radio Disney, a division of ABC Radio Networks, Disney.

Westwood One named **Dennis Green** senior VP of its affiliate sales. Green has been with the company for four years, most recently as senior VP of talk and entertainment affiliate sales and VP of affiliate sales, talk programming.

PRODUCT EVALUATION

Yamaha Vocaloid: Mr. Roboto Lives!

by Alan R. Peterson

I first heard about Vocaloid singing synthesizer technology only days prior to the NAB show a year and a half ago, where I was delivering a panel talk on new audio software and techniques for radio production. As I had been fascinated with text-to-speech applications for a long time, the prospects of text-to-singing were quite magnetic.

Vocaloid from Zero-G Ltd. and Yamaha is software that creates up to 16 tracks of virtual singers, with total control over nuances such as volume, vibrato (the subtle pitch warble in actual singing voices), brightness, pitch bend and gender.

This is by no means HAL 9000 droning through "Bicycle Built for Two." There is a lot going on here, which makes it fascinating and irresistible to the mind of the warped production person. A computerized vocalist adds new dimension to comedy bits, perhaps vocal backgrounds in advertising, and you finally have that choir you always wanted to sing, "The traffic today is crappy!"

Keep in mind that the singing truly does sound synthetic at this point in the product's evolution, and it takes considerable effort to get useful results out of Vocaloid.

Background

The software was created and perfected by Yamaha, while the voice component was created by U.K.-based Zero-G Ltd. Zero-G also did the packaging and marketing, and now offers three Vocaloid packages featuring different male and female singers. The version I was given to work with was Leon ($229.95), a virtual male soul vocalist based on the voice of a well-known session singer in the U.K.

Vocaloid singing synthesis is created in much the same way as concatenated speech. A word is entered as text and compared to existing words in a dictionary or analyzed by standard pronunciation rules. Phonemes, or small slices of spoken sounds, are retrieved from memory and assembled smoothly into syllables to form the desired words.

The difference here is that Vocaloid also works on the pitch and dynamics of each syllable, and does so without sounding "chipmunk-y" or harsh.

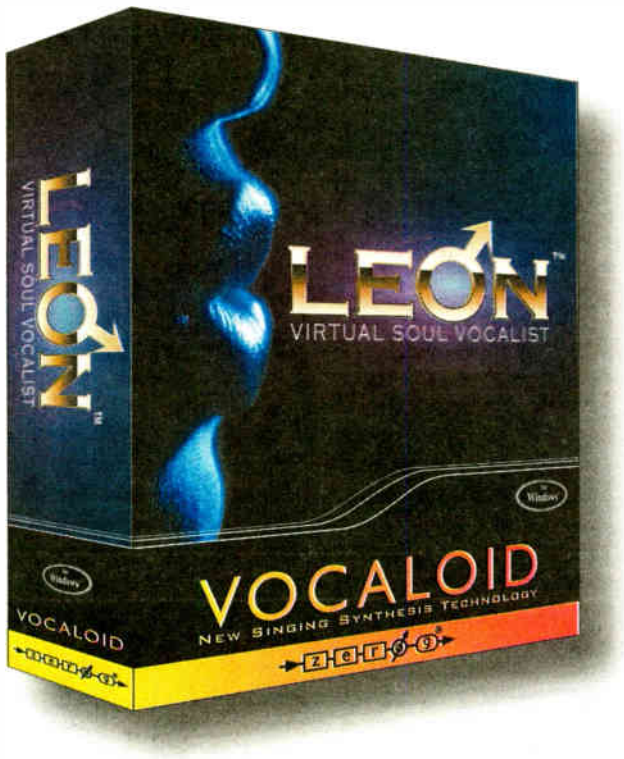
The process begins with the Sequence window. The notes you wish your virtual vocalist to sing are drawn in with the Pencil tool, piano-roll fashion. As always with programs such as these, a little knowledge of music is necessary; after all, you need to know what pitches you want your computer to perform.

You may draw the note durations freehand, or use the Grid function to lay down preset lengths.

What you get is a screen full of notes and the uninspiring lyrics, "Ooh-ooh-ooh." Now we add the lyrical content. Double-click each "ooh" in order, then type in each lyric you want generated.

Once done, click the Phoneme Transformation button (the one with the squashed-together "a" and "e": æ). This converts your text into the data Vocaloid needs to create the performance.

Now and again, Vocaloid may come across a word not in its dictionary. Much as in MS Word, you may add new or customized words into the database, along with a pronunciation to which the program may refer.



Once the text is transformed properly, start your playback. Then make a disgusted face and wonder to yourself what you ever saw in this software to begin with: the singer sounds flat and lifeless.

You be the vocal coach

Remember, effort is needed to get satisfactory results from Vocaloid. All we have done up to this point was teach Vocaloid our song. Now we need to buff up its interpretation.

Click open the Icon Palette. Here we have the opportunity to modify the attack of some notes, including bendups, or sliding up to the correct pitch, and accents. You may also decide on a level of vibrato, from a gentle Peabo Bryson warble to an over-the-top Andy Williams showstopper.

While you are here, set the dynamics from pianissimo (triple-soft) all the way to fortissimo (triple-loud). Real singers do this, so should your Vocaloid performance. Grab an icon, drop it into the track and that's it.

Finally, bang open the Control Track and start making changes here to gender expression and brightness. As a voice goes higher and louder, both elements tend to change.

You may dig deeper into the Vocaloid library and make changes directly to the primary qualities of the singer, including resonance and harmonics — basically you may reshape your singer's nasal and thoracic cavities for different timbres. One virtual vocalist can take on infinite characteristics.

Now that you have your lead singer in place, you can generate a second, third and fourth singer and beyond. A Mixer window can open up to set level and pan positions of all voices.

Probably the least complicated way to use a Vocaloid performance in existing music is to figure out the tempo of the music bed you are using — easily done in many audio editors. Calculate the beats per minute (bpm) and apply that tempo to your Vocaloid performance.

Render and export the completed Vocaloid project as a WAV file, which may then be opened up in a multitrack editor and mixed with the existing music bed.

If you have software capable of doing MIDI sequencing and audio, such as Cubase, Cakewalk, Power Tracks or other such programs, Vocaloid may be used as a plug-in for the host program. The entire production may take place in one environment instead of two or more.

I mentioned earlier that Vocaloid requires lots of tweaking. It is not possible to simply type in your text and expect immediate results.

One project I tried was recreating the three-part vocal harmonies of "Walk Away Renee" by the Left Banke. These lyrics were entered to match the pitches in the Sequence window: "Just walk away Renee, you won't see me follow you back home."

What came out of the speakers had an almost stoned Californian affectation: "Just Walk A-weh Ren-neh, you won't see me fol-leau yeu back heaum."

Clearly a little editing was needed on the syllabic level.

Summary

The licensing agreement accompanying Vocaloid may throw you at first, as there are numerous restrictions to its use that may require separate licensing above and beyond the purchase of the product. These include animated cartoons and mobile ringtones, neither of which affects broadcast production to a great degree.

Of particular interest to us is the section requiring additional licensing on a commercially released recording crediting the singer as not being human, but a machine or a specific technology.

This means you can probably do all of the on-air routines featuring "Fred the Singing Computer" you want, but the moment you commit them to a CD and sell them — or even make them available for download on a sponsored webpage — you are subject to additional licensing through Yamaha.

Similarly, it is unlikely a Vocaloid performance is appropriate for the lead line in an advertising jingle ... yet. It is still a new technology finding a foothold. Besides, there is a stipulation in the licensing that prohibits use that could be "harmful to the moral rights" of the original singer whose voice constitutes the phoneme library. For all we know, such uses might include fur dealers, adult video stores, online betting or tobacconists. Check on this before you run with any great ideas from the sales force.

The professional and hobbyist music industry is keeping a little distance between itself and Vocaloid, with other reviewers commenting that the software still sounds synthetic and not very believable.

For me, that is the charm. As much work as it takes to pull a worthwhile piece of production out of Vocaloid's virtual craw, I get a plasticky, almost Jetson-esque quality to a rendered audio file that I can't get any other way.

Creative minds will find ways to use this product for morning comedy bits and contests. How about starting a rumor that Michael Bolton has actually been retired since 1994 and that a look-alike robot has been standing in for him at concerts? Oh, you don't believe us? Well, just listen to this (insert typical mushy Bolton ballad recreated in Vocaloid)!

Vocaloid may not be everybody's ideal software. It won't make your production flow any faster and won't make your GM rich. But it is one more creative tool in the arsenal, and since Yamaha and Zero-G are constantly adding new vocal templates and upgrades, it has nowhere to go but up.

Try the demo, but don't be disappointed if it doesn't give you exactly what you want the first time.

Product Capsule:

"Leon" Vocaloid Singing Synthesis Technology From Zero-G and Yamaha

Thumbs Up

- ✓Extremely creative concept
- ✓Considerable control over vocal characteristics
- ✓Exports to WAV for use in other programs

Thumbs Down

- ✓Still sounds very synthetic
- ✓Restrictive licensing
- ✓Requires effort to coax a good performance

Price: $229.95

Information: www.zero-g.co.uk or www.vocaloid.com

Lack of Vision Not a Problem Here

With Help From Employees and a Talking Voltmeter, Bill Stachowiak Heads S&B Communications

by Ken R.

BUFFALO, N.Y. It is tough enough to manage an engineering consulting firm with a long list of clients and still find time to get your hands on the equipment you love.

Bill Stachowiak does all that, despite another obstacle most radio engineers don't face: He has been blind since birth.

"Hey, I've had some things to overcome, but I have taken adaptive measures," he said.

Foot in the door

"I love radio. When I was a kid I used to go to radio stations and knock on the door and try to get in."

While Stachowiak never held a full-time chief engineer position at a commercial facility, he had the drive to learn electronics at an early age.

"I couldn't get enough of it," he said. "I learned by working on stereo equipment."

He attended State University of New York at Cobleskill and graduated with an associate's degree in business administration in 1972.

"I was a chief engineer at my college station, carrier current WCOB(AM), which I helped put on the air. I did a lot of design work and installed consoles too," he said.

Stachowiak's entrepreneurial spirit began to emerge during those years.

"In October 1976, I started S&B Communications," he said. "My partner and I were in communications for a while working on two-way radios and CBs and we had contracts with some taxi companies."

In 1979, the firm added its first broadcast client when the general manager at WPHD(FM), Buffalo hired S&B.

"He asked a lot of questions and I guess I gave the right answers," said Stachowiak.

Some stations have lost sight of their goal. I think stations should make the listener number 1.

— Bill Stachowiak

WPHD was sold in 1991 and S&B lost that account; but many other broadcast facilities took its place. The company now has about seven employees and consults properties in New York and Pennsylvania. Stachowiak holds the title of president.

Seeing with hands and ears

But just how do you read a meter or schematic if you are blind? Or even get to the site?

"My employees have to help me with transportation, but I have a talking voltmeter made by Radio Shack," said Stachowiak. (Radio Shack no longer offers that specific model, but Omega.com sells the HHM2 talking multi-meter. Visit *www.omega.com/ppst/HHM2.html.*)

Stachowiak had to learn to "see" in non-traditional ways.

"Being able to use a computer really changed my life. I can read documents and PDF files and access the Internet using special software for blind people," he said. "In fact, using a scanner in conjunction with the computer, I can read anything."

He's referring to a type of system called a "screen reader," which presents visual information in audio form.

"The software enables me to move my cursor and the computer speaks the sounds of whatever I'm on," he said. "When I use the Web I can hear the links. I have Window Eyes by G.W. Micro (*www.gwmicro.com*), but there are others out there too, like Job Access with Speech (JAWS)."

The latter is available on the Internet from the American Foundation for the Blind, at *www.afb.org/prodProfile.asp?ProdID=117.*

Stachowiak uses regular hand tools such as screwdrivers and hammers, but can't read schematics, for which he relies upon his associates in the firm.

"But I love reading technical manuals and books just for fun," he said.

Shop talk

Stachowiak sees one good trend in radio technology: stations are getting away from older equipment.

"Most have gone to computer-based automation and digital music systems instead of carts by now," he said. "It's easier to work on computers than on cart machines and turntables, so that lets me concentrate on transmission equipment."

But while he believes that radio technology has improved greatly since the 1980s, he has a few problems with audio recording and storage.

"MP3s and MiniDisc represent major reductions in quality compared to analog," he said. "They may be okay for an occasional commercial, but for your main source of music they're awful. With modern automation, you can go linear (non-compressed) because of the larger hard drives, which used to be expensive. I think it's important to maintain the highest quality possible, especially with all that processing to maintain loudness."

He also questions the impact IBOC digital radio will have on the listener.

"If you mash audio that is already mashed, it sounds bad," he said. "You have competing algorithms and by the time you play it back, it is not what you put in. With the bit rates they're using now, I can't imagine achieving anything as good as analog."

When talking to Stachowiak, it is easy to catch his enthusiasm for the work and for the people he works with.

"But some stations have lost sight of their goal," he said. "Yes, they have to provide entertainment and make money for the advertisers, but I think stations should make the listener number 1."

Ken R. is a former broadcaster and now an author of books about radio.

PRODUCT GUIDE

Studio Technologies Has Announcer's Console, Audio Mixer

Studio Technologies says its Model 220 announcer's console serves as the audio control "hub" for announcers, commentators and production talent. The tabletop unit also is suited for sports and on-air radio broadcasting and voiceover/narration booths. Standard connectors are used to interface microphone, headphone, on-air, talkback and IFB signals.

A microprocessor provides logic, enabling control of operation. A microphone preamplifier circuit is included for low-noise/low-distortion amplification over a 20 to 60 dB gain range. The gain is adjustable in 10 dB steps. The input is compatible with balanced dynamic and phantom-powered microphones. The microphone power source is 48 V nominal and meets the P48 phantom standard.

Features include one main and two talkback outputs. The main output serves as the on-air or other primary feed. The company says it is an interface with high output capability, low distortion and low noise. The talkback outputs are intended to provide production trucks, control rooms or support personnel with talent-originated cue signals. These outputs are transformer-coupled with +4 dBu nominal signal levels.

A compressor circuit controls the dynamic range of the signal coming from the mic preamp, and uses a laser-trimmed voltage-controlled-amplifier integrated circuit for level control. The signal from the compressor is used by the talkback outputs.

The company also offers the Model 72 level meter/interface for monitoring IFB and intercom audio signal levels, and the Model 740 audio mixer for electronic newsgathering vehicles with multitasking operators.

For more information, contact Studio Technologies at (847) 676-9177 or visit www.studio-tech.com.

AT2020 Cardioid Mic Offers Low-Mass Diaphragm

Audio-Technica U.S. is showcasing its AT2020 cardioid condenser microphone, which is aimed at project or home studio applications and retails for $169.

It features a low-mass diaphragm that offers extended frequency response of 20-20,000 Hz and the capability to handle high SPLs of up to 144 dB.

The mic has a fixed cardioid polar pattern that allows for insulation of the desired sound source. It features a dynamic range of 124 dB, and comes with a pivoting, threaded stand mount. It uses 48 V phantom power that may be provided by a mixer/console or a separate, in-line source, such as the AT8801 single-channel and CP8506 four-channel phantom power supplies.

The AT2020 measures 6.38 inches long, has a maximum body diameter of 2.05 inches, weighs 12.1 oz and comes with a carrying pouch.

For more information, contact Audio-Technica at (330) 686-2600 or visit www.audio-technica.com.

THUS Boosts Chrysalis IP Network

by Lawrie Hallett

Traditionally, radio programs have made the journey from the studio to the transmitter via analog landlines or microwave RF links.

More recently, many studio-to-transmitter links have become digitized over dedicated circuits, often improving audio performance. But, in the United Kingdom at least, this typically has not resulted in cost savings along the way.

Enhanced flexibility

Technology is moving forward again and standalone digital links across dedicated lines are merging into Internet technology to form IP-based networks. This approach allows for enhanced flexibility, multiple routing options and lower costs.

The savings come through the use of commonplace communications techniques instead of broadcast-specific solutions, which rarely achieve serious economies of scale.

One such IP-based network is operated by Glasgow, Scotland-based THUS PLC, a provider of customized communications systems to business customers, listed on the London Stock Exchange since 1999.

The company says its multiprotocol label switching (MPLS) IP virtual private network offers broadcasters benefits over standard IP approaches.

For one, MPLS incorporates inherent "Class of Service" differentiation technology, which enables broadcasters to prioritize broadcast program traffic ahead of other data on the network.

In IP traffic handling, information, in this case program audio, is digitized and then divided into packets of data that are sent over a network, often via multiple routes, and reassembled at the other end ready for broadcast.

Most listeners of streamed audio over the Internet have experienced the problem of lost packets, which results in degraded or even missing audio at the receiving computer.

Top priority

The reason for the losses is that IP networks are contention-based. For any such network, traffic inevitably will slow down as the number of individual packets routed over it increases and the data circuits near their carrying capacity.

In a standard IP network, all packets are treated the same, which creates a problem for broadcasters. This means no one datastream can be given priority.

Using MPLS effectively allows program audio data packets to be tagged to ensure they always get top priority for delivery to their destination.

This approach ensures that audio quality is maintained regardless of the volume of other traffic on the network.

For example, as of September, the GWR Group was multicasting more than 1,000 hours of live broadcast content per month among 53 AM and FM radio stations via MPLS. Each station receives about 5 GB of audio data per day, as well as 2 million minutes of voice traffic per month.

Over the summer, GWR also used the network for live remotes, including its Milton Keynes Summer XS Concert in June. For that event, the Dunstable station multicast the concert to six other GWR stations and, at the end of the event, switched the stations back to the standard overnight FM show from Bristol.

Looking to expand its reach by applying for new licenses, Chrysalis Radio in the U.K. decided to replace a point-to-point STL network, connecting London and several other cities, with a converged MPLS IP network.

Chrysalis Radio, which owns the Heart, Galaxy, LBC and The Arrow stations, recently signed with the THUS MLPS network. Other commercial radio broadcasters using THUS technology include the GWR Group, the Capital Radio Group and Scottish Radio Holdings.

Chrysalis Radio, the fourth-largest commercial radio group in the United Kingdom, broadcasts to approximately 6.1 million listeners nationwide via its AM, FM and DAB stations. Its listenership amounts to about 11 percent of commercial radio market share.

Looking to expand its reach by applying for new commercial licenses in September 2004, the company announced it would replace its existing point-to-point STL network, which currently connects London with Leeds, Manchester, Newcastle and Birmingham, with a converged MPLS IP network.

Chrysalis Radio broadcasts live from

See THUS, page 28 ▶

Radio Benefits From IP Audio

IP Audio Can Do for Signal Routing at the Station What the PC Did for Radio Production, Automation

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Most of us remember well when audio production was performed on analog mixing consoles and tape recorders, and how strange it seemed to think of doing such work in any other way — especially on a computer. Yet today, the PC provides such a virtual environment for almost all our work. It is now typical to produce both short- and long-form radio content in facilities where one encounters not a single inch of audio tape.

This change has taken place in fairly short order, fueled not only by the convenience it offers to producers, but also by the cost-effectiveness it provides to station operations.

The next wave of this digital evolution now is breaking on radio's shores, again driven by significant operational advantages: Given that practically all audio is produced on PCs, it makes sense to explore the possibilities offered by computer networking to transport such audio around a broadcast facility. The benefits of doing so are myriad.

Leveraging an existing base

First, consider that computer networking is a common feature in every business, and many homes, in the United States. It is rare to find a PC that is not a "connected" device nowadays — connected, if not continuously, at least occasionally. Given this already common environment, it makes sense to exploit these interfacing methods for transport of audio produced in the digital domain.

Note also that methods of accomplishing such interconnection continue to expand and improve, including the exploding world of wireless networking. Meanwhile, as PC platforms increase in processing speed, so too do networking systems expand their bandwidths. Thus continuing growth along this axis is generally assured.

Much of digital networking's near-ubiquity today has been generated by the popularity of the Internet. One of the key and initially enabling features of this environment was its introduction of the Internet Protocol (IP), which provided a simplified and robust architecture for digital networking. Today, nearly every digitally networked device recognizes IP, and most digital transmission systems (including digital broadcast formats) include some method of carrying IP-formatted data in a relatively efficient and standardized manner.

LINK	Network interface and driver (e.g., Ethernet)
NETWORK	IP, ICMP and IGMP
TRANSPORT	TCP OR UDP
APPLICATION	Telnet, FTP, SMTP (e-mail), SNMP (network management), HTTP, RTP, etc

Within the wired enterprise, the most common method of carriage for IP data is via Ethernet (IEEE 802.3), generally using CAT-5 wiring and RJ-45 connectors. Typical Ethernet bandwidths today are 100 Mbps, which is adequate for most compressed or even uncompressed audio transport applications. Gigabit Ethernet networking speeds are also available for the most demanding audio networking environments. (In the latter environments, a full CD's worth of data can be transferred in 10 seconds or less under best-case network conditions.)

So it now makes sense to think about using IP as a common format of data interface for digital audio files in the production environment. Just as moving to PCs allowed production facilities to jettison expensive dedicated mixing and production hardware in favor of computer-based systems, using IP for audio transport provides broadcasters with the ability to eschew expensive cross-point switchers, discrete signal-path wiring and connectors and other dedicated signal routing equipment for inexpensive Ethernet hubs and routers.

Economies of scale have driven the cost of such equipment to commodity pricing, but even greater savings are afforded to broadcasters by the use of a single CAT-5 cable and RJ-45 connector for an almost unlimited number of audio channels. Thus a single computer-networking cable can act as a "configurable snake," carrying dozens of simultaneous audio signals anywhere in the facility cheaply and easily.

Some manufacturers have even extended this physical cost-effectiveness by using CAT-5 wiring and RJ-45 connectors for audio interconnections outside the digital networking domain (i.e., for discrete audio signal I/O paths), thus allowing a facility to standardize a single, inexpensive cable and connector type throughout.

Digital networking 101

Classical networking architecture is based on the 7-layer Open Systems Interconnect (OSI) model, which includes Physical, Data Link, Network, Transport, Session, Presentation and Application layers. IP consolidated this to a 4-layer architecture:

✓ Link: Defines the network hardware and device drivers, such as Ethernet or Wi-Fi; uses Media Access Control (MAC) "hard" addressing of individual devices, in the form of six colon-separated pairs of hex digits (e.g., 0F:A7:00:B4:92:FF).

✓ Network: For addressing, routing and other basic communication, via IP, the Internet Control Message Protocol (ICMP), and the Internet Group Management Protocol (IGMP); uses IP addresses for "soft" addressing of individual devices currently on the network, in the form of four dot-separated decimal numbers between 0 and 255 (each represented by one byte of address data; e.g., 168.21.422.7)

✓ Transport: For communication between programs, via Transmission Control Protocol (TCP) or the User Datagram Protocol (UDP).

✓ Application: For user functionalities over the network, such as File Transfer Protocol (FTP), Real-time Protocol (RTP), Simple Mail Transfer Protocol (SMTP), Hypertext Transfer Protocol (HTTP).

Tweaking for audio

Computer networking is intended primarily for data file-transfer, which is intrinsically a non-real-time process. The development of IP streaming technology has allowed near-real-time audio signals to flow over such networks, however. The combined power of file-transfer and streaming allows computer networks to provide the best of both worlds by emulating digital audio cross-point routers for real-time audio signals (via streaming), while simultaneously providing faster-than-real-time file transfer of recorded programs (via traditional data networking).

Nevertheless, broadcasters are by nature rightly concerned with reliability, and have traditionally been suspicious of the real-time streaming performance of packet-switched systems, preferring instead the bulletproof nature of circuit-switched broadcast audio routers. The latter never have to cope with the signal collisions or bandwidth management that Ethernet routers frequently encounter.

For this reason, several variations on pure IP systems have been developed, to add reliability to the real-time signal routing performance of digital networks used for professional audio applications. Perhaps best known among these is a network management system called CobraNet. Originally developed by Peak Audio, CobraNet is now implemented by several radio equipment manufacturers for Ethernet-based digital audio routing. CobraNet and other similar protocols address the specific needs of real-time audio transmission over a digital network, in particular the reduction of TCp or UDP latencies associated with high-bandwidth (i.e., uncompressed audio) streams, and the provision of improved quality-of-service (QoS) management.

Given these and other recent reliability improvements in digital systems, most industry experts believe it won't be long before IP-based networking is the focus of the next paradigm shift for our world. Just as the PC has become the preferred production and signal origination platform, IP-based networking will likely soon become the standard mode of signal interface for all audio facilities.

Skip Pizzi is a contributing editor of Radio World.

Thus

▶ Continued from page 27

all its sites every day, and needs its network to be as reliable as possible, as any interruption to service would be immediately audible to listeners.

The Chrysalis THUS distribution network is not just a replacement for existing equipment. In addition to ensuring that transmission audio quality is maintained, the new network enables individual sites to share content such as networked programming or live studio sessions with other members of the Chrysalis group.

According to the supplier, the network also will provide Chrysalis with valuable scalability and flexibility through access to the rest of the THUS national network. Chrysalis will be able to integrate new sites into its network easily.

In addition, the new approach supports Voice Over IP (VoIP), so Chrysalis can move away from traditional telephony between stations to a fully converged VoIP environment at some point in the future.

"We wanted to link our five sites with a flexible, cost-effective converged network that could be developed to incorporate new technologies," said Bruce Davidson, group technology director at Chrysalis Radio.

In-depth knowledge

According to THUS Chief Operating Officer Philip Male, when providing critical network solutions, a supplier must have in-depth knowledge of the business of the customer.

"THUS is now a mature player in the broadcast industry having developed a unique depth of experience working with the UK's five largest commercial radio groups," said Male. "Our national MPLS IP network will ensure that Chrysalis Radio can manage its voice, data and broadcast traffic efficiently and cost effectively."

The U.K. Office worked with THUS to design a solution that complemented the existing network equipment at Chrysalis.

THUS says its fundamental understanding of the needs of the industry enables radio broadcasters to achieve technology firsts, such as live audio multicasting over MPLS.

Lawrie Hallett reports on the industry for Radio World from Norwich, England. Contact him via e-mail at: lawrie@terella.com.

The routing switcher gets a new twist.

(About five twists per inch, actually.)

Everybody needs to share audio. Sometimes just a few signals — sometimes a few hundred. Across the hall, between floors, now and then across campus. Routing switchers are a convenient way to manage and share your audio, but will your GM really let you buy a router that costs more than his dream car? Unlikely.

If you need a routing switcher but aren't made of money, consider Axia, the Ethernet-based audio network. Yes, Ethernet. Axia is a *true network*. Place our audio adapter nodes next to your sources and destinations, then connect using standard Ethernet switches and Cat-6. Imagine the simplicity and power of Ethernet connecting any studio device to any other, any room to any other, any building to any other... you get the idea.

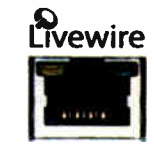
Routers are OK... but a network is so much more modern. With Axia, your ins and outs are next to the audio, where they belong. No frame, no cards, no sweat.

Scalable, flexible, reliable... pick any three.

An expensive proprietary router isn't practical for smaller facilities. In fact, it doesn't scale all that well for larger ones. Here's where an expandable network really shines. Connect eight Axia 8x8 Audio Nodes using Cat-6 cable and an Ethernet switch, and you've got a 64x64 routing switcher. And you can easily add more I/O whenever and wherever you need it. Build a 128x128 system... or 1024x1024... use a Gigabit fiber backbone and the sky's the limit.

Are you still using PC sound cards?

Even the best sound cards are compromised by PC noise, inconvenient output connectors, poor headroom, and other gremlins. Instead, load the Axia IP-Audio Driver for Windows® on your workstations and connect *directly* to the Axia audio network using their Ethernet ports. Not only will your PC productions sound fantastic, you'll eliminate sound cards and the hardware they usually feed (like router or console input modules). Just think of all the cash you'll save.



There's a better way to get audio out of your PC. No more consumer grade ⅛" connectors – with Axia your digital audio stays clean and pristine.

Put an Axia Microphone Node next to your mics and send preamplified audio anywhere you need it, over Ethernet — with no line loss or signal degradation.

Put your preamps where your mics are.

Most mainframe routers have no mic inputs, so you need to buy preamps. With Axia you get ultra-low-noise preamps with Phantom power. Put a node in each studio, right next to the mics, to keep mic cables nice and tight, then send multiple mic channels to the network on a single Cat-6 cable. And did we mention that each Mic Node has eight stereo line outputs for headphones? Nice bonus.

Put your snake on a diet.

Nobody loves cable snakes. Besides soldering a jillion connectors, just try finding the pair you want when there's a change to make. Axia Audio Nodes come in AES/EBU and balanced stereo analog flavors. Put a batch of Nodes on each end of a Cat-6 run, and BAM! a bi-directional multi-channel snake. Use media converters and a fiber link for extra-long runs between studios — or between buildings.

An Axia digital audio snake can carry hundreds of channels of digital audio on one skinny CAT-6 cable. We know you're not going to miss soldering all that multi-pair...

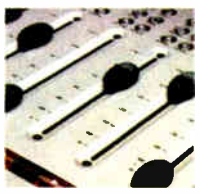
With a little help from our friends.

A networked audio system doesn't just replace a traditional router — it *improves* upon it. Already, companies in our industry are realizing the advantages of tightly integrated systems, and are making new products that reap those benefits. Working with our partners, Axia Audio is bringing new thinking and ideas to audio distribution, machine control, Program Associated Data (PAD), and even wiring convenience.

Axia is already working with some great companies. Like Enco Systems, Prophet Systems, Scott Studios, Radio Systems, Balsys Technology Group, and of course Telos and Omnia. Check AxiaAudio.com/partners/ to find out who's next.

Would you like some control with that?

There are plenty of ways to control your Axia network. For instance, you'll find built-in webservers on all Axia equipment for easy configuration via browser. PathfinderPC® software for Windows gives you central control of every audio path in your plant. Router Selector nodes allow quick local source selection, and intelligent studio control surfaces let talent easily access and mix any source in your networked facility.



Control freaks of the world, rejoice: intelligent Axia mixing surfaces give talent complete control of their working environment. Reconfigure studios instantly and assign often-used sources just where they're most useful.

"This sounds expensive." Just the opposite, really. Axia saves money by eliminating distribution amps, line selectors, sound cards, patch bays, multi-pair cables, and tons of discrete wiring — not to mention the installation and maintenance time you'll recover. And those are just side benefits: our hardware is about half the cost of those big mainframe routers. That's right... *half*. Once you experience the benefits of networked audio, you will never want to go back. AxiaAudio.com for details.

AXIA
A TELOS COMPANY

Broadcasters General Store BSW

Products & Services SHOWCASE

PRODUCT GUIDE

Digigram Releases Another Linux Driver for miXart 8 Line

Digigram is highlighting the availability of another Linux driver under open source licensing for its miXart 8 and miXart 8 AES/EBU multichannel sound cards, adding that it follows an audio standard for Linux called Advanced Linux Sound Architecture.

The company's managing director said the driver's release is the next step in Digigram's effort to make its professional sound cards available to the Linux community, after releasing a Linux driver for its VX222, VXpocket v2 and VXpocket 440 sound cards in March of last year.

The miXart 8 platform combines processing with audio mixing functions. Its 8/8 analog mono I/Os are suitable for audio applications requiring multiple I/Os for distributing, recording, routing and mixing.

The most recent driver is available for download at *www.alsa-project.org*.

For more information contact the company in Virginia at (703) 875-9100 or visit www.digigram.com.

ATI SLM-100 Measures Sound, Checks Acoustics

Audio Technologies Inc. has debuted the Precise Sound Pressure Level Meter, which the company says is suitable for measuring sound intensity in acoustic environments.

The SLM-100 SPL Meter features analog meter movement, and has a frequency response of 32 Hz to 10 kHz. It is equipped to make both A and C weighted measurements with peak or averaging response. Additionally, the unit features a 7 SPL Range Selector, calibration control and a test signal output via an RCA jack.

For more information, contact Audio Technologies Inc. at (215) 443-0330 or visit www.atiaudio.com.

Soundelux E250 Condenser Is Optimized for Close Vocals

TransAudio Group promotes the Soundelux E250 cardioid tube condenser, which Soundelux says is designed to address problems with the modern practice of close-miking loud vocals.

The model is described as a condenser version of the ELUX 251. It is designed by David Bock.

"The E250 is not as bright as the 251 with its pronounced high-frequency peak," he said. "The 250 is mellowed down a bit and I sculpted the proximity effect more towards the middle of the vocal range than down below where it usually lives.

"Basically the 250 is 251 optimized for close vocals ... with lower noise and distortion specs," he said.

The E250 has a broader cardioid polar pattern than the 251, which is fairly directional up close. The E250 is aesthetically similar to the 251, but with a one-piece body and without a chromed windscreen.

The capsule design of the 250 sets the unit apart from the 251. The capsules are one-inch in diameter with a six-micron-thick gold-vapor deposited diaphragm.

For more information, contact TransAudio Group (702) 365-5155 or visit www.transaudiogroup.com.

WHO'S BUYING WHAT

WFAE Uses Dielectric DCBR

WFAE(FM) in Charlotte, N.C., is using a Dielectric cavity backed radiator, DCBR, which is more typically used to broadcast several stations in a common antenna configuration. The station airs at 90.7 MHz.

"WFAE's director of engineering and IT, Jobie Sprinkle, was faced with the combination of filling a difficult directional pattern while having their antenna mounted on a very large cross-sectional tower, 10 feet wide," said the supplier's radio product line manager, Matt Leland.

"He also needed to accommodate their IBOC signal. In order to achieve the pattern, Dielectric designed an antenna which comprised cavity radiators of two different sizes, some baskets approximately 6 feet in diameter and some approximately 9 feet in diameter. There are five panels on one face of the tower, five on the second and three on the third. The panels are also skewed in order to shape the azimuth pattern."

The size and asymmetrical mounting configuration led to another question: Was the tower capable of supporting the load? The Kline Towers division of Dielectric did a tower analysis and reinforcement and was hired to install the antenna.

Other components include FlexLine transmission lines and an isolator. The analog-digital combining takes place in the antenna.

"Combining in the antenna rather than at high level on the ground is many times more efficient than other methods available and offers lower operational costs down the road," Leland said.

"The power level of the digital transmitter is much lower than that of the analog transmitter, on the order of 1 percent in fact. Therefore, maintaining adequate isolation from the analog transmitter to the digital transmitter is a crucial factor of these systems. Since the A-D isolation of the antenna itself in this case measures –28 dB, it is necessary to use an isolator at the output of the digital transmitter in order to supplement the isolation of the low-power digital transmitter from the high-power analog transmitter.

"The isolator passes the transmitted signal from the digital transmitter, while it diverts any energy coupled onto the digital side of the antenna into an absorptive load, which safely dissipates the energy."

Information is provided by suppliers and users. Tell us about your unusual or prominent purchase or sale; send details and photos to radioworld@imaspub.com.

BROADCAST Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

ACOUSTICS

Want to Sell

ANTENNAS/TOWERS /CABLES

Want to Sell

3-bay, 90.9 freq, uses 1-5/8" cable, $2295, buyer arranges shipping. Hugh or Carol Ellington, WKNU, POB 468, Breston AL 36427. 251-862-4824.

Cablewave HCC158-50, approx 425', 1-5/8" coax, 5 yrs old, on spool, good condition, $1800. Dennis Blais, Mortenson Bdctg, 3950 Lexington Rd, Versailles KY 40383. 859-873-8096.

Jampro JMPC-3R, 3 bay full wave spaced, 99.3FM, BO. Dennis Blais, Mortenson Bdctg, 3950 Lexington Rd, Versailles KY 40383. 859-873-8096.

Shively 6812 2 bay with radomes, tuned to 96.1 FM, BO. Dennis Blais, Mortenson Bdctg, 3950 Lexington Rd, Versailles KY 40383. 859-873-8096.

Want to Buy

Coaxial relays, 3-1/8" and 1-5/8". Continental Communications, 314-664-4497, Fax 314-664-9427 or email: contcomm@sbcglobal.net.

Tower, 600-800' and 3-1/8" line. Carl Haynes, Dominant Communications, POB 31235, Jackson MS 39286. 601-331-6527.

AUTOMATION EQUIPMENT

Want to Sell

1978's DP-1 computer automation system. Includes 6 roll-around 6' racks, 6 r-r Otari tape decks, controller & amps. Was working well when station went to satellite deliver of programs. Manual included, $900/BO. Dave Boyll, KWKC/KZQQ, 1749 N 2nd St., Abilene TX 79603. 325-673-1455.

Smartcaster Live Assist CD automation system with live assist for commercials, run 24/7, $2500. John Wilsbach, WMSS, 214 Race St, Middletown PA 17057. 717-948-9136.

CART MACHINES

Want to Sell

Spotmaster R/P, $350 +shpg; ITC stereo R/P, $350 +shpg; Tapecaster R/P, $250 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

ITC stereo R/P cart machine, $250 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

Spotmaster R/P cart machine, $200 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

Tapecaster R/P cart machine, $150 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

COMPLETE FACILITIES

CONSOLES

Want to Sell

Arrakis 12 channel & 8 channel control boards. Both in working order, $750 ea or $1000/pair +shpg. Patrick Lopeman, WMOM, 206 East Ludington Ave, Ludington MI 49431. 231-845-9666.

LIMITERS/AUDIO PROCESSING

Want to Sell

Orban 9000 in excellent condition with manual, still in service, $1800/firm +shpg. Jerry Evans, KPTL, 1960 Idaho St, Carson City NV. 775-782-2211.

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's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

MISCELLANEOUS

Want to Buy

MONITORS

Want to Sell

RCA AMN-1 freq & mod monitor with instruction book, $350 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

RECORDERS

Want to Sell

Tascam 112 MK II stereo cassette deck in good working order, low hours, $200. Ken Manri, WJPG/ WJPH, POB 603, Woodbine NJ 08270. 609-861-3700.

Revox stereo r-r tape recorders (2), $1000 or $475 each +shpg. Donald De Rosa, WAMF, 113 Schuyler St., Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

Tascam 32, rack mounted, $600/BO +shpg. Curt Marker, Gospel Opportunities, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

REMOTE & MICROWAVE

Want to Buy

Marti RPU link, any power. Patrick Lopeman, WMOM, 206 East Ludington Ave, Ludington MI 49431. 231-845-9666.

SATELLITE EQUIPMENT

Want to Sell

MPEG-2 Satellite Receivers, LNBs, C & Ku Band Equipment. www.daveswebshop.com, 479-997-2230.

Zephrus 4 card #304 satellite main frame card holder, excellent condition, BO +shpg. Curt Marker, Gospel Opportunities, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Want to Buy

Wegener DR96Q receivers. John Graham, WCPE, 919-556-5178 or engineer@wcpe.org.

STATIONS

Want to Sell

PROFITABLE 1KW Atlanta metro AM for sale. Make offer. 678-454-5430.

Want to Buy

AM, FM, CP, translators, LPTV in RI, CT, MA FL areas. Call after 5PM EST. Michael Cardillo, 151 Morgan St, Cranston RI 02920. 401-942-8341.

STUDIO EQUIPMENT

Want to Sell

Lighthouse Digital TDM router, 32x32 analog audio router with navigator control software, expandable, $500/BO +shpg. John Belch, WYEP, 2313 East Carson St, Pittsburgh PA 15203. 412-381-9131.

TAPES/CARTS /REELS/CD's

Want to Sell

172 carts in lazy Suzan, $300 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

1000 carts in Glenview, $50 per 100 carts. Kara Lee, WGBK Blenbrook South. 847-486-4487 or email: operations@wgbk.org.

Fidelipac carts (172) in Lazy Susan, $300 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

Want to Buy

Seeking San Francisco bay area sports recordings, baseball, football, basketball, etc. From the 1920's through the 1970's if possible taped off the radio or audio. Write or call. Ron Tamm, 140 Linden Ln #127, Mill Valley CA 94941. 415-383-6216.

Seeking San Francisco radio recordings from the 1920's – 1980's. Stations like KSFO, KTAB, KFRC, KNBR, KNBC, etc. Anything pertaining to newscast, disc jockey shows, live band remotes, etc. The format can be 16" radio transcriptions, disc, r-r tape, cassette tape, CD, etc. I'll pay to have copies made. Write or call. Ron Tamm, 140 Linden Ln #127, Mill Valley CA 94941. 415-383-6216.

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Fritz Bauer AM xmtr, brand new crystal & spare parts with manual, tuned to 1300 Khz, $4000. Must pick up or arrange shipping. Jerry Evans, KPTL, 1960 Idaho St, Carson City NV. 775-782-2211.

Harris Gates 1KW on 1560, bought in 1998, great condition, sell as is, buyer responsible for S/H, BO over $5500. G Hayes, WKKY, 95 West Main St, Geneva OH. 440-466-9559.

Energy-Onyx ECO6, 6 kW FM transmitter, under 4 yrs old, tuned to 98.3 Mhz with Energy-Onyx exciter, asking $17k. Lee Schafer, Inspirational Family Radio, 1440 S Weideman Ave, Boise ID 83709. 208-377-3790.

Transmitters (WTS) Cont.

QEI 675 FM exciter 5-20 watts, frequency agile, $1000 +shpg. Curt Marker, Gospel Opportunities, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

QEI Quantum "E" 300 watt transmitter and exciter combo, frequency agile, $3000 +shpg. Curt Marker, Gospel Opportunities, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

RCA BTA1S 1000/500 watt broadcast transmitter with manuals, $3000 +shpg. Donald De Rosa, WAMF, 113 Schuyler St, Fulton NY 13069. 315-593-1300 or wamf1300@alltel.net.

Tepco J340 translator, factory checked, will be shipped from factory, RX98.1FM, TX92.7FM, $2282 +shpg. Curt Marker, Gospel Opportunities, 130 Carmen Dr, Marquette MI 49855. 906-249-1423.

Want to Buy

AM phasors, phasor parts, AM-19 phase monitors, RF switches, AM transmitters. Continental Communications, 314-664-4497, Fax 314-664-9427, contcomm@sbcglobal.net.

ACTION-GRAM

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- Market segment specialists—Analog and HD Radio end-to-end solutions
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◆READER'S FORUM◆

Radio World, January 5, 2005

Kahn's Powerful, Factual Case

It was exciting to see Leonard Kahn's response to the "Wrath of Kahn" piece ("Kahn: IBOC System Is Defective," Sept. 24).

As expected from one of the great figures in radio technology, Mr. Kahn knocked his condescending detractors right out of the ballpark. He can be relied upon to tell the truth, and does not suffer fools. His passion is science and he has no tolerance for the politically driven "junk engineering" that pervades our industry.

Twenty years ago, had the industry elite been interested in supporting the best, most compatible system rather than political expediency, Mr. Kahn's AM stereo would be a long-established fact of life. Imagine how the evolution of the AM broadcast band might have been changed had the listening experience been more fulfilling. Kahn's version of AM stereo allowed other talented engineers to build on and complement his work. That opportunity was lost. And with the band-aid of NRSC, the programming had to mutate to fit an adulterated, constricted medium.

Mr. Kahn presented a powerful, factual case against IBOC. There is no wrath. His emotion is not the result of a technical disagreement, but the product of an illogical bias in high places against fair consideration of his wonderful ideas and well-founded warnings. It would seem that the implementation of IBOC, like Broadband over Power Lines, might get any private individual arrested for malicious interference. These technologies work, but so would a nuclear bomb for exterminating mosquitoes.

Mr. Kahn reminds us to consider the side effects, and that thought and finesse can allow us to have our cake and eat it too.

In any high-stakes debate, we must ask *qui bono*, "Who benefits?" If the purpose of IBOC is to force listeners to buy complex receivers to listen to a little FM-like "music" mixed with repetitious political pundits and 30-minutes of commercial load for every hour, the listening audience *will not benefit*. If the sole beneficiary is yet another cartel attempting to convert a public resource into a private profit center, the uncontested adoption of IBOC might be a crime!

A few widely spaced test stations operating in daylight are deceptively benign. The insidious aspect of this rush to digital is that the destructive impact on legacy AM listeners is not fully perceived until it is deployed 24/7, coast to coast. By that time it will be too late — or could that be the real plan?

Fortunately, Leonard Kahn is mature enough to remember that at the heart of radio broadcasting is a covenant of good faith, consisting of ubiquity, compatibility and responsibility — especially for a broadcast industry operating during a time of quasi-war. Would FDR have allowed broadcasters to play with incompatible, exclusionary, self-serving radio broadcast standards during the peak of World War II? It is vital to reach the most people with the simplest most ubiquitous technology.

Mr. Kahn is offering us the best of all worlds, allowing AM radio technology to advance without leaving anyone behind. Turning a blind eye to this gift could be our industry's third and final strike. The fat lady will sing, but nobody will be able to hear her.

Mike Dorrough
Dorrough Electronics
Woodland Hills, Calif.

Suggestion Box

Back in the mono era of the 1950s, several small manufacturers offered component AM tuners with two, or even three, bandwidth positions. They always cautioned buyers that while the wide position could provide FM-like "hi-fi" sound from AM during daylight hours, it would generally be unusable at night, even on most local stations, because of noise from the skywave signals of adjacent-channel stations.

If the boutique "hi-fi" companies of that era could understand the difference between daytime and nighttime medium-wave propagation and the resulting differences in potential audio performance, why can't today's broadcasters?

The best solution would be to limit bandwidth at night, say from 40 minutes before sunset until 40 minutes after sunrise the following morning — but keep it at its maximum during the day.

I think a 24-dB-per-octave low-pass filter with its 3-dB down point at 4.5 kc would be ideal. It would be a mere whole tone below Clear Channel's 5-kc proposal, and would have the added benefit of providing a 1-kc "guardband" between adjacent signals at night.

But during the day, the more bandwidth, the better. I'd like to see bandwidth extend to 15 kc within 2 or 3 dB, though I realize that 7 or 8 kc may be the practical upper limit with many older directional antenna systems, and even with some single towers at the low end of the band.

As for IBOC, it's the most harebrained technology to come along since CBS Labs proposed its FMX system, which was supposed to solve the problem of noisy analog FM stereo reception in weak signal areas.

CBS wanted to add a second, highly compressed difference signal in quadrature with the standard one. Many broadcasters were eager to adopt FMX — until Amar Bose's independent tests showed that it was so sensitive to even the slightest phase distortion of the RF waveform (something inevitable with the multipath problems of mobile reception) that it was practically useless in cars.

The whole IBOC idea, intruding as it does on adjacent channels, should be scrapped for FM and for AM, as should the C-Quam AM stereo system. The FCC erred in choosing C-Quam over Leonard Kahn's independent sideband system for AM stereo, and we're still living with the adjacent-channel interference consequences of that mistake.

Jack Hannold
Clayton, N.J.

Radio World, January 5, 2005

GUEST COMMENTARY

The Trouble With Patents

The Author Says the Current State of the Patent Industry Hikes Product Costs, Stifles Innovation

by Tom Hartnett

There were never any courses on Intellectual Property Law back in my engineering school. But as a designer of electronics for the radio industry, I've reluctantly received a pretty extensive education on the U.S. patent system. And while I believe the concept of patents still remains valid and necessary, my experience tells me the system is broken.

The patent system was written into the U.S. Constitution with the intention of creating an environment where innovation flourished. By giving inventors a limited monopoly over their concepts, it would be difficult for larger players to simply copy these concepts and profit. But an increasing number of infringement claims these days come from people who have no interest in innovation, but rather emphasize the "property" aspect of "IP" — that is, the right to charge product developers license fees on their products.

Many times these "Intellectual Property Holders" have never invented anything, but rather purchased or inherited, through acquisition, the patents in question. In other instances, the patent holder may have intentionally "morphed" an existing patent to duplicate a popular product. Sometimes, the patent holder really isn't entitled to his "monopoly" at all due to a previous invention.

The nitty-gritty

If you are a developer of innovative products, the first sign that you are about to learn a lot about patents usually comes in the form of a polite letter from the attorney representing a patent holder. The letter typically includes a copy of the patent, along with an invitation to enter license negotiations. Here's where the system begins to show its bias toward the patent holder.

Your own patent attorney (you'll need to have one here) will tell you that it's very risky to simply ignore this letter, as this makes you potentially liable for "treble" damages (*triple*, in non-lawyer speak) should you be found infringing by a court. Due diligence requires that you get an opinion letter from your attorney stating why your product does not infringe.

The cost of this letter will vary based on the complexity of the product and the patent, but typical rates are $10,000-$20,000. In contrast, at this point the patent holder has invested a first class stamp.

Next, you'll enter into a lengthy exchange of letters, by attorneys on both sides, as to the merits of the claim of infringement. Here it becomes less about the patent and the product, and more about who can fund their attorney the longest. Eventually you'll give up and license, or you'll risk a lawsuit.

On the rare occasion that a patent dispute winds up in court, seven-figure attorney fees are common. Your patent attorney will remind you of this fact often. It's likely that, against your better judgment, you'll swallow your pride and try to negotiate licensing terms that will keep your product viable.

Radio broadcasters and other consumers of technology should care about patent corruption. Its parasitic nature threatens to add a huge cost to products and stifle innovation.

Finally, you'll have a conversation with your attorney about how best to protect yourself in the future from frivolous infringement claims. He'll suggest that "the best defense is a good offense" and recommend applying for your own "defensive" patents on all new products. This will be an expensive process both in time and money, and further add to the Patent Office caseload.

Many examples exist of companies trying to live off patent royalties. Forgent Networks not long ago "found" a patent in their inherited collection that bears resemblance to what has become the JPEG standard of image compression, and they have been aggressively — and successfully — pursuing licenses.

Rambus participated in industry standard-setting for computer memory, only to later reveal they had patented the chosen architecture. Rambus has sued its fellow standard participants for millions.

In these and many other cases, the patent system is being used to aggressively stifle competition and innovation. The real test of value of a concept should be how much benefit the idea adds to a product. In too many cases, the amount of that value is zero.

Quality control

But predatory patent enforcement has become so lucrative it has created its own industry. Patent "litigation companies" now exist that have no assets aside from other people's patents, and these companies make a living of negotiating licensing deals with the willing, and suing the unwilling. This industry is parasitic in the sense that it produces nothing of value to anyone other than itself, and self-perpetuating in the sense that as more companies cave to these tactics, the industry itself grows.

You may sense my contempt for companies that would rather profit from litigation than building good products. But part of the blame is with the U.S. Patent Office, chronically under-staffed and under-funded. Without the resources to do proper research into claims, many "junk patents" issue that should not. But once it does issue, a patent can become a powerful moneymaking device regardless of its legitimacy.

In a case with which I was involved, the Patent Office allowed a patent holder to continually re-file his patent with subtle changes to reflect our existing product. We eventually found the best business decision was to license, rather than face the uncertain cost of a court battle. The cost of this license must be borne by us and by our customers, yet it adds no discernible value to either.

This is why radio broadcasters, and other consumers of technology, should care about patent corruption: the parasitic nature of it threatens to add a huge cost to products, as well as to stifle innovation of new ones. Particularly in our environment, where small companies can thrive in niche markets, it is important to protect this ability to innovate.

Because reform at the government level is likely to be glacial in pace, broadcast equipment consumers should vote against companies who practice this technique with their dollars. Become aware of ongoing patent disputes and determine whether the IP holder has legitimate rights for a monopoly on their concepts. Seek out political candidates who support patent reform. The future of innovation may depend on it.

The author is the technical director at Comrex.

Remembering Jim Malone

Every year at the NAB convention, I made a beeline for the Belar Electronics booth to see my old friend, Jim Malone.

Like so many people in our business, we saw each other only once a year in Las Vegas, despite the fact that we both lived near Philadelphia and had known each other for more than three decades. Naturally, I'd stop by his booth, always to be greeted by Jim's million-watt smile and those never-forgotten kind words: "Dan, you look younger every year!"

In 25 years, I never missed my chance to say hello and to collect my compliment. Last spring, when Jim atypically was absent from the show, Lynd Meyer took me aside and explained that Jim had cancer and was too weak to attend — but he was still at work, designing products. That was just like Jim, I thought. He loved and cared deeply about his work and our industry.

Jim worked in broadcast his entire professional career. I met him in 1975 when he worked at LPB. He helped me get my business started by coming down after-hours to my storefront location in Philly to repair transmitters until late in the evening. Ten years after that, he moved to Belar, where he helped design many of the monitors in use at broadcast stations throughout the world.

Our industry has hundreds of dedicated, caring engineers like Jim who are happy to stay in the background, designing and building the products that we depend on every day. So often we take their dedication, patience and good nature for granted.

A few months ago I had lunch with Jim at work. He was very weak, so we ate at his desk while he enthusiastically showed me his CAD design for a new Belar product.

Jim died on my 50th birthday, at 61 years of age. Now I know that I won't be getting any younger.

Dan Braverman
Logan Twp., N.J.

Kudos

Congrats to Frank Grundstein on getting Page One placement *above* the name of the paper (in the Oct. 20 issue). Now *that's* an achievement. I know he's written for RW before, but it is cool. And hey, the content was good, too.

Knowing how and when to cut cap-ex spending is a perennial, important topic, but adding the section about benefits and concessions made it even better — and made for a good, detailed twist to this subject. I'm sure many readers will use it to their advantage during this time of budget talks everywhere in the world.

Tom Zarecki
Public Relations/Press
RCS Sound Software
New York

◆READER'S FORUM◆

Disturbing The Peace

Thank you to John King and John Crigler for the point/counter-point discussion of program retention ("Recording: Just Inefficient or Just Too Much?" Oct 20). You made good points on both sides of the issue.

Pros and cons aside, for a stand-alone AM station like ours, which is under the umbrella of both San Antonio and Austin and fighting for its very existence, this whole idea is, without question, the dumbest thing the commission has ever proposed.

Not only might the cost be difficult to endure, the very idea of broadcasting anything that even approaches indecency is completely foreign to small-market broadcasters.

If the FCC feels compelled to punish someone, punish those causing the problem — and allow those of us who still believe in local community service to do our jobs in peace.

This issue centers around good judgment. Apparently common sense isn't that common.

Hal Widsten
General Manager
KWED AM 1580
Seguin, Texas

Captioned Media Program PSAs

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Visit *www.cfv.org* to register for CMP service or order videos from the online catalog.

Ray Frieders
Marketing Consultant
Captioned Media Program
Sahuarita, Ariz.

Extra Curricular

I rather liked the copy of the Engineering Extra that arrived along with my issue of Radio World this month. However, I worry it may detract from the engineering content of Radio World. What is so wonderful about Radio World is that it features such a wide variety of different kinds of articles. It would be a shame to see many of the more technical articles removed and rerouted into a separate edition.

Scott Dorsey
Kludge Audio
Williamsburg, Va.

While I enjoyed the first copy of the RW Engineering Extra, it was difficult to read. The paper and printing need to be improved. It should at least be equal to the Radio World edition. Maybe I just got a bad copy. Just thought I should mention it.

Fred Rathert
Baltimore

'The Great White Noise'

Those persuading the industry to adopt a new standard of 5 kHz bandwidth to help *reduce* interference are the *same* people who see nothing wrong with adding the HD sidebands.

RW says "modulation at greater than 5kHz is landing on top of the next station on the dial" ("The Time for 5 kHz AM Has Come," Nov. 3). Where do you think the HD sidebands — which cause far greater interference than traditionally modulated voice or music — land?

The AM bandwidth reduction could be a legitimate option for better reception if we weren't about to unleash the great white noise.

Mike Erickson
North Babylon, N.Y.

The Federal Bureau of Indecency

The FCC should not be in the position of determining what is indecent. But various forces are moving it in that direction. Some attorneys believe the question may soon prompt a legal confrontation in court.

Broadcasters say indecency guidelines are vague; three are fighting big fines. We feel indecency might not be an issue at all if broadcasters and the listening and viewing public took more responsibility on themselves. Yet we acknowledge that "responsible" behavior is not easy to define, either. Over time, America's standards of what belongs on-air have changed. Also, certain content may offend people in one market but not another — for that matter, in one neighborhood, or one room of a home, and not another.

There is no single definition of decency; there cannot be.

Hindering any thought of developing a consistent national approach to decency is the fact that legislators and regulators have applied inconsistent rules to competing media. We anticipate a great deal more attention to this issue.

If we accept the argument that the broadcast spectrum is a kind of public trust, the occupants of which should serve the public interest — and we do accept this argument — how does it make sense that satellite services are held to a laxer standard? Simply because these are "pay" services and kids can't get at 'em?

Remember, satellite still uses regulated spectrum. Yes, XM and Sirius paid for that access; but does payment of an "entrance" fee mean government waives its oversight responsibilities? No. Or if it does, what about those licensees who recently paid a fee at auction for FM licenses? Are *they* less constrained in their programming than existing radio stations?

These are not easy questions, and they'll intensify as satellite radio becomes more explicit. Expect discussion of content regulation for pay radio to continue along with that for cable TV and the Internet. (We think so, even though the FCC Media Bureau Chief reiterated in mid-December, in the Saul Levine case, that "subscription-based services do not call into play the issue of indecency.")

So the commission certainly is in a hot spot — partly of its own making — pressured by consumers, values groups, the administration and Congress.

Chairman Powell has long been loath to let government interfere with programming. Yet, as the indecency issue gained traction in an election year, the commission increased the amount and frequency of its fines against broadcasters. Before the elections, lawmakers pushed to raise fines. The effort ultimately failed, but this is unlikely to be the last of the matter.

It's much easier to file a complaint at the commission now. It received more than 540,000 complaints about last year's Super Bowl broadcast. But advocacy groups generate most such complaints; so it's unclear just how upset most Americans are about all this.

In a New York Times opinion, Powell wrote that "it's time to take a deep breath" about the issue. He reminded the public that programming must meet the legal definition of indecency to be actionable; it must be of a sexual or excretory nature; and it must be patently offensive.

"Mere bad taste is not actionable," he stated. "(W)e are not the Federal Bureau of Indecency. We do not watch or listen to programs hoping to catch purveyors of dirty broadcasts."

We agree that a little calm is called for, and that the FCC should not be in the position of regulating what is indecent.

At the same time, broadcasters must do a better job of self-regulation. In fact, based on anecdotal evidence, we think licensees have been doing just that.

Regulators need to develop more consistent policies for content enforcement. Congress should make clear to the FCC that if a medium uses publicly regulated spectrum — and satellite spectrum, while treated differently than broadcast, is still subject to government regulation — it should not be free of oversight simply because it is subscription-based.

Meanwhile, the last time we looked, radios still come with "off" buttons. The listener who finds herself offended should let market forces prevail, not look first to the government to solve her problem. She should take her complaint directly to the broadcaster or advertiser, and remember that she can change the station.

— RW

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Our Generation-5 provides your operators with a straightforward traditional control surface coupled with all the benefits of digital technology. It gives you the flexibility of system-wide source, mix and destination control (any signal any*where*), a powerful mix-minus section and a complete event store, name and recall system. One wire from this surface can control THOUSANDS of wires in your technical operations center.

And while the G-5 *feels* like an analog console, its DSP-based mixing engine keeps your digital sources digital while converting analog sources to switched digital, eliminating crosstalk and noise. It can furnish remote and telcom functionality on any input fader without fear of feedback—a real plus in back-to-back daily operations. Its built-in graphic displays keep operators on top of things with just a glance. And since the entire system is software based, you can accommodate any format with a press of a button.

Like all our Generation Series consoles, the G-5 has complete failsafe options available, such as automatic fail-over DSP and CPU cards and redundant power supplies. We can even provide scheduling software and studio mounted satellite cages that can be configured to mix independently from your main routing system.

At WHEATSTONE** we've built and sold over a thousand digital audio consoles.* The G-5 is a culmination of all that experience. *Benefit from our expertise — choose **WHEATSTONE!

Wheatstone

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Behind Every GOOD CONSOLE There's an EVEN BETTER ROUTER

GENERATION 4

A Straightforward, Easy-to-Use Control Surface

There's no long learning curve required to immediately start using this traditional layout specifically envisioned for operators of all skill levels.

***BRIDGE TECHNOLOGY** enables the GEN-4 surface to operate far beyond the limits of its studio mainframe. Integration with the Bridge digital audio network router provides systemwide access to all station on-air and off-air audio resources via interlinked CAT-5 or fiberoptic cable. And of course, we all know **EXPERIENCE COUNTS**! With over eighty Wheatstone Generation control surfaces already operating in the field, you can be assured your installation will proceed smoothly and on time.*

the digital audio leaders

Wheatstone

www.wheatstone.com