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THE RADIO TECHNOLOGY LEADER
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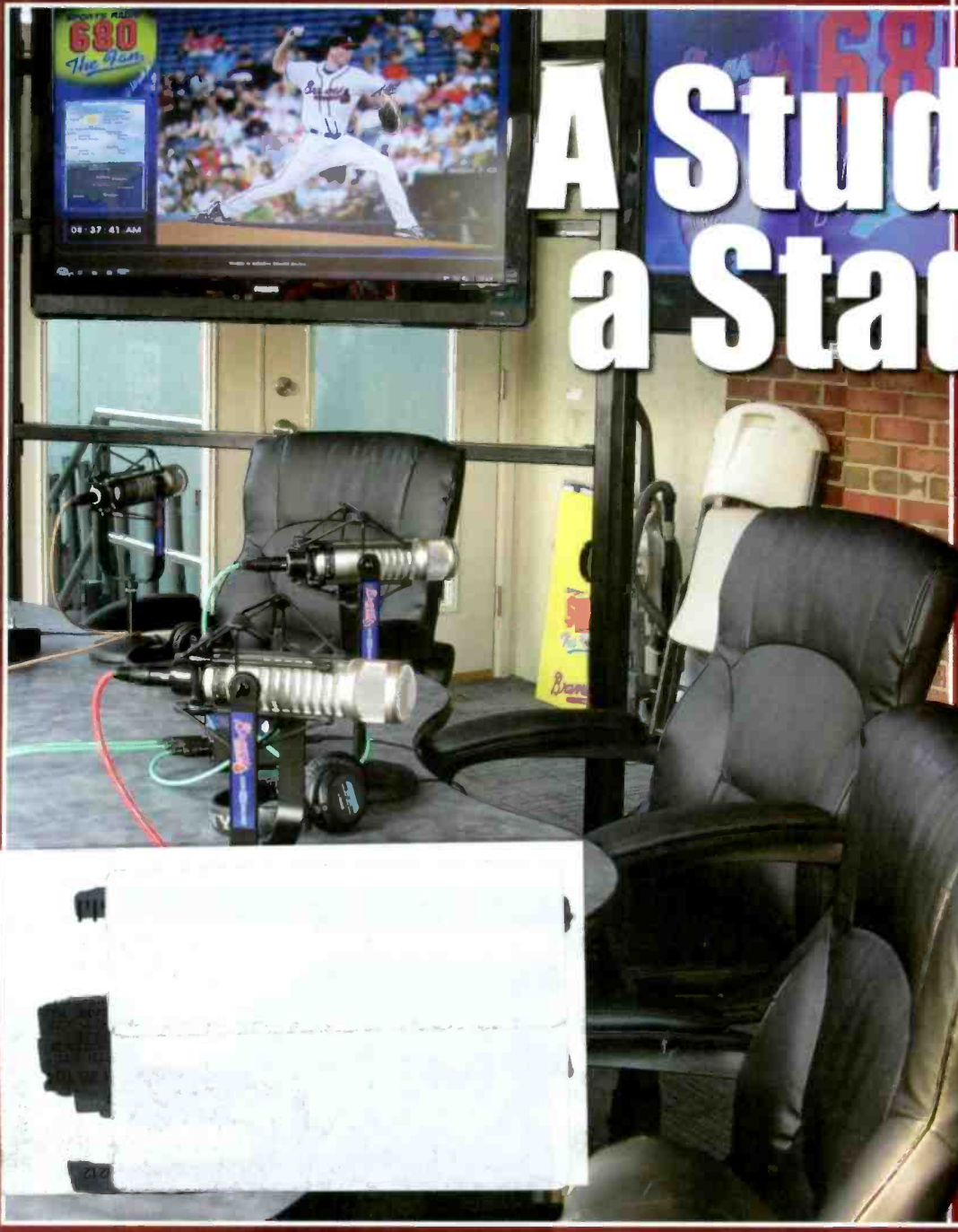
RadioMagOnline.com



A Studio in a Stadium

Cumulus and Dickey Rebuild for the Braves

TRENDS IN TECHNOLOGY

Measuring HD Radio performance

FIELD REPORT

Comrex STAC and Blue Mics Snowball

A Penton Media Publication

IMAGINE THERE'S NO IP HASSLE. IT'S EASY IF YOU TRY.

Preface... Clear your mind. All that anxiety that you've come to associate with the typical AoIP network install is going to leave you now... Think of cool clear water flowing into the coffee maker and the sound of sprinkles hitting fresh, hot donuts... OK. Ready?

1.OPEN

Confront your boxes. You know they're there. They know they're there. But only YOU have the power to change that. Go ahead... open them

10:03am

2.LOOK

Take a good look at what's in the boxes. You've got a control surface mixer item and rack mount BLADE something or other. They sure look pretty. And they are. Using this stuff you are gonna be a chick magnet. Or a guy magnet. Whatever, you are going to be IN CONTROL. Cool part is, THAT is only moments away!

10:09am

Every BLADE has all the information about your entire network stored in it. Should any part of the network go down, the rest continues to function perfectly. Simply plug in a new BLADE and you'll be where you started in moments!

3.RACK EM UP

Rack mount the rack stuff. OK, we're going to be brutally honest here. THIS SINGLE ONE STEP takes the longest of the entire setup process (unless you have a REALLY dull knife in step 1). Of course you'll need your own rack and screws, but hey, if it's a deal breaker, we'll work it out.

10:20am

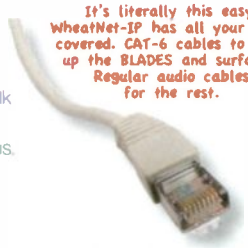
4.PLUG IN

Time to hook them up. You knew it was coming. Your little tummy is wrapped around your throat. I mean, it's gotta be a real hassle, right? Interfacing these things? Setting them up? Getting them to talk to each other? Somebody get me an antacid.

Wait... is that a CAT-6 cable? You know what that is. And that's all it takes? Mmm Hmm. Yep. You bet.

11:02am

It's literally this easy. WheatNet-IP has all your bases covered. CAT-6 cables to hook up the BLADES and surfaces. Regular audio cables for the rest.



5.PUSH THE BUTTON

OK. Everything all hooked up (meaning, is the CAT-6 cable plugged in)? Great. Now we're gonna configure the system. We start by turning it on. Then?

Um... that's it. It configures itself. Every piece talks to every other piece and does what it's supposed to do. What? Doesn't EVERY IP Audio system do it that way?

11:05am

WheatNet-IP does ALL the work of configuring your system EVERY BIT OF IT! It knows when you are adding on or when you are taking something out. You concentrate on content. We concentrate on getting it where it needs to be.

6.IT'S WORKING!

You've got a system! From here on out, it's just like the analog stuff you're used to. Except ultimately more flexible. And much more reliable. And better sounding. And completely expandable. And such a joy to use. Yes – you heard it – I said A JOY TO USE! (Bet you never thought you'd hear an IP system described that way. Certainly not one from the other guys)

11:06am

7.CELEBRATE

Time for that cup of coffee and donut we talked about in the preface. Let's face it...the whole process was painless. AMAZINGLY PAINLESS. So painless, you are already up on Facebook and Twitter talking about what a stud muffin you are with your technical prowess. Don't get cocky, kid. But DO enjoy a delicious coffee and donut. And remember, next time you even think about installing new gear, you've gotta call your Uncle Wheaty...

11:07am

8.SLEEP EASY

With a WheatNet-IP system, rather than having to be on the phone to who-knows-where in the middle of the night, you can take your emergency engineers off the clock and let them get a good night's sleep. We ARE here, 24/7, in beautiful New Bern, North Carolina, and if you need us, we'll talk to you all night long. But with Wheatstone's reliability record, chances are much greater that those visions of sugar plums will just keep dancing in your head.

3:40am

AoIP ADVANCED...

It's great to be able to say you invented something (whether you did or not). Turning that invention into a viable, workable solution for modern applications is what's needed if we are going to take this technology to the next level. The status quo was a pretty good starting point – but taking it out of the vacuum and into the workplace requires a fresh, objective yet passionate approach to advance it. WheatNet-IP certainly advances it, making your workflow everything it should be. We cost the same or less. We can handle 10 times the bandwidth. We are far more reliable. And we're poised for THIS decade as well as the NEXT one. We're Wheatstone! This is what we do! What else would you expect?

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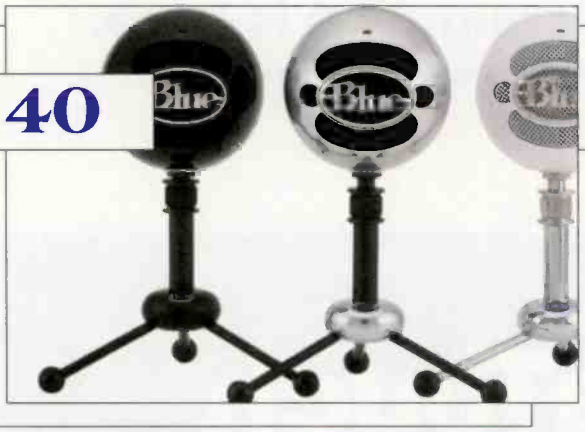

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ON THE COVER

When Dickey Broadcasting Co. and Cumulus Media took over broadcasting the Atlanta Braves, they went all out, making over the play-by-play broadcast booth and constructing a new pre/post game stage. See the results starting on page 22.

OUR BRIDGE-IT IS TURNING HEADS

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Currents Online

Selected headlines from the past month.

Survey: Local Radio News Has Positive Future

68 percent of radio newsroom personnel believe management is willing to invest in news staffs to effectively cover their markets.

Attend 129th AES Convention Exhibits for Free

Exhibits are open Nov 5-7, 2010.

EAS, CAP and the 180-day Clock

As radio waits for the trigger to be pulled, rumors and misconceptions abound about how CAP implementation will work.

Broadcasters Foundation of America Golf Tournament Raises $150,000

In August 2010 the Broadcasters Foundation granted the highest amount of financial aid to the largest number of broadcasters in one month than ever before.

Yamaha Ships W24 and C24 Portable Recorders

The Pocketrak recorders have been revamped with new models and features.

FCC Launches License View

The news system allows the public to explore licenses through on online dashboard.

NAB Leaders: Consumers Deserve Radio-capable Cell Phones

Steve Newberry and Caroline Beasley sent letters to the House and Senate leaders for the Judiciary and the Commerce committees to clarify their views.

Mike Erickson Joins Vorsis

Erickson began his broadcasting career in 1991 at a small AM station on Long Island where he soon developed a love for manipulating audio with processors.

Site Features

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The weekly Radio Currents, the twice-monthly Digital Radio Update and twice-monthy New Products Extra put the latest in radio technology in your e-mail inbox. Subscribe today.

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What happens when FEMA approves CAP?

The underlying mechanics of the Emergency Alert System have been the source of extensive debate recently. It's not a new subject, but interest was quickly renewed when news of a radio spot for gasoline company Arco included a modified EAS tone that caused some EAS units to decode the partial RWT header to be logged. Some attentive engineers investigated the issue and discovered the details, which we documented at RadioMagOnline.com.

The poor choice in marketing caused many to think about EAS again, especially with the near perpetual wait for FEMA to finally adopt CAP as its standard. Once the decision is made (I have heard speculation that the announcement will come at the beginning of October), many broadcasters are concerned with the now legendary 180-day clock that will begin counting down.

FCC Rules 11.55 and 11.56 mention the 180-day clock. 11.55 discusses how CAP

could be implemented into state plans and how stations might receive those messages. 11.56 has the meat: "[A]ll EAS participants must be able to receive CAP-formatted EAS alerts no later than 180 days after FEMA publishes the technical standards and requirements for such FEMA transmissions."

We knew CAP was coming. Some still question the reasons for implementing it, but the reality is that stations will have to comply with the change. If you attended the 2010 NAB Show you heard the CAP demonstrations (which you could not avoid hearing anywhere in the Central Hall). The technology and hardware exist. Similar demos (although hopefully not as loud) will be held at the 2010 Radio Show.

Some stations are already in complete or near-complete compliance. Stations that bought an EAS encoder/decoder within the last 12 months (and possibly longer) can very likely already decode CAP messages, although many newer EAS units will need a software update with the latest CAP protocol. Some estimates say 10 percent of stations are ready when the 180-day clock expires.

I hear complaints about the unexpected cost of replacing EAS equipment. It's hard to call it unexpected at this point. The notice of the 180-day clock has been in place for more than two years. Granted, some stations operate on tighter-than-tight budgets, but this is an expense that should have been planned for by now. While no one likes to scrap equipment that works, the current EAS was designed 15 years ago. That's a step away from stones knives and bear-skin huts in technology terms.

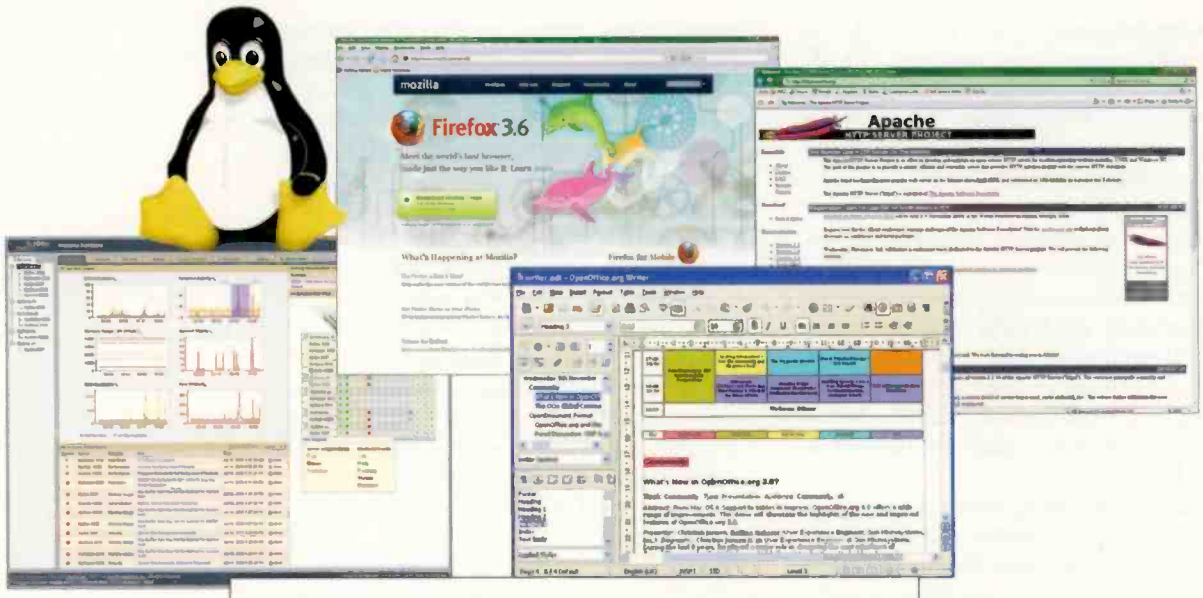
There are also several unknowns in how states and local agencies will transmit CAP messages. Much of the CAP rollout is a work in progress. But for stations, having the CAP-compliant EAS unit is the basic step. As engineers, we usually want all the details before installing a new system, but all the details are not yet known. If a state or local plan has no mention of CAP, a station obviously cannot fully integrate the system. But the CAP-compliant EAS unit can still be installed.

There have been pleas to extend the clock to 12 months or more, but even if the clock is extended to 24 months, many broadcasters will wait until the very last day before updating their equipment.

If nothing else, the 180-day clock puts a firm deadline on events that have already been put into action.

Chris Scherer

What's your opinion? Send it to radio@RadioMagOnline.com



Open source software

By Kevin McNamara

The concept of open source isn't new; in fact, it can be traced back to the early 1900s when the Motor Vehicle Manufacturers Association was formed. It was clear that different individuals or companies holding patents for various innovations were holding back the automobile industry as a whole. The MVMA promoted the cross-licensing of patents between its members without exchange of money.

Since then there have been many instances of open software projects, most notably the development of the network protocols leading to ARPANET, the predecessor of the Internet. ARPANET provided the platform for collaboration between various government and academic institutions which further made it possible to freely share software code. IBM was the first company to distribute source code for programs and operating systems through a user group called SHARE, which is still in existence today.

The term open source was created in 1998 as a result of Netscape releasing the source code for its Navigator Web browser. Since that time there have been countless open source projects providing quality free software alternatives to expensive commercial operating systems and applications. Some of those projects include the Linux operating system, Firefox, OpenOffice.org, Apache, My SQL and hundreds of other useful programs written for Windows, Linux and Mac operating systems.

Chances are you are already familiar with, and probably using open source software in your personal or business life, but do you know the official definition?

Opensource.org defines open source software as having: free redistribution, source code, derived works, integrity of the author's source code, no discrimination against persons or groups, no discrimination against fields of endeavor, distribution of license, license must not be specific to a product, license must not restrict other software and license must be technology-neutral.

Can I write my own programs?

Yes, while coding a large software project is out of the core competency of most station engineers, there are some great development tools that can make the job easier. This may be particularly useful if, for example, you are asked about writing an application for a smartphone. The tools are somewhat limited for the iPhone, although Apple has recently decided to open the iPhone app community to more developers. The Android operating system is open source and freely available to developers. In fact, Motorola will provide (free) an excellent and easy-to-use code development environment called MotoDev which makes developing apps for Droid phones easy. Go to developer.motorola.com for more info.

Programming languages such as PHP and Java are also open source projects. These languages are extremely useful for everything from making interactive websites to controlling devices and pretty much any other application you can think of. There are also numerous code development tools (also open source) that can be found with a simple search on the Web.

One of the real useful aspects of open source software is that you have complete access to the source code, which means you can also, if you have the proper knowledge, modify the program for your unique needs. It also means that the source code could be compiled to run on different operating systems.

If you decide to develop a new program or modify an existing project, for distribution to the public, there are rules that need to be followed.

Developing open source software

If you decide to write open source software, you will need to comply with the following requirements (from opensorce.org).

- No intentional secrets: The standard must not withhold any detail necessary for interoperable implementation. As flaws are inevitable, the standard must define a process for fixing flaws identified during implementation and interoperability testing and to incorporate said changes into a revised version or superseding version of the standard to be released under terms that do not violate the OSR.
- Availability: The standard must be freely and publicly available (e.g., from a stable website) under royalty-free terms at reasonable and non-discriminatory cost.
- Patents: All patents essential to implementation of the standard must: be licensed under royalty-free terms for unrestricted use, or be covered by a promise of non-assertion when practiced by open source software.
- No agreements: There must not be any requirement for execution of a license agreement, NDA, grant, click-through, or any other form of paperwork to deploy conforming implementations of the standard.
- No OSR-incompatible dependencies: Implementation of the standard must not require any other technology that fails to meet the criteria of this requirement.

With so much importance being place on a broadcaster to maintain a connection with its audience on the Internet and mobile device, this is one skill you should develop and add to your resume. It's never been easier to learn and write useful programs that make your day-to-day life easier, more productive and increase your value as an employee.

McNamara is president of Applied Wireless, Cape Coral, FL.

FAA pre-approval of FM frequency use on hold

By Harry Martin

The Federal Aviation Administration has backtracked from a proposal advanced in 2006 under which FM broadcasters would have been required to notify the FAA, and get FAA approval, for most proposed new or changed facility applications.

In 2006 the FAA proposed to dramatically expand its influence over radio spectrum users – if not usurp the FCC in some areas of spectrum allocations. New or modified facilities that included RF generators using a wide range of frequencies, including changes in channels, power increases of 3dB or more and antenna modifications, all were to be subject to an FAA threshold study. Without an FAA blessing in the form of a Determination of No Hazard, a noticed change would not be permitted regardless of what the FCC said about the underlying application. Fortunately, in a decision released this summer, the FAA has committed to collaborating with the FCC and NTIA in regulating RF radiation. The end result for FM licensees and applicants, however, is still to be determined.

Dateline

For *noncommercial* radio stations in Colorado, Minnesota, Montana, North Dakota and South Dakota, their biennial ownership report deadline is Dec. 1.

Dec. 1 is the deadline for radio stations licensed in the following locations to place their Annual EEO Reports in their public files: Alabama, Colorado, Georgia, Minnesota, Montana, North Dakota and South Dakota.

The radio station license renewal cycle begins again in 2011, with the first batch of renewals due on June 1, 2011, for stations in D.C., Maryland, Virginia and West Virginia.

For decades the FAA has expressed concern about possible adverse effects of electromagnetic interference (EMI) on aviation safety. Modern aviation radios – both on-board aircraft and on the ground – use radio spectrum for a variety of important purposes, including communications and navigation. But the FAA's interest in preventing EMI has historically led to tension with the FCC and FM broadcasters. It is one thing for the FAA to regulate the height of towers and other structures that might get in the way of aircraft landing and taking off; it is another for the FAA to assert that it can or should dictate the geographic areas and the manner in which FM radio frequencies may be used.

To support its intervention in this area, the FAA has pointed out that Congress gave it broad authority to promote safe air travel. And if EMI is a threat to air safety, then the FAA has a role in controlling spectrum use so as to reduce, if not eliminate, that threat. Relying on that position, in the 1990s the FAA put a hold on hundreds of FM applications involving new tower structures where a possible EMI problem existed regardless of whether the FCC was satisfied that the proposed operations would protect other spectrum users adequately. The FAA's 2006 initiative threatened to reopen and expand the agency's review of FM applications as well as applications of other spectrum users on selected frequencies.

In its July 2010 decision, the FAA withdrew the proposal for required pre-construction notice for all frequencies *other than* the FM band (88.0-107.9MHz). With respect to FM, the FAA took a notably conciliatory tone, saying in the future it would collaborate with the FCC and NTIA to come up with mutually agreeable review standards and procedures.

While this interim decision does not eliminate the threat of increased FAA intrusion into RF matters, it allays immediate concerns. Further, the cooperative manner in which the FAA-FCC dispute involving FM proposals was resolved provides hope that the agencies will cooperate in a way that will not result in a new set of restraints on FM facilities-change applications. But the decision also underscores the fact that the FAA's interest in having a say about FM operations is still alive, as is the FAA's apparent belief that its statutory authority gives it some say in that regard.

Under the new rules, which take effect Jan. 18, 2011, Determinations of No Hazard will be effective 40 days after the date on which they are issued. Previously, a determination's effective date was reflected on the face of the determination itself, and normally corresponded with the date of issuance. Thus, the new rules impose a 40-day lag time between issuance and effectiveness. This, in turn, could result in delays in obtaining FCC Antenna Structure Registrations, which are required for the issuance of a new construction permits.

Martin is a member of Fletcher, Heald & Hildreth, PLC, Arlington, Virginia. E-mail: martin@fhhlaw.com

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Exploring NRSC-G201-A

A technologically economical explanation of NRSC-5 IBOC compliance

By Doug Irwin, CPBE AMD

In April of this year the NRSC released NRSC-G201-A, which discusses in detail the NRSC-5 IBOC emissions mask and recommended methodology used to measure compliance. Many IBOC systems have been up and running for five years now (or more) and so re-measuring compliance with the RF mask, while making use of the recommended methods, represents good engineering practice.

This is a rather long document – 102 pages. Although I recommend reading the entire thing yourself, the purpose behind this article is to concentrate the information found within NRSC-G201-A, and to present the methods described therein in a technically economical fashion. I'll discuss the following aspects of the measurement methodology:

- The instrument used to make the measurements;
- The sample point at which the RF data is collected; and
- The mask itself.

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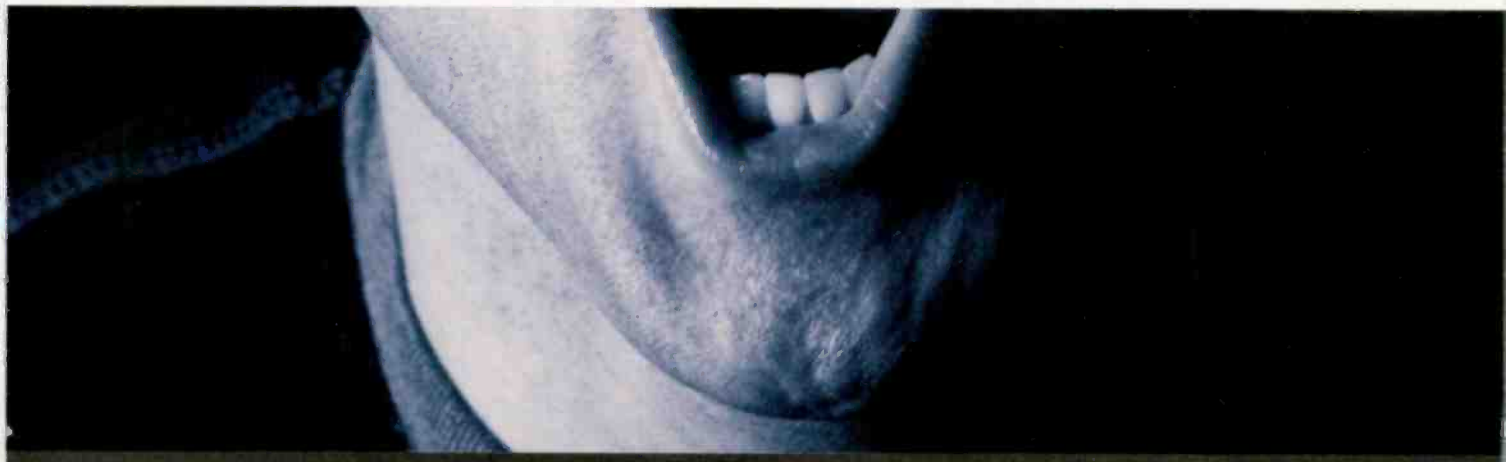

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The measuring instrument

An RF spectrum analyzer is obviously the measuring instrument of choice. While older units can be used, it is necessary to check their specifications and abilities to see whether or not they are appropriate for the job at hand. Unfortunately some of the old "classic" analyzers (the Tek 2710 comes to mind) are not up to the task.

When looking at the analyzer's specifications, note especially the "1dB compression point" as well as the DANL (displayed average noise level).

Resolution bandwidth (RBW) is one of the most important parameters you will set during your measurement. In this document, the standard RBW used for measuring IBOC in the FM band is 1KHz; in the AM band, 300Hz. The type of RBW filter also affects the readings slightly (check your analyzer specs again). Subtract 0.5dB from your readings if the filter type is 4-pole analog; subtract 0.24dB if the filters are Gaussian/analog. Video bandwidth, can be turned off, or as a rule of thumb, set for 10 times that of the RBW.

The detector type in use by the analyzer is important. It is recommended in this document that the detector be average

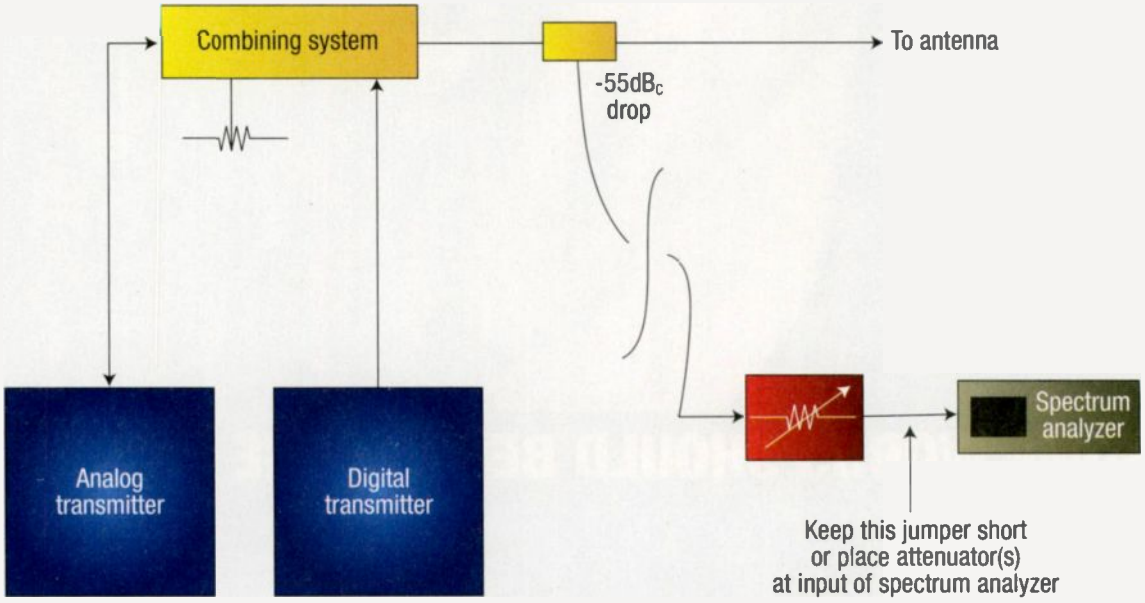

Figure 1. Test equipment setup for a single transmission line system

The 1dB compression point is important because if you exceed this level of power into the first mixer, you could not only damage the unit, but you'll generate intermod products that could possibly show up in the displayed spectrums. It's also critical to consider all the RF sources that make up the sample. If you were to sample on the wideband output of the combined system (for example) you would need to consider the total power from all carriers heading out to the antenna.

On the other hand, the document recommends (at minimum) that the DANL be at least 10dB below the lowest mask limit. So, as the instrument user, you need to be sure that you have a strong enough sample signal so that you don't bring the analyzers' own noise floor up too high in the reading – otherwise the lowest limit of the emissions mask (-80dBc) will be buried by the instrument's own internal noise.

The final line under this heading in the NRSC document reads as follows: *"There is no better way to evaluate the instrument than to try it out on signals whose performance is already known."* I take this to mean that if the DANL reads low enough, based on a given RF sample level, and that the instrument's capabilities are correct, then the unit is good enough to take measurements.

power (or RMS) type. Again, consult the analyzer specs.

And finally, the number of sweeps taken by the analyzer in the collection of the data should be 100. To comply literally with the recommendations, you must measure at least 100 sweeps and extend the collection time to at least 30 seconds.

So a quick review of our basic spectrum analyzer specs and setup:

- Make sure the total input power to the analyzer is sufficiently below the 1dB compression point, but high enough so that reference power reading is at least 90dB above the DANL;
- Set the RBW for 1KHz (FM band readings). VBW at least 10 times RBW;
- Use average power (or RMS) detector; and
- Leave "sweep time" on auto, and take measurement over 30 seconds minimum with a minimum of 100 sweeps.

The sample point

The place to take measurements will be on the transmission line that carries both the analog and IBOC carriers. In the event that you use space-combining, or separate antenna feeds, the situation is a bit more complicated. We'll discuss those particulars shortly.

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When both types of carriers share the transmission line, you'll obviously use a line section downstream from a high-level or split-level combiner – or simply on the output side of a combined amplifier. Insert an RF sample slug (such as a Bird 553-75) in the line section. The sample level on that particular slug is -55dBc – which seems like quite a bit of attenuation. But, even with a sample at 55dB below the carrier level, you've still got lots of power (relatively speaking).

For example, if your TPO is 10kW – otherwise known as +70dBm, 55dB below that is still +15dBm, which is likely way too much power for the input of your analyzer to handle. Be prepared with at least 20dB of outboard attenuation and connect that to the input of your analyzer before even connecting your sample line! I use outboard attenuators in series – typically a

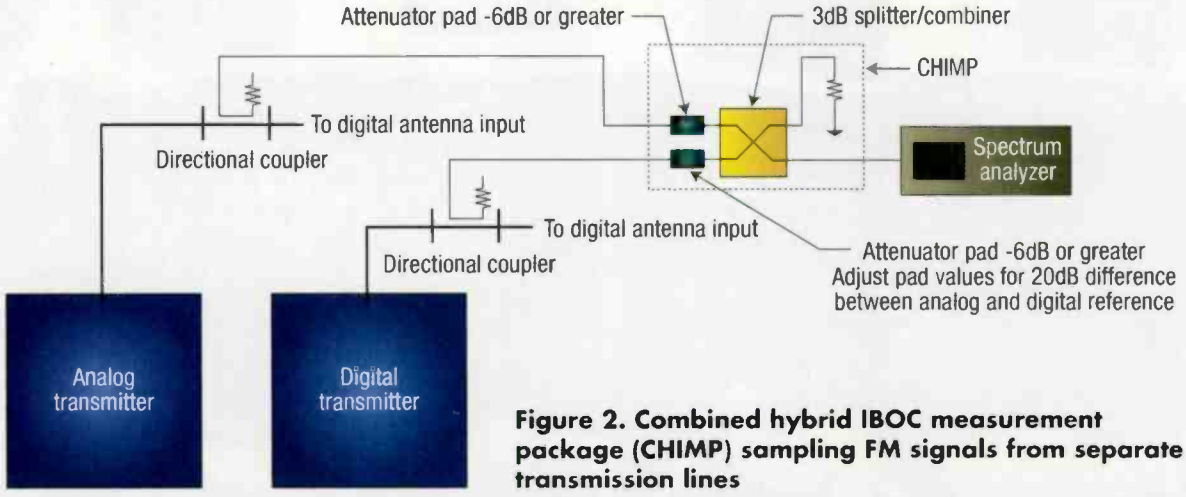


Figure 2. Combined hybrid IBOC measurement package (CHIMP) sampling FM signals from separate transmission lines

couple of -10dB, a single -6dB, a single -3dB and -2dB. Put them physically as close to the analyzer input as possible – thereby minimizing the chances of RF pollution getting into leaky coaxes that may otherwise be used to connect the output of the attenuators to the input of the analyzer. See Figure 1 for more clarity.

If your analog and digital transmitters do not share a common transmission line, then the measurement technique is more involved. NRSC-G201-A has a section about CHIMP, otherwise known as the Combined Hybrid IBOC Measurement Package, and it's a very straightforward method for measuring mask compliance in this circumstance. (Randy Mullinax of Clear Channel developed it in 2006.) Basically the technique involves the addition of the analog sample, and the IBOC sample, by means of small combiner (such as a Mini-circuits ZFSC-2-2) that subsequently drives the analyzer input. (See Figure 2.) The reference levels are carefully set (more on that below) and external attenuation is used to ensure that the analog sample is 20dB higher than the digital sample. Once this is accomplished, the spectrum display is equivalent to what you would see if the two signals shared one transmission line.

Taking the measurement

As mentioned earlier, when taking the IBOC measurements, you'll make use of the average power (or RMS) detector in your spectrum analyzer. Set the RBW for at

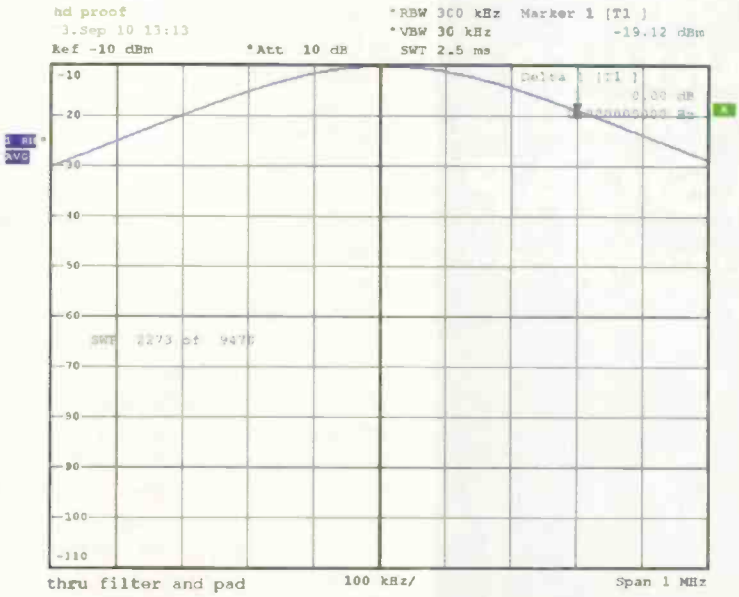


Figure 3. Setting the reference: get the trace as close to the top of the display as possible.

least 300kHz for the reference set – that way you'll be telling the analyzer to include all the RF from your analog carrier – regardless of the modulation. NRSC-G201-A recommends removing all sub-carriers and stereo pilot for this measurement, and modulating the carrier at 100 percent with a 1kHz tone, by the way. The reasons given are twofold: The results are more repeatable and demanding against the mask limits than either pink noise or normal program audio. Obviously this will require the station to be off-air in the middle of the night. (I prefer not to work in the middle of the night unless it just can't be avoided.)

With the RBW set at 300kHz, and external attenuation in place ahead of the analyzer input, connect the sample signal, and take a look at how much power is making it into the analyzer. (Let the analyzer average out this power reading as well – set the reference level after 15 or 20 sweeps). A good rule of thumb is aiming for 10dB below the 1dB compression point. If the input signal is too low, remove some of the external attenuation until you get a level you can easily work with, and change the attenuation in the analyzer (1dB steps) to get the trace as close to the top of the display as you can. (Figure 3 shows an example analyzer display.) Strive to get the power reference right at a value that's a multiple of 10 (like -10dBm) because this will make it a bit easier later on to evaluate your performance with respect to the mask.

Setting reference levels while using CHIMP is a little more involved. First, using the output of the little power combiner, set your analog reference level with the sample with the IBOC signal removed. Make a note of the level. Then take a look at the IBOC-only level, with the analog signal removed. Add or subtract attentuation on the analog sample input to the combiner so the two samples, after being combined, hit the input of the analyzer exactly 20dB apart in level.

After setting your reference level, change the RBW to 1kHz (for the FM band). As I mentioned previously, use the average power (or RMS) detector in the analyzer, and let it sweep at least 100 times (leave the sweep speed on auto) and for at least 30 seconds.

What can we expect to see for results?

Another common feature in newer analyzers is the ability to set "limit lines" on the display to quickly judge whether or not the emissions you measure are in compliance. Take a look at Table 1 to see those limits – keeping in mind those refer to 1kHz RBW on the analyzer.

If your analyzer meets all the other requirements mentioned herein but won't accommodate limit lines, then when printing out the results (or otherwise generating a hard copy of the results) you'll need to add the limit lines yourself.

Frequency Offset relative to carrier (kHz)	Level relative to carrier (dBc/kHz)
100 - 200	-40
200 - 250	(-61.4 - [freq. in kHz - 200]) × 0.260
250 - 540	-74.4
540 - 600	(-74.4 - [freq. in kHz - 540]) × 0.293
> 600	-80

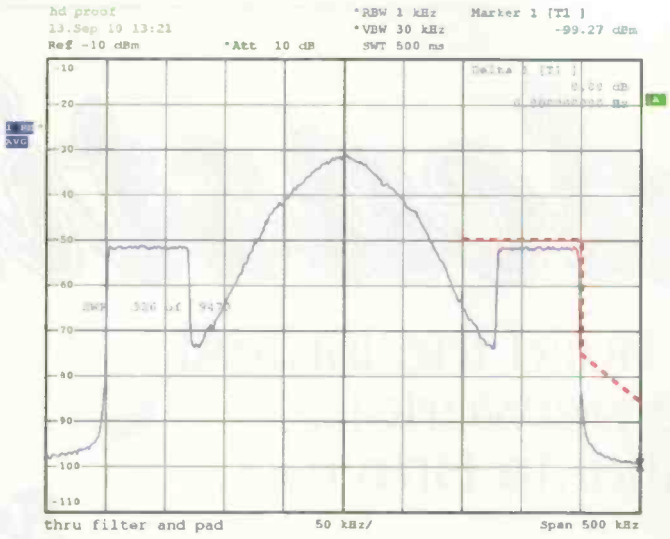
Table 1. NRSC-5-B hybrid FM IBOC waveform and noise emission limits

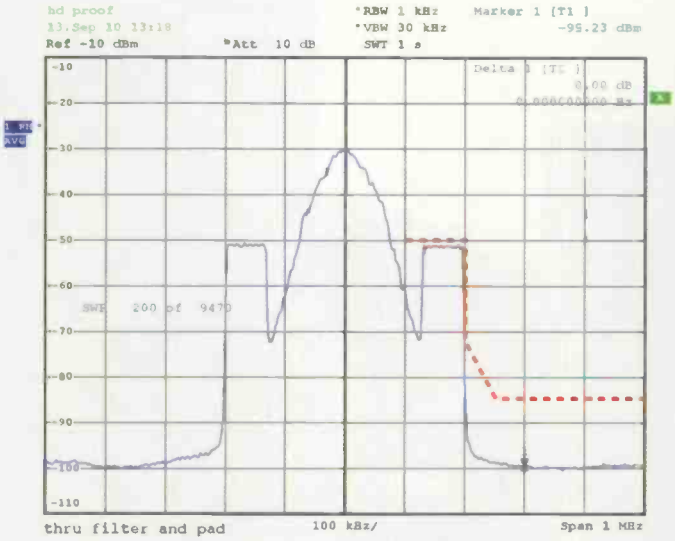
During the measurement process, I first look at a span of 500kHz. I then go up to 1MHz, and finally 2MHz. See Figures 4, 5 and 6 for examples.

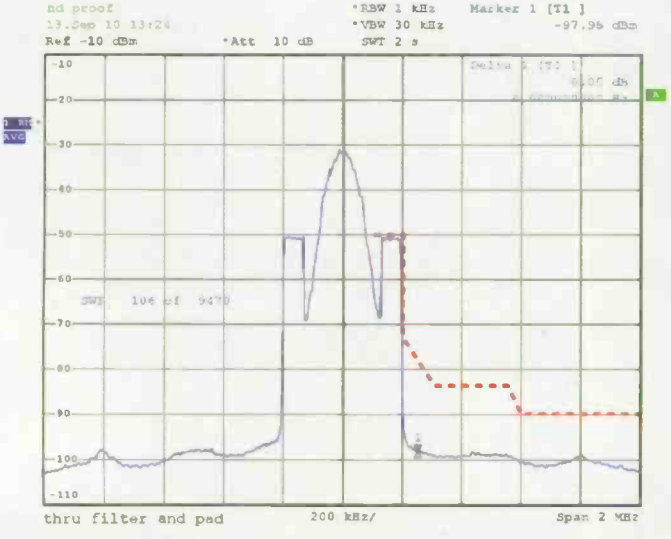
By making your input reference level as close to one of the 10s as possible (like -10dBm) and then adjusting the span so that each division is a multiple of 100kHz you'll find evaluating your performance with respect to the mask is made easier.

IBOC measurements are easy to do if you have the correct instrumentation. Make notes on the particular details of how it is done in your case, and file the results in a well-known spot (one you won't forget about between measurements) and you'll have gotten one more of your job functions completely under control.

Irwin is transmission systems supervisor for Clear Channel NYC and chief engineer of WKTU, New York. Contact him at doug@dougirwin.net.



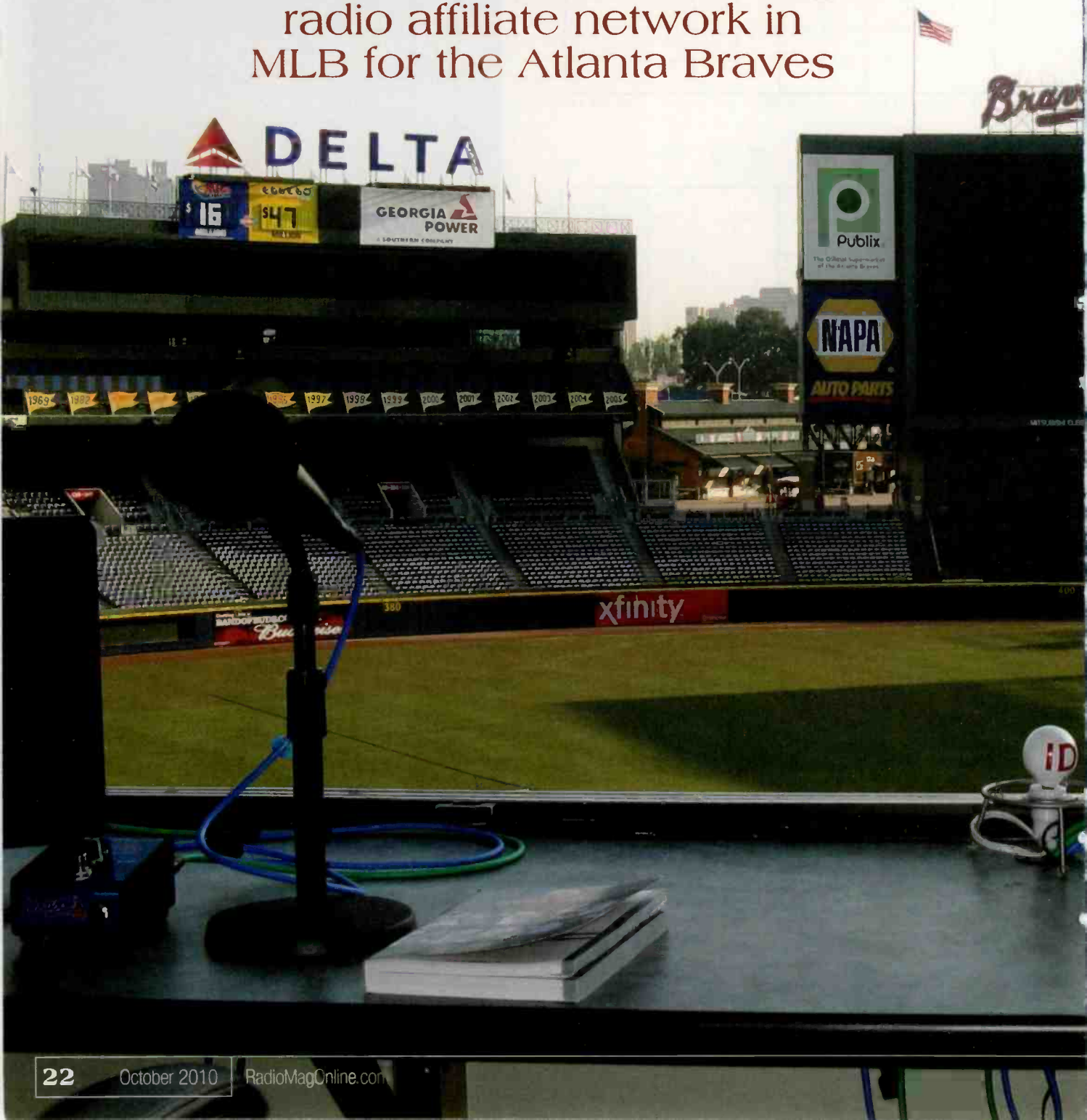




Figures 4, 5 & 6. Results with a span of 500kHz, 1MHz and 2MHz, top to bottom.

Broadcastin

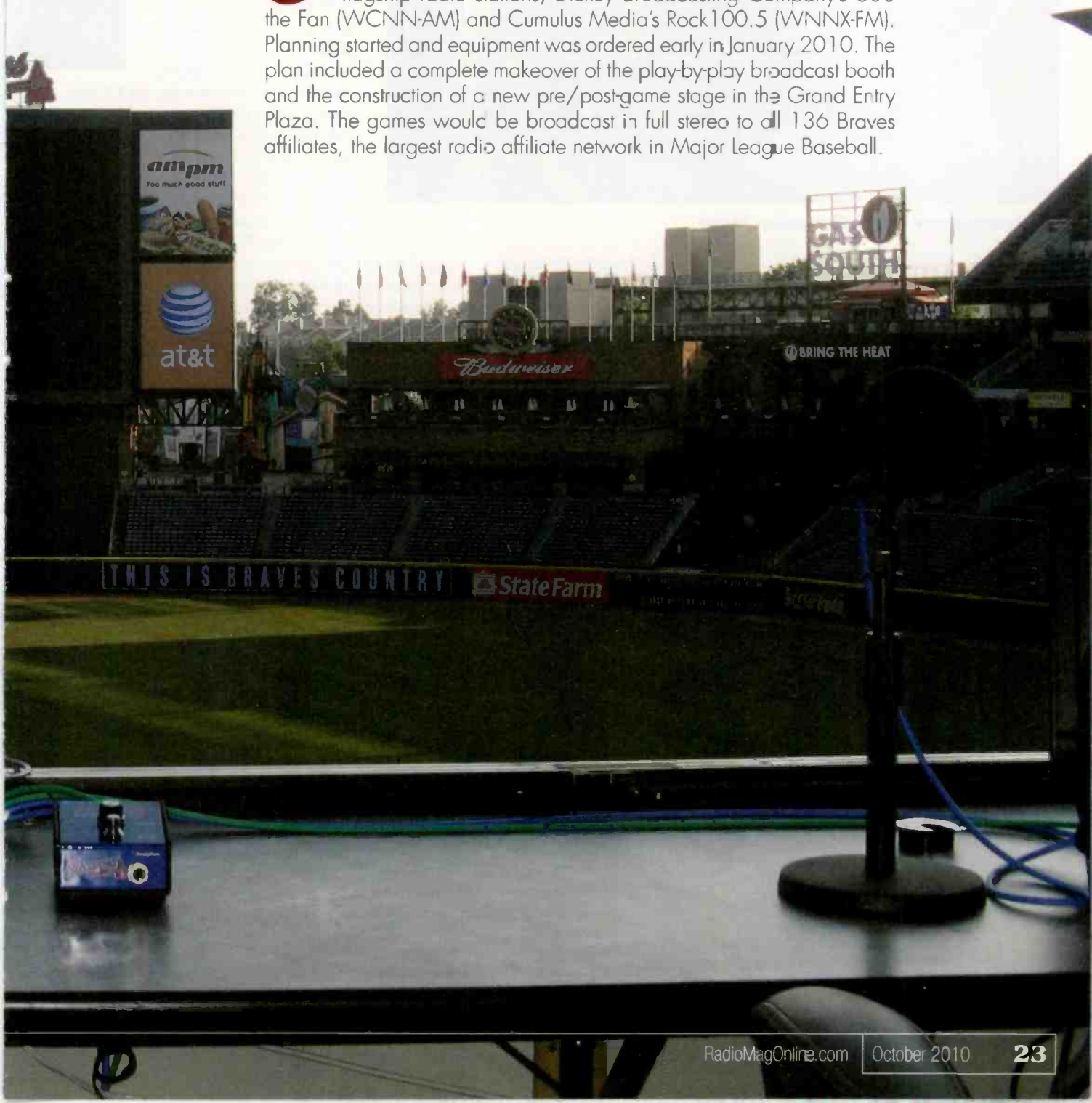
Cumulus/Dickey build the largest radio affiliate network in MLB for the Atlanta Braves



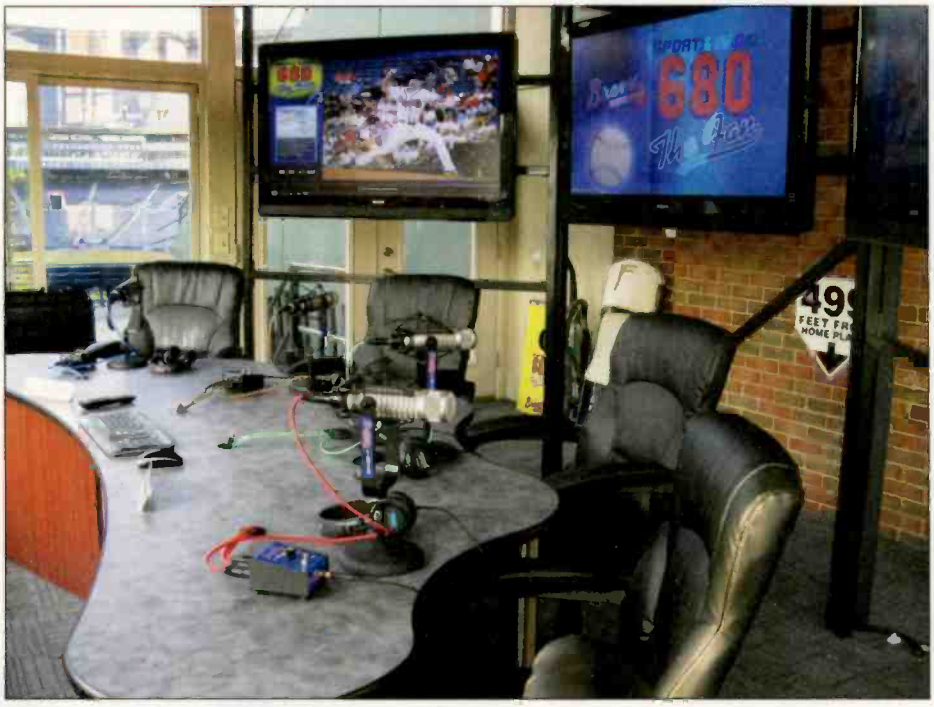
ng Baseball

By Marc Lehmuth

On July 23, 2009, it was announced that the new radio broadcast rights holders for the Atlanta Braves would be two Atlanta flagship radio stations, Dickey Broadcasting Company's 680 the Fan (WCNN-AM) and Cumulus Media's Rock100.5 (WNNX-FM). Planning started and equipment was ordered early in January 2010. The plan included a complete makeover of the play-by-play broadcast booth and the construction of a new pre/post-game stage in the Grand Entry Plaza. The games would be broadcast in full stereo to all 136 Braves affiliates, the largest radio affiliate network in Major League Baseball.



Broadcasting Baseball



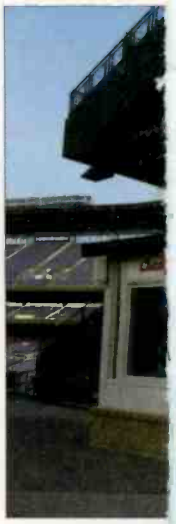
Pre-game show at the Champion Stage

Turner Field was originally built as Centennial Olympic Stadium for the 1996 Summer Olympics. After the Olympics, the stadium was converted into a baseball park. The broadcast booth remained relatively untouched until March 2010, when everything from floor to ceiling was demolished. New carpet, paint and ceiling tiles were installed with cabinetry from Omnirax, which was selected as the furniture supplier because of the solid construction and ease of installation. David Holland of Omnirax worked closely with Michael Gay, project manager for Cumulus Media, to design function into flash for both the broadcast booth and the pre/post-game stage.

In the booth

The center point of the broadcast booth is the Mackie Onyx 24.4. This console features a 24-channel/4-bus design with mic preamps on every channel. The console has a 4-band Perkins EQ, with six aux sends with long 100mm faders. This console gives operator Brian Giffin lots of flexibility and power over his mix. In addition, there is a Broadcast Tools SS 16.4 stereo switcher making switching among stadium dry pairs a flash. The entire mix is tweaked by Gary Kline, vice president of engineering and IT for Cumulus Media, with a TransLanTech Sound Ariane Sequel. This unit gives transparent yet powerful control over everything from low ambient crowd to the overpowering bursts of celebration.

The signals from the broadcast booth, pre/post-game stage, and Hispanic broadcast are transported to the station via a single T1 on an APT WorldNet Oslo multiple channel audio multiplexer. There are three two-channel input/output analog audio cards, utilizing Enhanced apt-X 16-bit coding. This gives us three bi-directional stereo audio paths, which is great for individual feeds from both booths and the stage with individual talkback and IFB. There is a four-channel duplex two-wire FXS/FXO card that transports to POTS extensions off the station phone switch to the ballpark for offline communications.



As a backup, we have two ISDN lines, one at the booth and one at the stage. We use Telos XStreams for this backup service and for all the audio to and from other ballparks and the feed to Skyview Networks in Scottsdale, AZ.

The announcers in the booth use Sennheisers MD 421-II mics because of their rugged design and pronounced directivity. All three mics are processed by AirTools Voice Processor 2x. This programmable microphone processor has two independent processors in one rack space controlled via software. The fourth unused channel on the AirTools is for a reporter using a Lectrosonics HM plug-on wireless transmitter on an Electro-Voice RE-27 or a Lectrosonics SMQV wireless mic pack with an RE-27. The receiver is a Lectrosonics VRMWB venue receiver with three VRS modules: two for field reporters and one tuned to the IFB frequency of the pre/post-game stage area beyond left field. In addition we use one of the AirTools processors to control the two

Broadcast booth equipment featuring a Mackie Onyx 24.4 console

The Champion Stage in the Grand Entry Plaza

Sennheiser ME 66 shotgun mics set in a near-coincident pair for crowd and bat sounds.

All the headphones used are Sony MDR7505 powered by a Presonus HP60 six-channel headphone mixing system. This unit features two sets on stereo inputs with a mix control and one external stereo input for each channel. We send an announcer post-fader aux feed to the A stereo input and pre-fader aux feed of effects, IFB, station return audio, etc., to the B input. Now each headphone output has a custom mix between A and B inputs. It also has a talkback mic input where we split the engineer's Sennheiser HMD 25 headset mic between this talkback input on the Presonus and a talkback input to the station down one of the six audio channels on the T1. The headphone audio is sent to a Pro Co Sound Short Stop modified with a stereo pot so the talent can control his own headphone level and mute his mic. The field reporters use Sony MDR7505 headphones attached to a Lectrosonics R1a IFB receiver. We use the Lectrosonics IFBT4 to transmit audio with the same signal that the talent in the booth hears off the Presonus HP60.

The remaining equipment in the booth is rounded out with two rack-mount Marantz PMD-580 digital flash recorders with companion Marantz PMD-661 portable digital flash recorders. This gives us the ability to record locker room or field interviews and play them back in game. In addition we installed two Henry Engineering USB Matchboxll multi-mode stereo codec's. Our engineer, Brian Giffin, can connect his laptops via USB to the console for recording

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George Lemait, Station Manager

KSMZ, Alexander, AR

" Xtreme has more flexibility, sounds better & has fewer problems then our stations running (other automation systems). It's easier to program & a 9 compared to other programs out there."

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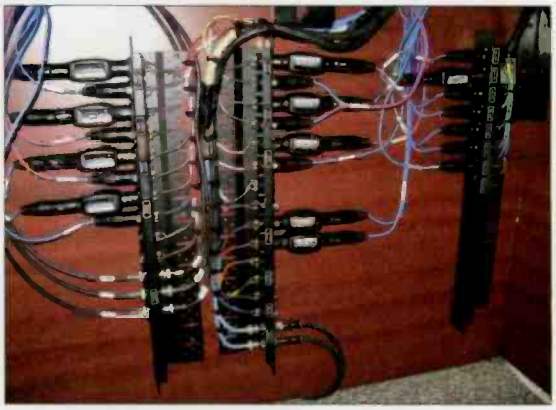
and playback of interviews, effects or highlights directly to the console with balanced stereo outputs.

On the stage

The pre/post-game stage was demolished and a new air-conditioned booth was constructed by Champion Window Siding and Patio Rooms of Atlanta. This booth was constructed with sliding glass windows to allow fans to interact with the talent and give a TV-set look and feel. The talk table was built by Omnirax and the equipment is similar to the travel equipment with a few exceptions.

The Mackie 1642-VLZ3 is rack-mounted in one of the two SKB 1SKB19-R1010 Roto GigRigs. We chose these racks for the portability of removing them during the off season. Loaded below the mixer is an Aphex 320D Compellor to provide overall control of the audio back to the station. There are two AirTools Voice Processor 2xs processing four Electro-Voice RE27 for the talent, and a Lectrosonics VRMWB venue receiver with three VRS modules: two for field reporters and one tuned to the IFB frequency of the

The play-by-play position with custom cough/headphone box and instant replay monifor



Stadium dry pair feeds

Equipment list

AirTools Voice Processor 2x
Aphex Compellor 320D
APT WorldNet Oslo
Broadcast Tools SS 16.4
Crown CTS-4200
Denon DNC640
Electro-Voice RE-27
JBL C2PS Control 2P
Klipsch AW-650
Lectrosonics HM plug, IFBT4, R1a, SMQV, VRMWB
Mackie 1642-VLZ3, Onyx 24.4
Marantz PMD-580, PMD-661
Omnirax cabinetry
Presonus HP60
Pro Co Sound Short Stop
Sennheiser HMD 25, MD 421-II, ME 66
SKB 1SKB19-R1010 Roto GigRigs
Sony MDR7505
StarTech.com 110VDSLEXT
Tascam TU690
Telos XStream
TransLanTech Sound Ariane Sequel

broadcast booth's IFB. Below that is a Lectrosonics IFBT4 IFB transmitter, a Denon DNC640 CD player, and a Tascam TU690 AM/FM rackmount receiver. The second GigRig has two computers for the three 50" LCD TVs, and a Crown CTS-4200 to power two Klipsch AW-650 waterproof speakers mounted outside the stage and two JBL C2PS Control 2P speakers for inside the stage.

The stage has four dry pairs from the booth and a backup ISDN line. We have the ISDN line split between the stage and the Chop House where our sister stations broadcast before some of the games. We use the first dry pair for program out of the Aphex Compellor and the second as IFB from the station via one of the channels off the APT WorldNet Oslo T1 multiplexer. One of the pairs is used as a POTS line off the FXO card of the Oslo, which gives the board operator a direct line to the main studio at the station. The last pair is used for Ethernet data by utilizing a pair of StarTech.com 110VDSLEXT Ethernet extenders to transmit and receive Ethernet from the cable modem in the booth giving the talent and operator at the stage Internet connections.

With wiring changes and installation of additional T1 and ISDN equipment at the studio, the 2010 broadcast season of the Atlanta Braves has gone off without a hitch. It took a lot of folks to pull this off and make it one of the best-sounding sports broadcasts in America.

Lehmuth is engineering manager of Rock100.5, Q100 and 99X, Atlanta.

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Omnirax Studio Furniture

At Turner Field, Omnirax furnished WCNN's (AM680 "The Fan") Home Radio Booth (pictured) and a stage set in the Grand Entry Plaza for Pre and Post-game broadcasts. This project followed the Omnirax proven formula of close collaboration with both engineers and station personnel. Cumulus provided rough furniture layouts and field dimensions to which Omnirax applied its signature design concept rendered as 3D images for client approval. The custom components were then built and fit-tested in the Omnirax shop before shipping to Atlanta for installation by Cumulus personnel. This rigorous process ensures smooth assembly and seamless integration. Since completing this project at Turner Field, Omnirax has since shipped custom Innova line furniture for six additional stucios at Dickey Broadcasting's "The Fan" in Atlanta, GA.

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By Erin Shipps

The 2010 Salary Survey comes at the first rumblings of what is hopefully a wave of rebirth for the radio industry, as well as the nation's economy. Many industries are starting to turn around and seeing 2011 with a glimmer of hope that it will be better than the past few years. With stalled salaries, layoffs and non-existent budgets, it couldn't get much worse.

The same old story continues this year with engineers concurring that help is the number one priority. Engineering staffs are still very slim. In addition, salaries are still stagnant for the most part and an engineer's time is precious. If only you could add more time to the day and more days to the week, right? Many engineers also see a need for better communication from above and more training.

Let's get right into it. Our typical respondent has worked in the broadcast engineering field for 24 years. Corporate engineering titles hold the top at 31 years, followed by station chief engineers at 28. These jobs on average have been held for 11 years. Corporate officer/corporate management/sole proprietors have had their jobs for an average of 14 years. Our average respondent age is 50 and most hold technical job titles with station or market chief engineer at the top with 57 percent.

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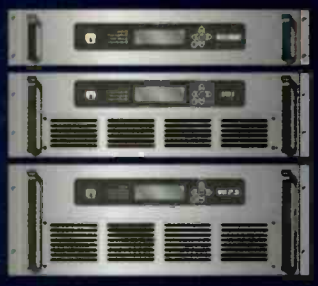

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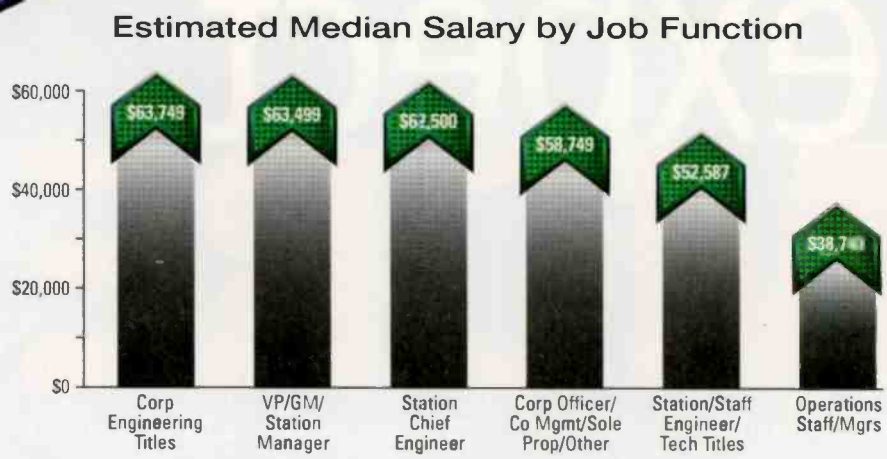
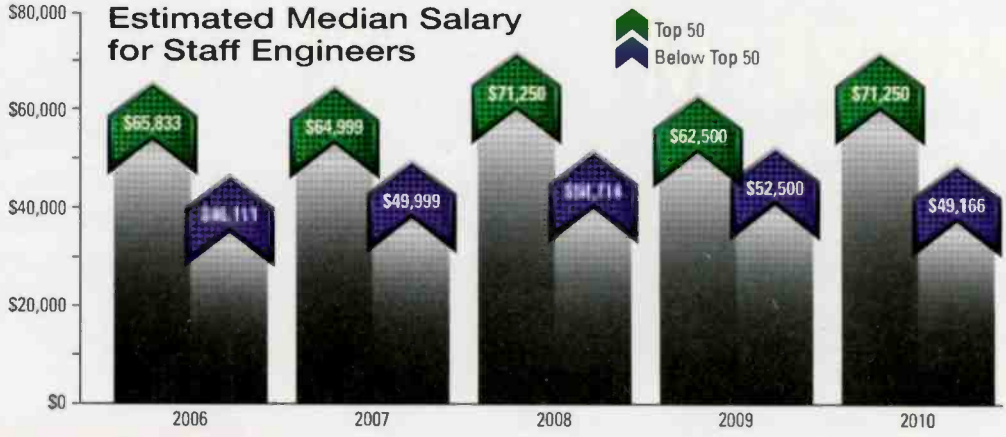
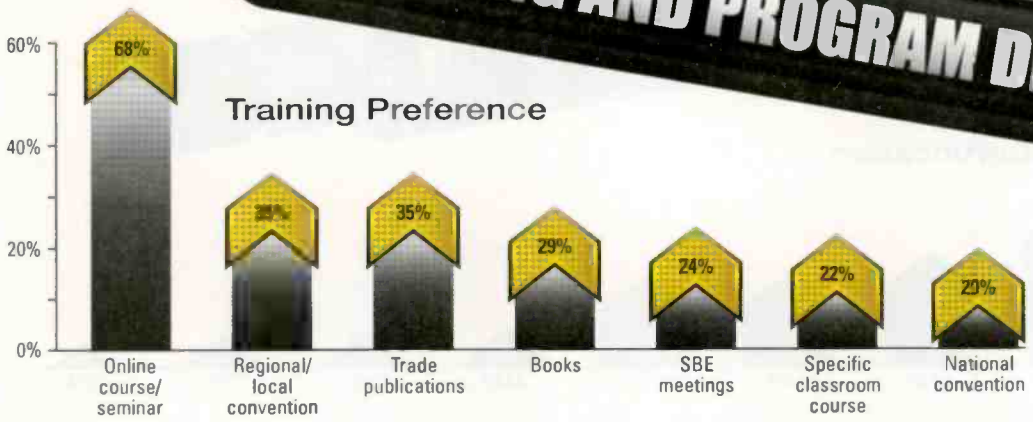
SALARIES

Our typical respondent earns an estimated median income of $55,000, compared to $52,500 last year. While only 36 percent received salary increases during the past 12 months, that number is up from 27 percent last year. The average increase was 8 percent. Corporate engineering titles are still at the top of the chart, but station chief engineers are not far behind. The estimated median salary for staff engineers has remained stable in both large and small markets, despite small fluctuations over the years.





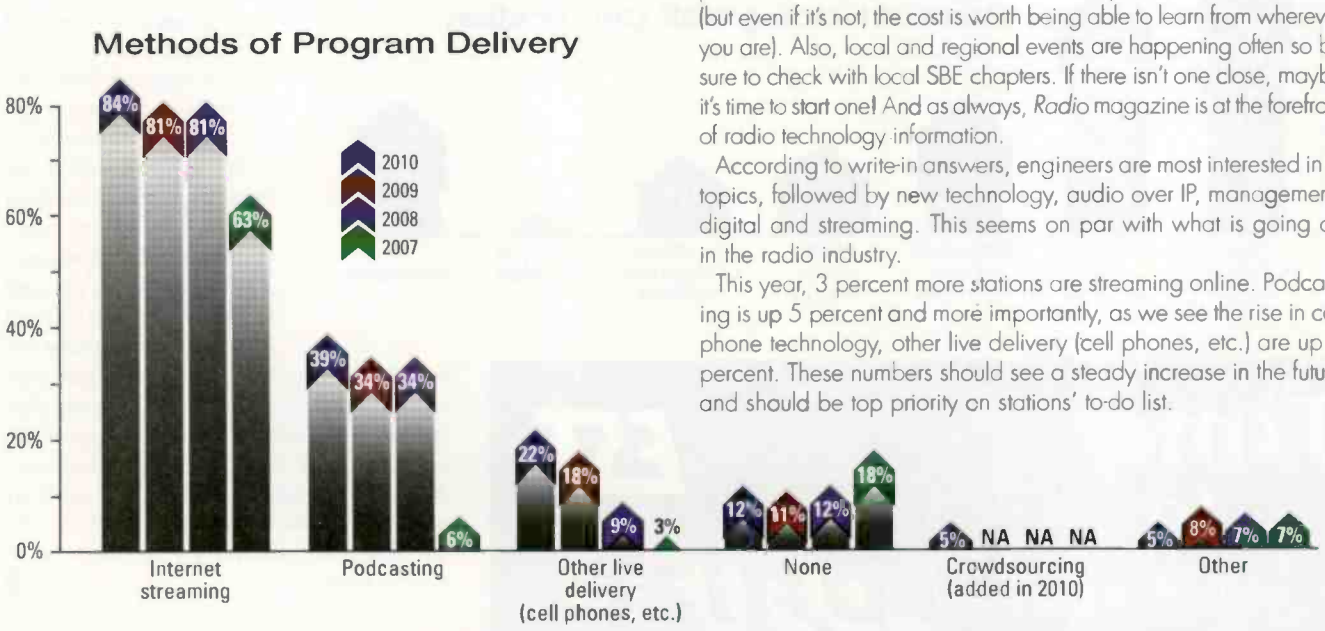
TRAINING AND PROGRAM DELIVERY



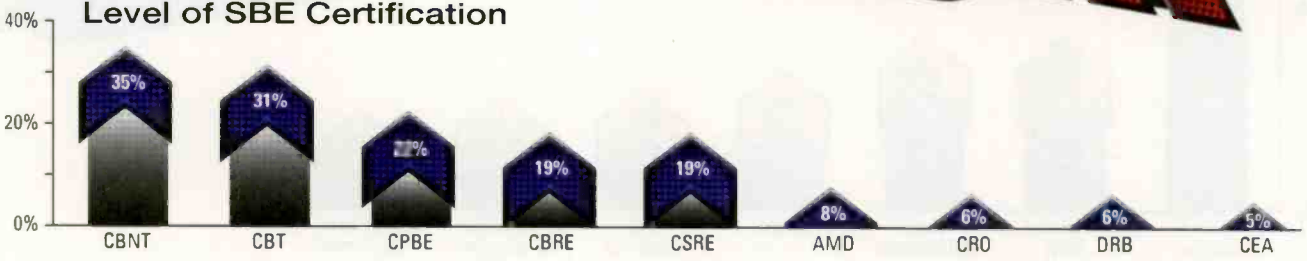
Half of all respondents (52 percent) have attended an educational seminar within the past two years. And why not? There are many great learning opportunities including online seminars, local conventions, *Radio* magazine, books, SBE meetings, classroom courses and the national NAB convention. With nearly 70 percent of engineers preferring to attend online courses, be on the lookout for more opportunities to learn online. It's convenient, quick and sometimes free (but even if it's not, the cost is worth being able to learn from wherever you are). Also, local and regional events are happening often so be sure to check with local SBE chapters. If there isn't one close, maybe it's time to start one! And as always, *Radio* magazine is at the forefront of radio technology information.

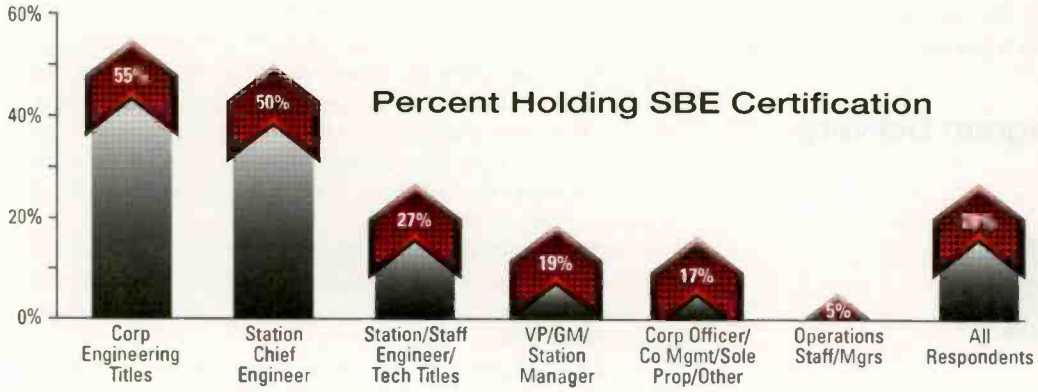
According to write-in answers, engineers are most interested in IT topics, followed by new technology, audio over IP, management, digital and streaming. This seems on par with what is going on in the radio industry.

This year, 3 percent more stations are streaming online. Podcasting is up 5 percent and more importantly, as we see the rise in cell phone technology, other live delivery (cell phones, etc.) are up 4 percent. These numbers should see a steady increase in the future and should be top priority on stations' to-do list.

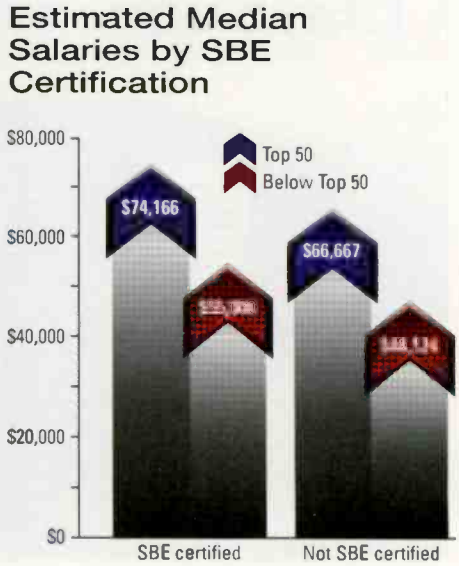


CERTIFICATION





I'm not sure what else can be said about the importance of certification for engineers. I understand sometimes it is not necessary or required for a job, or that management might not support certification. Some engineers even believe they know everything already, but what about getting certified for personal satisfaction? I was pleased to see the number of certified engineers in our survey rise this year. Compared to 33 percent last year, more than half of corporate engineering titles are certified. Station chief engineer certification also rose from 41 percent to 50 percent. As I say every year, it pays off: SBE certified engineers received between $6,800 and $7,500 more money this year. Work this in to your schedule.



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Tips, tricks, hints and more

By Chriss Scherer, editor

There's an app for that

The catch phrase "there's an app for that" is used for the iPhone, but it obviously applies to the iPod Touch, Android and other mobile devices. While many of the apps are toys or nifty gadgets, there are some that are practical in radio engineering. Here are some that have been suggested by readers.

❶ There's an app from Media5 called Media5-fone, which is a suite of SIP-based mobile VoIP and Unified Communications softclient applications enabling end users to make VoIP calls using their smartphone with any WLAN and Packet Data networks. It's available on several smartphone platforms. One reader noted he has used the app for two-way, broadcast-quality audio by connecting to a Comrex Access located at the studio.

www.media5corp.com/en/mobilitysolutions/media5-fone

❷ AM Search is an iPhone and iPod Touch app that displays a catalog of all US FCC-licensed AM radio stations from 540kHz to1700kHz. It also includes Canadian and Mexican facilities. It links the call sign to a map showing transmitter locations via Google maps. While the app was designed for hobbyists interested in AM radio stations DXing, it could be useful to identify stations in a given area.

Users can enter a location or GPS coordinates and the program shows the nearest AM station frequencies and signal strengths. It also provides format info and station location as well as RF output power info.

Available at the iTunes Store.

❸ Wonder what satellites are visible from where you're standing? Using augmented reality (AR) – a method of using a phone's camera (for the reality view) overlayed with data (the augmentation) – an app called Dishpointer AR (for the iPhone and Android) lets you see what's between you and the satellite. The satellite arc and positions are overlaid on the device's screen. There is also a Pro version, which allows the user to update the satellite data directly.

www.dishpointer.com

❹ After you have used Dishpointer to find a clear view of a satellite, you'll need to adjust the angle of the receive antenna. Another app for the iPhone and iPad called Clinometer (from Plaincode Products) can do the trick. The app can be used as a bubble level or an inclinometer. The app can be easily calibrated on a device and is said to be accurate within ±0.1 degrees.

www.plaincode.com

❺ For the amateur radio operator there's an app that puts a ham radio on an iPhone, Droid or Windows PC. Using streaming audio, the program allows worldwide connections to be made between stations or from computer to station.

www.echolink.org

On Sept. 16, there was a regional Internet outage near Pittsburgh. The problem is being attributed to backhoe fade. While some Internet users may have noticed the problem, it was not severe enough to take down a significant portion of the Internet. The problem took down the Tier 1 infrastructure of XO and maybe Verizon.

Barry Thomas, CPBE CBNT, vice president of radio engineering for Lincoln Financial Media, pointed me to the Internet Health Report website as a convenient way to check for Internet problems and gauge how widespread a problem may be.

Thomas notes that there is a certain irony to using the Internet to check the overall health of the Internet.

www.internetpulse.net

We need your tips!

Ideas submitted to Tech Tips may be suitable to earn SBE recertification credits.

Do you have a tech tip? Send it to us at radio@RadioMagOnline.com

Site Control

WVRC-8 Web-enabled and Voice Dial-up Eight Channel Remote Control

The WVRC-8 provides a cost-effective, one rack-unit solution for web based and/or recordable voice response dial-up transmitter site control. Each analog, status, silence sensor, temperature sensor and power failure input can be configured to dial-out and/or email up to four individual email addresses.

Site *Sentinel*® *16* Web-enabled Sixteen Channel Site Remote Control System

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Site *Sentinel*® *4* Web-enabled Four Channel Site Remote Control System

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Web-enabled three relay module

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Web-enabled three status/logic module

Status *Sentinel*® *16*
Web-enabled Sixteen-input status/logic module

Relay *Sentinel*® *16*
Web-enabled Sixteen open collector/SS relay module

WebSwitch
Remote Power Switch

VAD-2 Plus
Dual channel Voice alarm Dialer

The tinyTOOLS VAD-2 Plus is a user programmable dual status input multi-number voice/pager auto dialer with integrated stereo silence sensor, temperature sensor and power failure port designed for dial out paging and/or voice message notification.

AUDIO *Sentinel*™
Web-enabled dual channel stereo silence monitor

The Audio Sentinel™ is a web based dual channel stereo silence monitor combined with a transparent, integrated audio switcher. Designed to monitor two balanced or unbalanced independent stereo analog audio sources.

USA Proud

BROADCAST tools

www.broadcasttools.com

PROBLEM SOLVED

Comrex STAC

By Kent Kramer

When I started to plan new studios for the nationally syndicated Tom Joyner Morning Show nearly five years ago, the Comrex STAC was a fairly new product. It debuted in 2004 and was looking to make a name for itself in a field dominated by the competition.

The STAC had several positives for my needs. The fact that it had a built-in Web server for call screening was a huge jump over a third-party or stand-alone software platform. The price for two hybrids that had an internal mix-minus between the callers and could handle up to four control surfaces connected with a standard CAT-5 cable were all pluses as well.

The negative (at the time) was that it was still fairly new. Putting it on a caller-intensive morning show would put the system to the test quickly. And failure was not an option.

A look inside

The STAC is based on a small form-factor, custom PC-style motherboard in a 2RU chassis that runs on Linux. Booting is quick, only taking around 45 seconds. The STAC actually boots from the flash card to run, so no hard drive is necessary.

Performance at a glance

Six to 12 phone lines

Two hybrids in one unit

Connect up to four control surfaces

Built-in Web server for call screening and remote line control

Built-in mix-minus between two callers

Firmware updates are as easy as removing the lid, sliding out a compact flash card and inserting a new one. Starting with firmware version 3.0 and newer upgrades can also be done via the Ethernet connection.

Over the years we've gone through a few different firmware versions and it's apparent that Comrex has been paying attention to user feedback. Most of the updates were to roll out minor fixes or upgrades to existing functions. The GUI has progressed greatly and now the setup functions that used to be buried in Linux are found in the GUI.

The GUI itself is clear and easy to use. The chat window (looking at it from an instant messaging world) needs more user control but adequately takes care of passing quick messages to and from talent (and anyone else who is logged into the GUI). The Web server login is password protected. On screen, the graphical representation of the lines has plenty of room for caller information and line selection, and disconnect can be made with a mouse click if the talent is out of the studio and away from a control surface.

The control surfaces come in six- and 12-line units. We have all 12-line units because of the number of inbound lines. The buttons are large and easy to press, and with LEDs under each button it's hard to miss the line status of each line. The LEDs are multicolor and can flash or burn solid to represent line status. The control surface is dip-switch selected to be either a screener phone or on-air phone – the difference being the screener is only able to screen calls and not put them on air. The STAC and surfaces are field upgradeable from six lines to 12 lines.

The control surfaces don't take up much space and have a handset built in to them so there's no need for a stand-alone phone to screen calls. The talent can switch a call to and from the handset at any time. The surfaces are also powered from the STAC so there is no need for power supplies at the control surface.

Good connections

The connection between the STAC and the control surfaces is via CAT-5 cable and RJ-45 connectors. Dedicated cables are necessary from the STAC to the surfaces as they run tip and ring, power and serial data through the cable.

You'll find all the user settings and level control recessed behind a cover on the front of the STAC. The cover comes off without a screwdriver, and

The Web interface duplicates control surface functions on any network-connected computer.

adjustments are made with your favorite greenie screwdriver. Nomenclature is located on the back of the removable cover to help identify the adjustment trimmers. The AGC can be turned on or off by one of the dipswitches but there's no provision for any control of the AGC.

You'll find all the standard PC connections of keyboard, mouse, network and VGA monitor. Once set up you can run without any of those connections but you'll find it is easier to have your primary talent watching the VGA output and have the screeners logging into the Web server.

All audio inputs and outputs are analog, on the back and XLR balanced connections. The telephone line input and loop through connections for the analog telephone lines are on the back. The telephone lines are input on four RJ-45 cables (three lines per cable). The lines can be looped through to additional STACs or other phones. By enabling the clustering feature, calls can be isolated between STACs so that one studio doesn't interrupt an interview in progress in another studio.

Overall the Comrex STAC has been a reliable system for the Tom Joyner Morning Show. It's grown into a well established system that will be a benefit to any studio.

Kramer is director of engineering of Reach Media/The Tom Joyner Morning Show, Dallas.

Comrex

P 800-237-1776

W www.comrex.com

E info@comrex.com

Editor's note: Field Reports are an exclusive *Radio* magazine feature for radio broadcasters. Each report is prepared by well-qualified staff at a radio station, production facility or consulting company.

These reports are performed by the industry, for the industry. Manufacturer support is limited to providing loan equipment and to aiding the author if requested.

It is the responsibility of *Radio* magazine to publish the results of any device tested, positive or negative. No report should be considered an endorsement or disapproval by *Radio* magazine.

Blue Microphones Snowball

By Gil T. Wilson

I think I may have found the coolest mic ever. The Snowball has a unique look and after running a few tests, it seems as though Blue Microphones puts high quality technology into a very attractive package.

Out of the box the first thing that appealed to me was the look and feel of the mic. It comes shipped with its own stand and when set up looks like a softball on a stand. Although it also feels like a softball in your hand, don't throw this baby: The inner workings in this mic pack a punch and I would not want to risk testing the durability of the packaging. Though I felt like juggling the mic, I decided to avoid possible accident-inducing actions and just test the mic out.

As with most guys/engineers and production persons, I decide to leave the instructions set aside and just plug and play. Well, plug-n-play, for this microphone is a reality. No software to install from CD or any other hassles. I simply plugged the USB cable into the mic and then straight into my laptop (running Windows 7). The mic was immediately recognized and installed.

Performance at a glance

Condenser USB mic with two polar patterns

40Hz - 18kHz frequency response

Weighs 460g

Available in white, brushed metal or gloss black

Suspension shock mount available

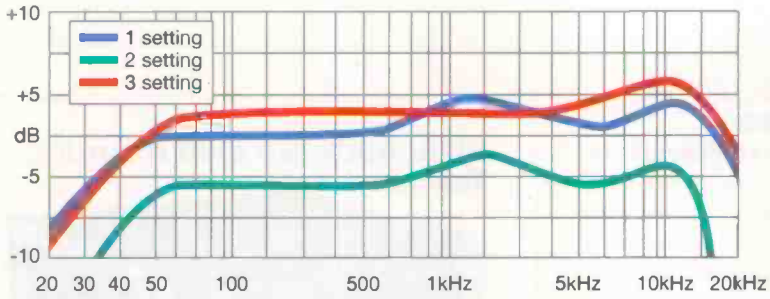
Ready, set, record!

I went straight to my production software and started recording. It took me a couple of takes to get used to the mic – not any fault with the mic but I didn't think it was going to be as sensitive as it is. Sensitive in a good way: This little Snowball USB mic can really pick up sounds. The casing looks like you would have to get really close or shout, but this mic grasps all sounds. There are three pickup settings on the mic to choose from:

- Cardioid mode: For normal vocals. Nice sound.
- Cardioid mode with 10dB pad: The same as cardioid mode, except with a -10dB attenuation to capture louder sounds with higher fidelity.
- Omnidirectional mode: This mode picks up sound equally from all directions with a very rich sound.

For my podcast recording I used the cardioid mode without the 10dB pad, which accurately captured my voice. I simply sat in my living room with no special settings and recorded. In fact, when I sent the review I told my editor I was testing out a new mic and not from the radio station. She replied, "Just curious – where did you record it in your house? Obviously you found a place that was quiet and the sound didn't bounce around. I'm not so sure it doesn't sound better than the recordings you did at the station. I'm impressed." I was impressed myself.

Check out the Snowball's polar pattern at RadioMagOnline.com



The Snowball's frequency response is 40Hz to 18kHz.

Other uses

Out of curiosity I tried a few recordings with the 10dB pad and liked that the louder sounds were recorded without any distortion or other annoying features that would cause me to trash a piece and have to begin again. One of the items I recorded was original music played on a piano. With the pad, all the loud sections of the song were mixed perfectly with the softer sections.

The omnidirectional mode was a feature I used while conducting an interview. When I heard the playback I was impressed by the ambiance sounds captured without over-emphasizing the hisses and buzzes around the room. Next time I go to record a live band I think I'll bring my laptop and this mic; that will be a great sounding recording.

Upon connection of the mic, the user will notice that the sample rate and bit rate are 44.1kHz and 16-bit. This is the factory setting and cannot be changed. This is the typical setting for compact discs so really no harm here. Besides, most software allows you to change these setting so you can change your recordings after the fact, if needed.

This microphone is only USB, so it can only be used on computers (PC or Mac). If you are looking for a mic for recording directly to you computer, this mic is the perfect fit. I will be using this for all my Skype broadcasts, podcasts, home recording and anything else I can come up with. So many times I have had to find different adapters to connect a decent-sounding mic to my computer; finally I have the solution thanks to the Snowball USB Mic from Blue Microphones.

Wilson is an announcer, producer, webmaster and promotions guy at WAKO-AM/FM, Lawrenceville, IL.

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by Erin Shipps, associate editor

Media player
Jetcast

UniversalPlayer: Jetcast's UniversalPlayer is an Internet broadcaster's primary or secondary media player and provides numerous revenue solutions in addition to the built-in display, in-stream and pre-roll advertising revenue. The online player will play streams from just about any streaming provider, including Shoutcast, Icecast, MP3, WMA and others, and takes only minutes to set up. It also contains integration into leading social networking sites that can be managed from a single source. One key feature is the application store, an open source platform that allows developers to create and sell custom applications that integrate into the player for listeners to use while listening to their favorite broadcasts. The station and the app developer both earn money as listeners interact with the apps.

917-338-3289; www.jetcast.com; team@jetcast.com

Eight-track pro field recorder
Tascam

HS-P82: This high-quality eight-track field recorder has eight microphone preamps with standard XLR inputs to record up to 96kHz/24-bit audio with timecode. Dual compact flash slots provide recording with backup and no moving parts for rugged reliability. A stereo mix can be recorded in addition to the eight individual channels, for a total of 10-channel capture. The recorder is housed in an aluminum chassis with a TFT color touchscreen.

323-726-0303; www.tascam.com
tascamlit@tascam.com

NEW PRODUCTS

Microphone suspensions
Rycote Microphone Windshields

InVision USM: The InVision USM is a universal mic suspension for large-diaphragm recording microphones. The mic mount offers substantial isolation from unwanted vibrations. It was designed to provide a 21st century alternative to elastic suspensions. Based around the u-shaped Lyre suspension mount used in Rycote's existing InVision suspension range for smaller-barreled microphones, the InVision USM will fit any high-quality microphone from 18 to 55mm in diameter, including large-diaphragm models and those with flat-sided and tapered barrels.

+44 1453 759 338; www.rycote.com; info@rycote.demon.co.uk

Ribbon mic
Cloud Microphones

JRS-34: The Cloud JRS-34 is made from parts sourced from U.S. businesses. Stephen Sank, son of RCA BK11 designer Jon R. Sank, and recording studio owner RJ Cloud developed the JRS-34 ribbon mic. It offers 150 ohm impedance with an output level on the passive version is about -52dB and -32dB for the active version. It features a balanced-in, balanced-out, no-output-transformer, phantom-powered pre-preamp circuit.

888-321-MICS; www.cloudmicrophones.com; fen@cloudmicrophones.com

PCI Express PCM audio adapter
AudioScience

ASI5680: The ASI5680 is an analog, high-channel count, PCI Express (PCIe) PCM audio adapter. This model adds a PCIe analog adapter with eight stereo playback streams fed to eight stereo outputs, and one stereo record stream fed from one stereo input. The ASI5680 features "anything to anywhere" mixing and routing, as well as SSX2, which allows multichannel streams of up to eight channels to be played and mixed. AudioScience's SoundGuard transient voltage suppression is available on all I/O.

302-324-5333; www.audioscience.com; sales@audioscience.com

UPGRADES and UPDATES

Korg is now shipping the latest model in its MR Series of DSD digital recorders, the MR-2. (www.korg.com)...**RCS** has released GSelector 3.15.1, increasing the tools already found in the music scheduler to incorporate an architecture update, a third-party tools update and reporting updates. (rcsworks.com)...**Orban** is now shipping its new flagship FM processor, the Optimod-FM 8600, which features a significant update in the peak limiter. (www.orban.com) ■

Outdoor equipment shelter
CellXion

Shelters: CellXion offers a full line of lightweight shelters including structural steel and ultra-light aluminum. These shelters provide a secure and durable option when site accessibility is the governing factor. Included in the ultra-light product line is the Envolock Building System, which utilizes interlocking panels made from material as heavy as 11 gauge steel. Manufactured in easy-to-handle panels, the system is precut and ready to assemble on-site. Providing energy conservation, blast resistance and extreme loading conditions, this system offers a sturdy and flexible solution.

318-213-2900; www.cellxion.com
info@cellxion.com

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Contributor Pro-file

Meet the professionals who write for *Radio* magazine.
This month:
Field Report, page 38

Kent Kramer
Director of Engineering
Reach Media/ Tom Joyner Morning Show
Dallas, TX

Kent Kramer's career spans more than 18 years and covers market sizes from unrated to number one, network and local radio. He credits practical experience, constant work on his knowledge base and a lot of time dealing with start-up operations as giving him not only a technical but an operational insight to the business of radio.

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ADVERTISER INDEX

This index is a service to readers. Every effort is made to ensure accuracy, but *Radio* magazine cannot assume responsibility for errors or omissions

by Erin Shipps, associate editor

Do you remember?

Rod Hogg contacted us about his Fansteel Balkite B-180 power supply after seeing the Fansteel ad in our July 2009 Do You Remember column. The unit weighs 27 pounds and consumes 27W. One pound per watt just to supply B power of 180V at 55mA. A batteries and C cells were also needed. Rod picked up the Fansteel more than 20 years ago but has never fired it up. One interesting detail he notes is they did not use a vacuum tube rectifier, copper oxide or selenium rectifier. In all his studies on electronics (more than 50 years!) he has never come across the electrolytic rectifier.

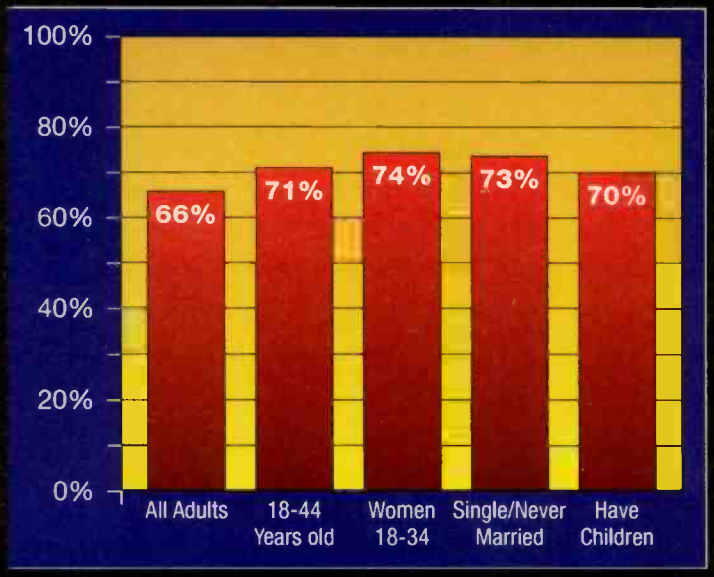
Find out more about Balkite power supplies at radiomagonline.com.

Sample and Hold

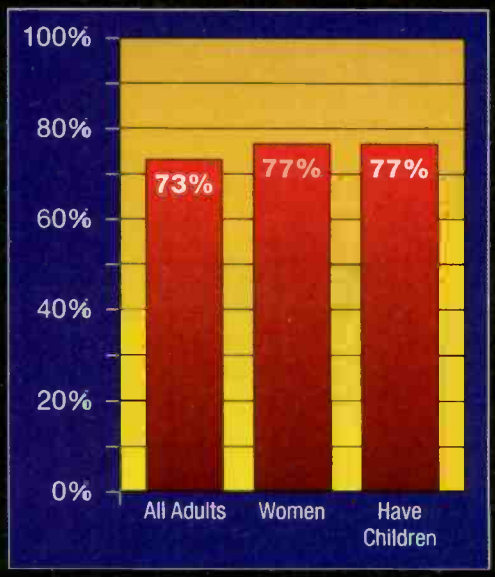
Radio in Cell Phones

The National Association of Broadcasters issued a statement applauding the results of a new nationwide poll conducted by Harris Interactive, which show that a sizeable majority of American cell phone users would like the ability to listen to their favorite local radio stations through a built-in radio receiver on their mobile phone. The survey, conducted as part of an online nationwide omnibus survey of 2,587 adults representing the U.S. general adult population, was conducted by Harris Interactive and commissioned by the NAB.

Would use a cell phone to access local radio stations



How important would a radio built into your phone be during emergencies *(Very/somewhat important)*



Source: Harris Interactive

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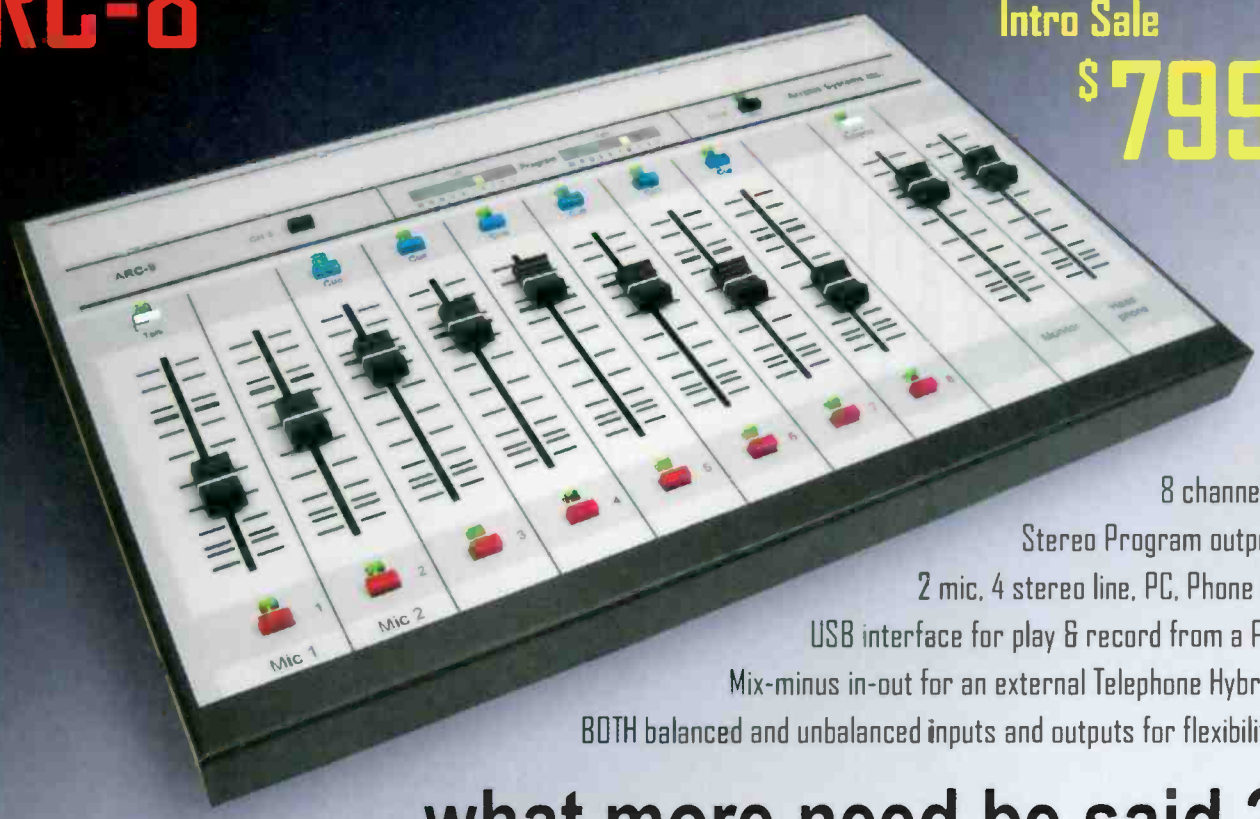

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Stereo Program output
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Mix-minus in-out for an external Telephone Hybrid
BOTH balanced and unbalanced inputs and outputs for flexibility

...what more need be said ?

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WHEATNET-BRIDGE TDM

For Entravision, with multiple stations in multiple markets, a network with flexible functionality and reliability is key to maintaining the strongest on-air presence with absolutely no downtime. Listeners depend on Entravision for content tailored to each community as well as demographically relevant programming across the grid. Wheatstone's WheatNet-Bridge TDM systems make it possible to keep such a network up and running around the clock.

Entravision currently has Wheatstone TDM systems in 5 of their markets –including Los Angeles where 27 surfaces provide programming for their eight Los Angeles area transmitter sites and seven satellite uplink networks.

Rick Hunt, Vice President and Director of Radio Engineering at Entravision Communications Corporation knows that taking chances with unproven or ad-hoc technology simply isn't feasible – that the ultimate cost of using less than the best can be detrimental not only to day-to-day operations but to their overall success.

"Entravision prides itself on delivering the highest quality content and programming to our loyal base of radio and television audiences, and we rely on the Wheatstone system as an important piece of our broadcast equipment. The system is versatile, easy to manage and one of the most advanced pieces of technology on the market. It also delivers an unmatched level of consistancy, ensuring that our systems operate the same way regardless of size or location."

You do your best to create and maintain a successful business. Wheatstone designs and builds its networking systems, whether TDM or IP based, right here in the USA. Wheatstone knows that your programming, network and content are mission-critical, and that failure is not an option. Don't leave it to chance - choosing Wheatstone can only ensure your efforts are rewarded... continuously.

Give us a call or visit us on the web to learn more - we'd love to hear from you.

Rick Hunt, Vice President and Director of Radio Engineering at Entravision Communications Corporation, with one of their Wheatstone G5 consoles.

Wheatstone

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