

September 19, 2011



Radio TechCheck



The Weekly NAB Newsletter for Radio Broadcast Engineers

2011 Radio Show Highlights

Last week, the radio industry gathered in Chicago, Ill. for the [2011 Radio Show](#), produced by the Radio Advertising Bureau (RAB) and NAB. This was the second year for the RAB/NAB show partnership and all indications are that this year's event was a great success with increased attendance, well-attended conference sessions and robust traffic on the exhibit floor. Included in this week's *Radio TechCheck* is a summary of some of the technology highlights from this year's show.



HD Radio Exhibit Features Autos, New Technology

The largest exhibit on the show floor this year by far was the iBiquity Digital Corporation exhibit (shown in the photo below), featuring six automobiles, all with factory-installed HD Radio receivers. These vehicles – a Ford Explorer, Volvo S60, VW



Jetta GLI, Subaru Forrester, Kia Sorrento and a Hyundai Sonata hybrid – were all able to receive local over-the-air HD Radio signals in the exhibit hall and included in some of these signals were advanced data broadcasting features including “the Artist Experience” and in-vehicle navigation and real-time digital map traffic data (see below for more on the new Garmin navigation device on display).

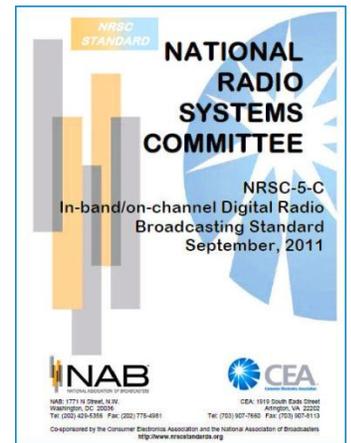
In addition to the in-vehicle radios, a wide array of automotive after-market and portable receivers were on display in the iBiquity booth. The two JVC automotive receivers shown here (models KWNT50-HDT and HWNT30-HDT) were displaying album art (receiver on right) and station logo (receiver on left) graphics being delivered over the HD Radio signal from Clear Channel station WNUA-FM (95.5 MHz) using iBiquity’s “Artist Experience” technology. These JVC receivers also have built-in navigation and are capable of receiving traffic and other information (utilizing “Journaline”) over Clear Channel’s Total Traffic Network (TTN) data service. Also being demonstrated in the booth (on a prototype portable HD Radio receiver) was the iBiquity “Active Radio” emergency alerting technology using a signal from Clear Channel station WVAZ-FM (102.7 MHz).



NRSC Adopts Updated IBOC Standard

The National Radio Systems Committee ([NRSC](#)), co-sponsored by NAB and the Consumer Electronics Association (CEA), met at the Radio Show on Thursday, September 15 and adopted an updated version of its in-band/on-channel (IBOC) digital radio broadcasting standard, NRSC-5-C. The new version includes more than 70 modifications that address improvements and refinements to the HD Radio system benefitting both broadcasters and listeners.

NRSC-5-C, In-band/on-channel Digital Radio Broadcasting Standard, was adopted by the Digital Radio Broadcasting (DRB) Subcommittee, which is co-chaired by Andy Laird, vice president and chief technology officer, Journal Broadcast Group, and Mike Bergman, vice president of new digital technologies, Kenwood USA. It was developed by the subcommittee's IBOC Standards Development Working Group (ISDWG), which is chaired by Dom Bordonaro, chief engineer, Cox Broadcasting – Connecticut.



The more than 70 modifications in this new version include the ability to use asymmetric sidebands, new modes of operation, and updated RF masks. A major part of this work has been the update of "reference documents" by iBiquity Digital Corporation, which contain the technical details of the standard.

The updated Standard will be available free-of-charge on the NRSC's website, following a final, procedural review that will take approximately two weeks. Additional information about the NRSC, including information on becoming a member, is also available on the website.

“Hybrid Radio” Demonstrated

An exciting demonstration of a “hybrid radio” which can seamlessly switch between a radio station’s over-the-air broadcast signal and IP streaming signal (over mobile broadband) was conducted by Nick Piggott (shown in the photo to the right), Head of Creative Technology with Global Radio (UK) and chair of the [RadioDNS project](#). RadioDNS is an open project with the goal of bringing together broadcast radio and IP to create a better radio experience.

This hybrid radio demonstration used the FM radio included in a Sony Ericsson smart phone which was also connected to the AT&T 3G mobile broadband network. A number of Clear Channel and Cox Radio stations have been working with RadioDNS on this technology. For the demonstration, the FM radio was tuned to one of the Clear Channel or Cox radio stations registered in the RadioDNS database.

A special hybrid radio “app” was created for the smart phone and used for this demonstration. Wherever possible, this app selects the over-the-air broadcast radio signal, but when that signal becomes weak, it



switches over to the IP streaming signal. As the broadcast signal improves, it switches back from the streaming signal to the broadcast. All this happens without listener intervention.

This app works by enabling listeners to choose which *station* they want to listen to, not which *system* (FM analog, HD Radio digital, IP stream). The app's station preset function can store all the information needed to find the station in a number of different ways, and then determines which signal for that station is best. Consequently, if the listener is in the coverage area, they will likely listen to the broadcast signal, but if not, the IP streaming signal will automatically be provided.

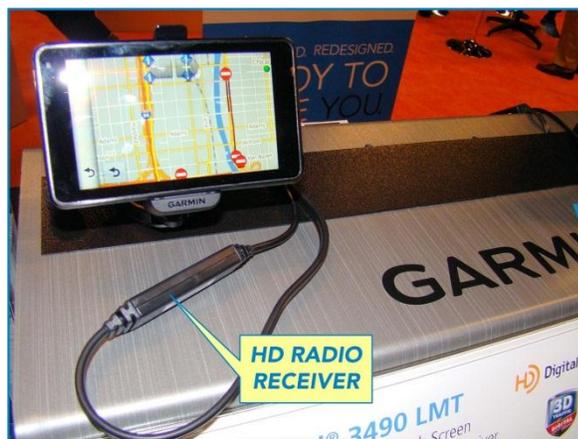
The discovery of the information needed to make all this happen uses the RadioDNS lookup process, and a small amount of configuration information held on each station website. RadioDNS doesn't aggregate this information, it just links radio receivers to it. Videos of the hybrid radio demo are available on YouTube:

- on an Android device – <http://youtu.be/c1t0FFGpAnM>
- on a Nokia device – <http://youtu.be/5OrPdd8E0b0>

Garmin Navigation Device Uses HD Radio Data for Traffic Info

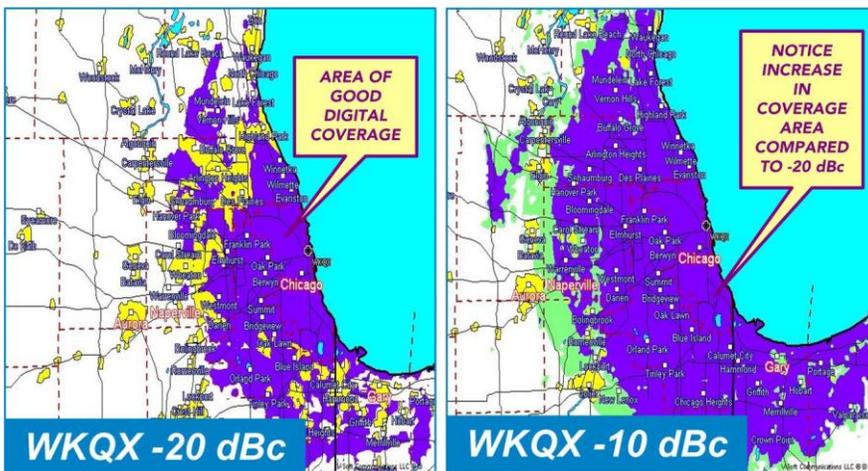
A new navigation device was on display in the iBiquity booth that includes an HD Radio data-only receiver (no audio). The Garmin nüvi 3490LMT will be available on October 16, 2011 with a suggested retail price of \$399 and will be able to receive traffic data over an HD Radio data channel from Broadcast Traffic Consortium (BTC)-affiliated stations. According to the Garmin product brochure, this new receiver will receive traffic updates “every 30 seconds, 4 to 10 times faster than competing services.” This receiver is also capable of receiving BTC traffic information over an RDS digital FM subcarrier, at reduced data rates compared to the HD Radio service.

A photo of the new Garmin receiver is shown at right, as displayed in the iBiquity booth. The HD Radio receiver portion is located in the power cord of the device as indicated in the photo; note that the power cord functions as the antenna for this receiver as well. Garmin has plans to incorporate the HD Radio receiver circuitry into the navigation device itself in future models.



Paul Brenner, SVP and CTO of Emmis Communications and President of the BTC, gave a presentation at the Radio Show technical conference entitled “Data Application Case Studies,” and discussed how important the FM IBOC digital power increase is to providing good coverage to the Garmin and future BTC traffic devices.

Shown in the maps above are a comparison of the expected data broadcasting coverage for Chicago station WKQX (101.1 MHz, now WWWW) for -20 dBc digital signal power (left map) and with the digital power increased to -10 dBc (right map). These maps were prepared using Vsoft analytics and the good coverage area (purple shading) is based upon IBOC packet reception rates and latency of reception.



FEMA IPAWS Special Event - Prepared & Ready: The Final Stretch Before the Nationwide EAS Test

Save the Date for September 30, 2011 from 1:30 – 3:30 p.m. ET

Please save the date for the final EAS Participant Virtual Roundtable discussion with government and industry leaders on September 30, from 1:30 – 3:30 p.m. ET. The



discussion will involve a variety of topics and draft documents for feedback that will support updates to the EAS Best Practices Guide and Nationwide EAS Test Informational Toolkit.

Some examples include:

Television and Cable EAS Background Slate
Nationwide EAS Test Message Transcript Draft
Public Service Announcement Audio Sample
Nationwide EAS Test Data Reporting
Required Monthly Test Activities and Findings.

The meeting will be held on Microsoft Live Meeting 2007 (*This [link](#) will be active the morning of September 30*). Additional information is available [here](#).

FCC Extends EAS-CAP Compliance Deadline June 30, 2012

On Friday, September 16, the FCC released a *Fourth Report and Order (Fourth R&O)* in the EAS proceeding (EB Docket No. 04-296) which amends section 11.56 of the Commission's EAS rules extending the deadline requiring EAS Participants to be able to receive CAP-formatted EAS alerts as required by Part 11 from September, 30 2011 to no later than June 30, 2012.

On May 25, 2011, the Commission issued the *Third Further Notice of Proposed Rulemaking (Third FNPRM)* which sought comments on a wide range of tentative conclusions and proposed rule revisions that would more fully delineate and integrate CAP into the Commission's Part 11 EAS rules. Among other things, the *Third FNPRM* asked whether the existing September 30, 2011, deadline for CAP-compliance is sufficient or whether the Commission should extend or modify it so it would be triggered by some action other than FEMA's adoption of CAP. The Commission received 30 comments and 12 reply comments in response to the *Third FNPRM*. The majority of commenters requested a further extension of the deadline. (See *TechCheck* from August 1, 2011.)

On July 29, NAB and a number of other broadcast organizations filed a petition asking the FCC to rule expeditiously on the deadline extension issue.

In the Fourth R&O the FCC stated that an extension of the current CAP compliance deadline is warranted and that they:

"agree with commenters that argue that until the Commission has completed its rulemaking process, it cannot meaningfully impose a deadline by which EAS Participants must "receive CAP-formatted alerts." No one can comply with section 11.56 yet, because the Commission has not finalized all the key technical specifics necessary for receiving CAP-formatted alerts. Without having these specifics, no EAS Participant can claim that it is currently capable of receiving CAP-formatted alerts, even if it has equipment that could receive such alerts under one or more of the technical specifications being considered by the Commission."

The fourth R&O is available on the FCC's Web [page](#).

The First Public Trial of a TV White Space Database Begins Today

The FCC's Office of Engineering and Technology (OET) announced that on September 19, 2011, it will commence a 45-day public trial of Spectrum Bridge Inc.'s TV band database system. According to OET, the trial is intended to allow the public to test the database to ensure that it is correctly identifying channels that can be used by TV white space devices;

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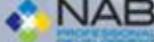
properly registers facilities entitled to protection, such as licensed wireless microphones, cable head ends, etc.; and provides protection to all authorized services and registered facilities. The complete text of the OET Public Notice is available at [here](#).

The trial will begin at 8:30 a.m. EDT and parties may access the Spectrum Bridge's TV band database at: <http://whitespaces.spectrumbridge.com/Trial.aspx>.

Broadcasters are encouraged to test the database to ensure that it is providing accurate channel availability results and that wireless microphone and MVPD registration process is operating properly. One simple test is to query the database to determine the available TV channels for white space devices at a particular location and then register a wireless microphone use at that location on one or more of those channels to see if the database correctly takes those registrations into account. If any problems are found, please send that information to NAB's Technology department at st@nab.org.

2011 NAB Satellite Uplink Operators Training Seminar
Instructor: Sidney Skjei, Skjei Telecom
October 3-6, 2011 · Washington, D.C.

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