



Radio Highlights at the 2015 NAB Show



This year's [NAB Show](#) was one for the books, with a record-setting amount of exhibit space and a significant boost in attendance. There were numerous interesting and informative radio-focused conference papers in the session rooms and lots of new, exciting and innovative technology on display in the exhibit halls. This week's Radio TechCheck focuses on some of the highlights.

All-digital AM Radio Panel

On Monday, just prior to his visit to this year's Show, FCC Chairman Wheeler posted a [blog](#) on the Commission's efforts to update the AM radio rules, indicating among other things his concerns about a suggestion that has proven very popular with AM broadcasters, that of opening a "window" for AM stations to obtain FM translator licenses. A discussion of Chairman Wheeler's comments helped to fuel a lively discussion at an [NAB Broadcast Engineering Conference](#) panel on Monday entitled " *Digital Broadcasting on the AM Band: Is it Ready for Prime Time?*" moderated by Ben Downs, Vice President and General Manager, Bryan Broadcasting Corporation (far left). Panelists were (from left to right) Ben Dawson, President, Hatfield & Dawson Consulting Engineers, LLC, Greg Borgen, Owner and President, WDGY, Andy Skotdal, S-R Broadcasting Co., Inc., and Glynn Walden, Senior VP of Engineering, CBS Radio.

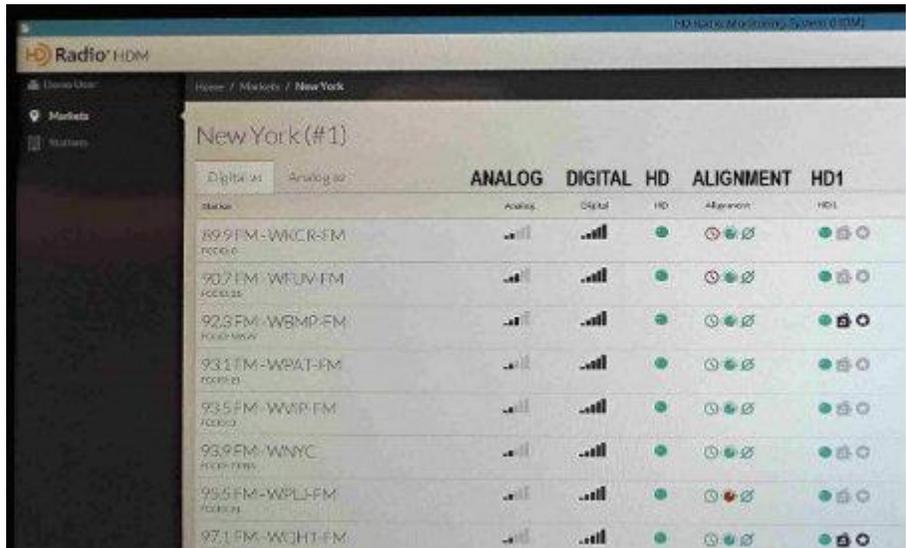
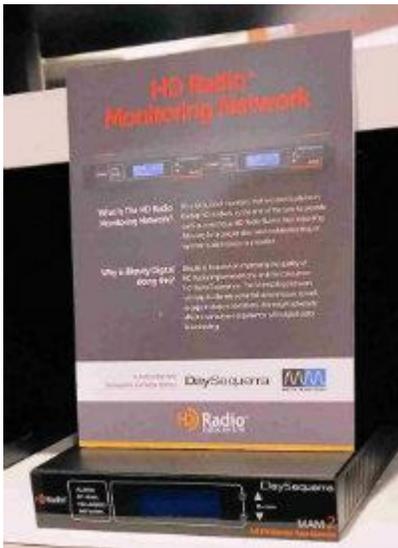


Mr. Downs focused the panel's discussion by asking a series of questions about the possible introduction of all-digital AM and some alternatives such as migration of AM radio to the VHF band. He also offered a four-step "plan" for improving the AM radio service as follows: 1) enact the proposals contained in the Commission's AM revitalization Notice of Proposed Rulemaking (NPRM); 2) provide lower-power AM stations with FM translators; 3) after one year of operation, grant primary status to these FM translators contingent upon these stations surrendering their AM licenses; 4) this will result in a "clearing" of the AM band so that higher-power AM stations can initiate all-digital services.

iBiquity Unveils HD Radio Monitoring Network

One of the more pressing issues that hybrid digital radio stations face is insuring proper time and level alignment of the analog and digital main-channel audio signals. At this year's Show, iBiquity Digital Corporation announced the rollout of a nationwide monitoring network, focused in general on improving the quality of HD Radio broadcast operations and the consumer HD Radio experience, and in particular on assessing the time and level alignment of all monitored HD Radio stations. iBiquity indicated that phase 1 of this network is currently operational in the top 10 radio markets as well as in Las Vegas and Detroit and the rollout will continue throughout 2015 to include all of the top 50 radio markets.

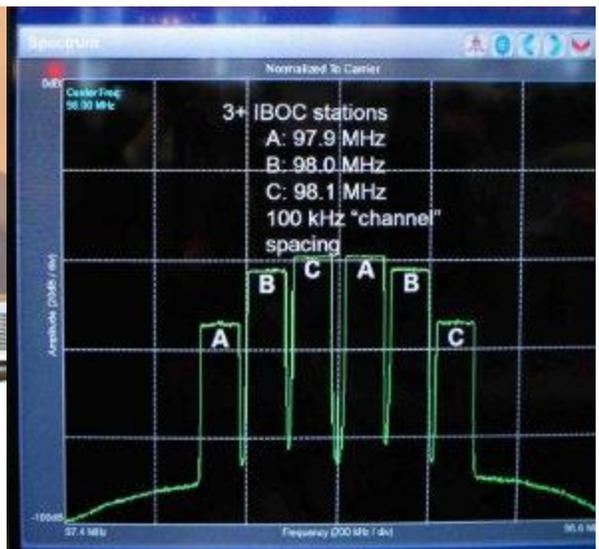
This monitoring network will help to identify potential station issues as well as gaps in station operations that might adversely affect a consumers' experience with digital radio broadcasting. Information will be gathered continually from a network of remote listening stations and fed into iBiquity's central data analysis platform. This data will help to ensure quality broadcast operations and quickly diagnose major issues with HD Radio signals. Ultimately, iBiquity intends to communicate any observed signal problems or issues to broadcasters who are responsible for the care and maintenance of their individual radio signals.



To develop this monitoring capability, iBiquity is partnering with equipment manufacturer DaySequerra, who is manufacturing the field monitors (shown in the photo above at left) that are being deployed in the various markets. Typical results from a monitor operating in the New York, NY market are shown in the photo above at right. iBiquity is also partnering with Media Monitors, a leader in local media monitoring for broadcast radio, TV, and other media services, in the installation and maintenance of the field monitors. The company has a strong presence in all of the leading radio markets where the HD Radio field monitors will be deployed. For additional information visit iBiquity.com.

Nautel HD Multiplex

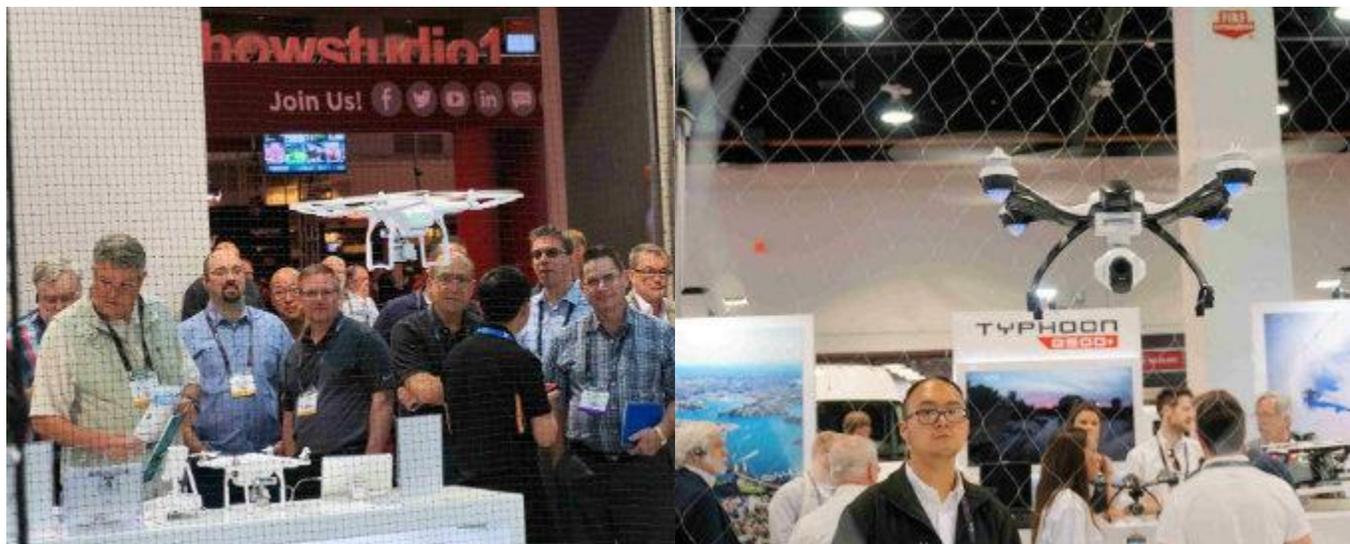
An interesting demonstration of an advanced all-digital FM radio configuration using the HD Radio system was shown by broadcast equipment manufacturer Nautel in their 2015 NAB Show exhibit. Called "HD Multiplex," this configuration supports up to 15 audio programs or channels within 600 kHz of signal bandwidth or up to nine audio streams in 400 kHz of signal bandwidth. Nautel's Philipp Schmid is shown in the photo below, demonstrating this technology; in the photo at right, a spectrum analyzer image of a 600 kHz-wide HD Multiplex signal is shown. As part of this demonstration, two consumer HD Radio tabletop radios were successfully receiving and decoding an HD Multiplex signal.



Nautel said their technology allows the combination of multiple independent IBOC engine modulators into one HD PowerBoost crest factor reduction engine, permitting two or more IBOC stations to be amplified using one transmitter and subsequent antenna system, and enabling an all-digital IBOC configuration that is capable of carrying up to three times the standard IBOC content. Nautel indicated that the methodology also maintains backward compatibility with existing receivers by ensuring the standard sideband channel separation within the multiplexed signal, although receivers need to be able to tune on 100 kHz channel spacings in order to accommodate the HD Multiplex signal. See more at nautel.com.

Drones Everywhere

One of the most popular technologies on display at this year's Show was that of unmanned aerial vehicles (UAVs) also known as [drones](#). Broadcasters are increasingly interested in using drone technology to provide for aerial newsgathering and entertainment although government regulation of drones in civilian air space is still being established. A number of drone exhibitors at the Show erected mesh "cages" to contain drones in flight and provide for safe operation of these devices on the Show floor; a couple of examples are shown in the photos below.



Automatic HD Radio Diversity Delay Correction

Broadcast equipment manufacturers were offering a number of new products at this year's Show which promise to provide for automatically maintaining precise time alignment between the analog and digital main channel audio signals in a hybrid digital radio signal.

Inovonics' introduced the JUSTIN 808 (right) which maintains time alignment between analog FM and HD1 channels to within 23 microseconds (± 1 sample) and is also capable of maintaining correct level alignment as well. JUSTIN's web interface features SNMP support and dispatches email and SMS alarm messages. The JUSTIN 808 offers automatic program phase correction when a phase reversal is sensed between the analog FM and digital HD1 program channels. RMS level correction is also available when the JUSTIN 808 is placed in the AES digital audio feed to the HD Radio exciter.



Placed in line with the AES audio feed to the HD Radio exciter, the JUSTIN 808 will automatically correct diversity delay errors and RMS level errors between the FM and HD1 programs. Placed in line with the AES audio feed to the analog FM stereo encoder, the JUSTIN 808 is capable of providing the entire diversity delay, if required. It will automatically correct diversity delay errors, but cannot normalize RMS level errors between the two programs. For more information visit the Inovonics [webpage](#).

The Belar FMHD-1 HD Radio monitor works in conjunction with equipment made by a variety of manufacturers including GatesAir, Nautel, Orban, Telos/Omnia and Wheatstone. The center photo at right shows the FMHD-1 display in Belar's booth with the inset highlighting the display screen that illustrates the relative timing between analog and digital main channel audio signals. The bottom photo, taken in the Wheatstone booth, shows the FMHD-1 working in conjunction with the Wheatstone AirAura X3 audio processor to provide continuous automatic audio timing alignment.



Belar's Automatic Delay Correction is a software-defined feature that monitors and adjusts the time alignment of a station's HD digital and analog FM signals, eliminating the eight-second delay between the two and allowing listeners' receivers to seamlessly switch between them without audio glitches. For more information visit the Belar [webpage](#).

