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Radio TechCheck



The Weekly NAB Newsletter for Radio Broadcast Engineers

Digital Radio Mondiale Releases DRM+ Test Report

Many countries around the world are considering when and how to make the transition to terrestrial digital radio. In the U.S., that decision took place in 2002 when the FCC adopted the HD Radio in-band/on-channel system, developed by [iBiquity Digital Corporation](#), for use in the existing AM and FM radio bands. Another system that can be implemented in the FM band is called “DRM+” and was developed by [Digital Radio Mondiale](#) (DRM), a consortium of broadcasters, network providers, transmitter and receiver manufacturers, universities, broadcasting unions and research Institutes (see the [June 28, 2010 issue](#) of Radio TechCheck for background information on DRM).

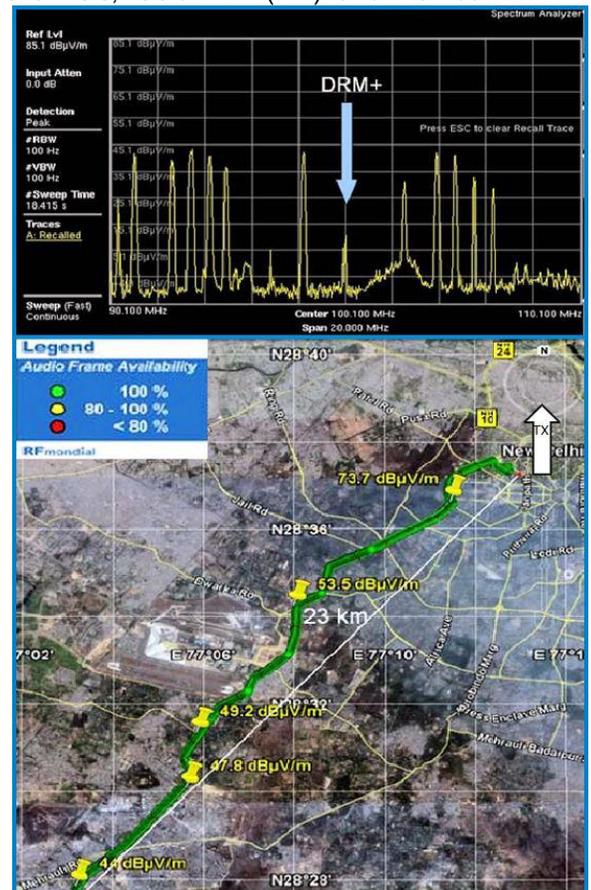


Earlier this month, DRM released a [report](#) describing a test of DRM+ conducted in India. This report is remarkable in that it is the first English language report detailing the performance of DRM+. A number of tests done in Kaiserslautern, Germany beginning in May 2008 were [publicized](#) but the only reports available on these earlier tests were written in German.

The India test was conducted in New Delhi and organized jointly by [All India Radio](#) (AIR) and the DRM Consortium, and took place as part of a week-long workshop on DRM technology (from May 23-27, 2011) covering issues of planning, transition, simulcast, content and receiver design and deployment. A single test frequency of 100.1 MHz was used and the DRM+ signal was configured to carry three program channels – two audio channels, “Gold DRM (FM)” and “Rainbow DRM (FM),” and a data channel programmed with AIR news using [Journaline](#) (a new data application for digital radio systems, providing hierarchically-structured textual information).

As with most digital radio systems, DRM+ supports a wide range of optional modes that are selected depending upon the desired application. Two test modes were measured during this test – a 4-quadrature-AM (QAM) mode designed for robustness (bit rate ranges from 40-75 kbps), and a 16-QAM mode (bit rate ranges from 100 to 190 kbps) which provides for higher capacity but reduced robustness compared to the 4-QAM mode. In the 16-QAM mode, the live stereo audio source was converted on-the-fly into 5.1 MPEG Surround Sound (compatible with all mono/stereo receivers) based on [Fraunhofer IIS "SX Pro"](#) multichannel sound technology. Additionally, a pseudo-random bit sequence (PRBS) was generated and transported as part of the DRM transmission to allow for calculation of the exact bit error ratio (BER) of the received DRM signal.

A four-bay transmit antenna was utilized, mounted at a height of 74 m above ground on one side of the tower. A 300 W transmitter was used; factoring in cable losses and antenna gain, the resulting ERP was approximately 500 W directed towards the southwest. Reception quality was measured using a test vehicle going in four directions from central New Delhi (where the transmitter was installed). The receiver used for these tests was the [RFmodiale DRM+ Measurement Receiver](#). A typical spectrum plot and test run map are shown in the image at right. A suite of test scenarios for both the 4-QAM and 16-QAM modes are detailed in the report. According to the report, coverage and performance were good a comparable to what was expected in simulation.



The full text of the DRM+ report contains a description of the DRM+ system parameters, system setup and equipment that was used in the trial and the measured results, and may be downloaded [here](#).



This year's [Radio Show Engineering Program](#), September 14 - 16 at the Hyatt Regency in Chicago, brings together the three key areas that occupy the broadcast engineer's time. A series of expert tutorials and presentations cover the challenges of creating, operating and maintaining a modern radio facility. New developments in studio design and audio production are explored during Studio/Production Day. Reflecting our evolving business, Transmission/Distribution Day offers a variety of discussions addressing traditional over-the-air and web-based program distribution. Finally, Tower Day focuses on keeping an often overlooked asset - the tower - properly maintained and prepped to become a potential revenue generator.

[The Radio Show](#) is jointly produced by NAB and the Radio Advertising Bureau (RAB). The Radio Show will include an enhanced schedule and expanded Radio Show Marketplace featuring exhibitor booths. The show program will also include a complete session schedule focusing on current issues impacting radio

Proposals Now Being Accepted for 2012 NAB Broadcast Engineering Conference

Las Vegas Convention Center, Las Vegas, Nevada USA
Conferences April 14 – 19, 2012 // Exhibits April 16 – 19, 2012

The 2012 NAB Show will host the 66th NAB Broadcast Engineering Conference. This world-class conference addresses the most recent developments in broadcast technology and focuses on the opportunities and challenges that face broadcast engineering professionals around the world. Each year hundreds of broadcast professionals attend the conference. They include practicing broadcast engineers and technicians, engineering consultants, contract engineers, broadcast equipment manufacturers, distributors, R&D engineers plus anyone specifically interested in the latest broadcast technologies.

If you feel qualified to speak at the NAB Broadcast Engineering Conference, we invite you to [submit](#) a technical paper proposal. The deadline for submitting your proposal is October 21. If you have any questions, contact John Marino, vice president, NAB Science and Technology at 202 429 5346.

A banner for a training seminar. The text reads: '2011 NAB Satellite Uplink Operators Training Seminar'. Below this, it says 'Instructor: Sidney Skjei, Skjei Telecom' and 'October 3-6, 2011 · Washington, D.C.'. There is a 'REGISTER NOW' button and the NAB logo.

A banner for conference proceedings. The text reads: 'NAB Broadcast Engineering Conference Proceedings'. Below this, it says 'A selection of papers from the 2011 NAB Show, with topics including cloud-based technologies, 3DTV and more.' and 'Learn More and Buy >'. There is a small image of a book cover on the left.

A banner announcing a new member benefit. The text reads: 'Announcing the Newest NAB Member Benefit'. Below this, it says 'Agility Recovery Prepare to Survive' and 'Disaster Recovery · Space · Connectivity · Power'. There is a logo with the letter 'A' in a circle.

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A banner with a colorful background of overlapping circles. The text reads: 'ON AIR. ONLINE. ON TARGET.'. Below this, it says 'Sept. 14-16, 2011 · Chicago, IL' and 'www.RadioShowWeb.com'.

A banner with a blue background. The text reads: 'INTRODUCING AmWINS PROGRAM UNDERWRITERS'. Below this, it says 'An AmWINS Group Company'.

There will be no *Radio TechCheck* on September 5.
Radio TechCheck will return on September 12.

