

DRM-ABU-NBT SHOWCASE PROJECT

May 2004, BANGKOK

DIGITAL RADIO BROADCASTING IN MEDIUM WAVE BAND



REPORT ON DRM-NBT-ABU SHOWCASE PROJECT IN BANGKOK

On 10 May Bangkok witnessed the introduction of a digital radio service broadcast in the medium wave band. As the first of its kind, a pioneering project has been established in Bangkok to showcase digital medium wave radio in Thailand and in the region. The project uses an analogue medium wave radio transmitter of the National Broadcasting Services of Thailand (NBT) serving Bangkok city. This transmitter, operating at 837 kHz and located 20 KM north of Bangkok, was converted for digital radio using the Digital Radio Mondiale (DRM) technology.

Inauguration

The digital radio service was inaugurated by Mr Suchaat Suchaatvejapoom, Director General of the Government Public Relations Department (PRD - the parent organisation of NBT) at a glittering ceremony in the Radio Thailand Head Office and Studio Complex in Bangkok. The event attracted a huge turnout. Present at the inauguration were senior executives representing many broadcasting organisations in the Asia-Pacific, national spectrum regulators, international organisations, broadcasting equipment manufacturers, digital radio set manufacturers and distributors and other sectors of the broadcasting industry.

In his welcome address, Wayne Heads, Director of the ABU Technical Department, said this showcase project was another milestone in the ABU's involvement with the digital radio and this event marked the start of the process for many broadcasters in our region to witness DRM transmissions in operation. Welcoming the broadcasting industry, Mr Dussadee Sinchermisri, Deputy Director-General PRD said that NBT was happy to participate in organising the first digital radio service in the medium wave band.

In his inaugural address, Mr Suchaat emphasised the need for broadcasters to employ digital technologies to improve the quality of services provided to audiences. He said that medium wave radio was a vital delivery medium for broadcasting in this region. He added that NBT was very excited about introduction of digital radio services and about the benefits this would bring to both the audiences and the broadcasters.

Digital Radio Services Commences

The digital radio service commenced as the ceremonial gong was sounded by Mr Suchaat. Simultaneously, eight digital radio sets at the venue started playing clear and crisp music. Many of these were kindly provided by Himalaya Electronics of Hong Kong, one of the first manufacturers of portable DRM receivers.

The Radio Thailand Ensemble played classical Thai music to mark the occasion. Mementos were presented on behalf of the ABU and NBT to all partners in the project.

The digital radio service will operate everyday from 11.30 a.m. to 2 p.m. for four weeks with regular programmes of high quality.

Medium of choice

Medium wave radio is a very powerful broadcasting channel in the Asia-Pacific region. Digital radio in this band is expected to become the medium of choice for radio programme delivery to mass audiences and several benefits are expected to be accrued through digital technology. Apart from providing improved quality, eventually digital radio can provide many value added services to consumers including aural/textual information and still images.

DIGITAL RADIO TRANSMISSION WORKSHOP

An associated event, a six day Digital Radio Transmission Workshop (10-15 May) commenced the same day at the same venue. The workshop, organised by the ABU as a part of the Showcase, attracted more than sixty radio transmission engineers. Out of these twenty five engineers travelled from various other countries, from neighbouring Laos to Turkey.

The Workshop itself was divided into two phases, the first devoted to a thorough grounding on the DRM system and related aspects, digital radio applications in the medium wave band, conversion of digital ready and analogue transmitters to DRM operation, signal measurement techniques, coverage and signal availability, and the requisite equipment and software. The topics addressed included a DRM system overview, DRM applications in the medium wave band, conversion of digital-ready / analogue transmitters to DRM operation, commercial issues, measuring field strength, SNR and MER, coverage and signal availability, measurement equipment set-up and software and measurement results obtained in other countries.

Field Measurements

The last four days were devoted to field measurements of the DRM transmitted signal. The objective of the measurements was to have a feel of the DRM signal strength in some in the coverage zone, both in the countryside and in Bangkok. Derivation of signal availability factor in Bangkok was another objective. A third objective was to train the participants so that they are enabled to plan transition to medium wave DRM in their own organisations at an appropriate time and to carryout field measurements.

The 10KW NBT transmitter on 837 kHz was used for digital signals and a similar transmitter at 918 KHz (located 20 Kms from the former transmitter) was used for analogue comparison purposes. The digital transmitter provided 3.7 KW power output using 64 QAM modulation and 0.5 error correction rate.

On the logistics side, each of the two measurement vans was equipped with a DRM receiver - laptop based measurement unit with GPS, a DRM receiver, analogue receiver (all operating on batteries) and a field strength meter. Several types of measurement software packages were available.

Measurements and Results

Measurements were carried out between 1130- 1400 hrs every day and thereafter, results plotted and discussed. Field measurements were carried out for the following four modes:

- Along a radial in the open countryside to determine drop in the field strength relative to another analogue signal.
- Along the radial in the open countryside to determine a cut-off point for digital reception vis-à-vis an analogue transmission. This was determined at 93.6 Kms (radial distance) from the transmitter (see figures).
- Digital and analogue signal mapping in a very congested area (urban canyon) in the heart of Bangkok city.
- Digital and analogue signal mapping in a relatively less dense area at the edge of Bangkok city.

Results

Given the objectives set, measurement results obtained were quite interesting. In open countryside, digital signal degradation with distance was markedly less than in analogue signal. In the inner Bangkok city, both analogue and digital reception were very poor, indicating the need for fillers and for higher power output as well as using a less robust mode.

In comparison, the signal availability in the relatively less dense area at the edge of Bangkok city was more acceptable.

All participants showed keen interest and were actively involved in the entire exercise, including processing of the measurement data. They generated many discussions on many issues and clearly seemed to have grasped the subject. Data generated is being analysed and a full report will be shortly circulated.

Acknowledgement

We gratefully acknowledge contribution made by NBT, DRM, Harris Corp, Deutsche Welle, VT Merlin, Himalaya and several other organisations, in making this event possible and successful.

For more information, please visit the project web-page at:

<http://www.abu.org.my/public/compiled/p435.htm>

Project Partners



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