



# NBTC/ITU Workshop on Digital Radio Technologies

1-3 March 2013

The Emerald Hotel & MCOT, Bangkok, Thailand



Supported by



## Agenda

Friday, 1 <sup>st</sup> March 2013	
– Workshop Sessions –	
Venue: Ballroom 2, 3 <sup>rd</sup> Fl, The Emerald Hotel Bangkok	
08:00-09:00	Registration
09:00-09:45	<b>Opening Session</b> <ul style="list-style-type: none"><li>❖ Opening Remarks by NBTC <i>Air Chief Marshal Thares Punsri, Chairman of the National Broadcasting and Telecommunications Commission, Thailand</i></li><li>❖ Welcome Remarks by WorldDMB <i>Ms. Joan Warner, Chairperson, WorldDMB Asia-Pacific</i></li><li>❖ Welcome Remarks by ITU <i>Dr. Eun-Ju Kim, Regional Director, International Telecommunication Union (ITU) Regional Office for Asia and the Pacific</i></li><li>❖ Welcome Remarks by <i>Col. Dr. Natee Sukonrat, Vice-Chair of the National Broadcasting and Telecommunications Commission, Chair of the National Broadcasting Commission, Thailand</i></li></ul>
09:45-10:15	Group Photo & Tea break
10:15-11:00	<b>SESSION 1: INTRODUCTION</b> <ul style="list-style-type: none"><li>❖ <b>DAB+ International Market Update, DAB/DAB+ around the World</b> <i>Speaker: Ms. Joan Warner, Chairperson, WorldDMB Asia-Pacific</i></li></ul>
11:00-12:30	<b>SESSION 2: REASONS TO ADOPT THE DAB+ SYSTEM</b> <p>Overview of the structure and efficiency of the DAB+ system and the business case for countries and broadcasters to adopt DAB+</p> <ul style="list-style-type: none"><li>❖ <b>DAB+ Business Case</b> <i>Speaker: Ms. Joan Warner, Chairperson, WorldDMB Asia-Pacific and CEO of</i></li></ul>

	<p><i>Commercial Radio Australia</i></p> <ul style="list-style-type: none"> <li>○ Capacity for broadcast sectors, multi-channeling, adding value for listeners, advertises and broadcasters</li> <li>○ Structure and regulatory frameworks that Thailand can consider</li> </ul> <p>❖ <b>Overview of DAB System : Block diagram level of the structure of a DAB system from audio encoding to RF transmission</b> <i>Speaker: Dr. Les Sabel, WorldDMB Technical Committee</i></p> <p>❖ <b>Q&amp;A</b></p>
12:30-14:00	Lunch break
14:00-15:15	<p><b>SESSION 3: DAB+ SYSTEM OPERATION AND TECHNOLOGY</b></p> <p>❖ <b>DAB+ Content Generation: Text and slide content generation for Program Associated Data</b> <i>Speaker: Mr. Wilson Ng, Commercial Radio Australia (CRA)</i></p> <p>❖ <b>DAB+ Receivers: Impact of different receivers on the design of DAB+ network, table top, car, handheld</b> <i>Speaker: Mr. Curtis Au, Keystone Semiconductors</i></p> <p>❖ <b>Q&amp;A</b></p>
15:15-1545	Tea break
15:45-17:00	<p><b>SESSION 3: continued</b></p> <p>❖ <b>DAB+ Network Planning and Deployment – A Journey</b> <i>Speaker: Dr. Les Sabel, WorldDMB Technical Committee</i></p> <ul style="list-style-type: none"> <li>○ Determining the system goals including population and geographical coverage and timing</li> <li>○ Discussion of MFN and SFN operation</li> <li>○ Interference issues and black spot rectification</li> </ul> <p>❖ <b>Q&amp;A</b></p>
18:00	Welcome Dinner hosted by the National Broadcasting and Telecommunications Commission

**Saturday, 2<sup>nd</sup> March 2013**

**– DAB+ System Demonstration and Field Measurements –  
Venue: MCOT, Auditorium Room 6<sup>th</sup> Fl.**

The DAB+ demonstration is being conducted in association with the Workshop on Digital Radio Technologies which covers the DAB+ technology, operations and deployment aspects as well as a number of commercial and marketing aspects.

The demonstration is designed to allow the workshop participants to get a clear understanding of the technology and how it operates. The demonstration will include

- A visit to the transmission site with demonstrations of equipment operation and a briefing by

	<p>the equipment suppliers</p> <ul style="list-style-type: none"> <li>○ Transmitter</li> <li>○ Encoders / multiplexers / controllers</li> <li>○ ETI Monitoring equipment</li> </ul> <ul style="list-style-type: none"> <li>▪ A field test where the broadcast signal will be received under a range of conditions from high power/close to the transmitter to edge of coverage and a number of different urban environments as can be found around the location of the transmitter. <ul style="list-style-type: none"> <li>○ The received signal will be logged and then the data will be analysed, that analysis will then be presented to the workshop attendees as a demonstration of a method of validating the performance an installed system.</li> <li>○ If possible the coverage will be compared with a field strength prediction</li> </ul> </li> </ul>	
09:00-10:30	<p><b>SESSION 4: DEMONSTRATION BRIEFING</b></p> <ul style="list-style-type: none"> <li>❖ <b>High-level overview of trial equipment configuration and setup</b> Trial goals, system design and review of equipment capabilities and operations <i>Speaker: Dr. Les Sabel, WorldDMB Technical Committee</i></li> <li>❖ <b>DAB+ Test Route and Arrangements</b> Field trial routing, data processing, results reporting plus preview of field measurement activity <i>Speaker: Mr. Wilson Ng, Commercial Radio Australia (CRA)</i></li> </ul>	
10:30-11:00	Coffee break	
	<b>PARALLEL SESSIONS</b>	
11:00-12:30	<p><b>FIELD MEASUREMENT EXERCISE</b></p> <p><u>Group 1 &amp; 2</u></p> <p>Drive tests to take field measurement around the city of Bangkok and visit to the transmitter site</p>	<p><b>SESSION 5: DAB+ PRACTICAL CONSIDERATIONS – THE SUPPLIER EXPLAIN</b></p> <ul style="list-style-type: none"> <li>❖ <b>Why DAB+ is more green &amp; cost effective than analogue</b> FEC code rates, OFDM transmission, SFN operation <i>Speaker: Jens Stockman, Harris Broadcast</i></li> <li>❖ <b>Multiplex network design considerations and options</b> DAB+ encoding, PAD, multiplexing, FIC <i>Speaker: Mr Jorgen Scott, Factum Electronics</i></li> <li>❖ <b>Antenna systems for DAB+ radio</b> <i>Speaker: Mr. Rainer Vogt, Kathrein, Germany</i></li> </ul>
12:30-13:30	Lunch break	
13:30-15:00	<p><b>FIELD MEASUREMENT EXERCISE</b></p> <p><u>Group 3 &amp; 4</u></p> <p>Drive tests to take field measurement around the city of Bangkok and visit to</p>	<b>SESSION 5: continued</b>

	the transmitter site	
15:00-15:30	Coffee break	
15:30-17:00	<b>FIELD MEASUREMENT EXERCISE</b> <u>Group 5 &amp; 6</u> Drive tests to take field measurement around the city of Bangkok and visit to the transmitter site	<b>SESSION 5: continued</b>
17:30	Meeting adjourn	

Sunday, 3 <sup>rd</sup> March 2013		
– Workshop Sessions –		
<i>Venue: Panorama 1, 14th Fl, The Emerald Hotel Bangkok</i>		
09:00-10:30	<b>SESSION 6: DAB+ COVERAGE &amp; FREQUENCY PLANNING &amp; FIELD TEST RESULTS</b> Covers the process of frequency coverage and network planning for DAB+ roll out and how to bring all the stakeholders together <ul style="list-style-type: none"> <li>❖ <b>DAB+ Coverage Planning</b>  <i>Speaker: Milos Pavlovic, LS Telecom</i> <ul style="list-style-type: none"> <li>○ Presentation of methods and techniques to predict transmission coverage</li> <li>○ Discussion of critical models and parameters</li> <li>○ Live demonstration of tools</li> </ul> </li> <li>❖ <b>DAB+: Experiences in network planning, erection and operation</b>  <i>Speakers: Thomas Wachter, MEDIA BROADCAST GmbH</i> </li> </ul>	
10:30-11:00	Coffee break	
11:00-12:30	<b>SESSION 6: continued</b> <ul style="list-style-type: none"> <li>❖ <b>Discussion of Test Results</b>  <i>Speakers: Dr. Les Sabel, WorldDMB Technical Committee / Mr. Wilson Ng, Commercial Radio Australia (CRA)</i> </li> <li>❖ <b>Q&amp;A regarding RF Planning with all speakers in Session 6</b></li> </ul>	
12:30-13:30	Lunch break	

13.30-14:00	<p><b>SESSION 7: DAB+ IMPLEMENTATION – HOW TO BRING IT ALL TOGETHER</b></p> <ul style="list-style-type: none"> <li>❖ <i>Speaker: Ms. Kath Brown, Commercial Radio Australia (CRA)</i> <ul style="list-style-type: none"> <li>○ Key factors to ensure success: Bringing all of the stakeholders together – regulators, broadcasters, suppliers retailers, manufacturers</li> <li>○ Lessons learnt from DAB+ systems deployment</li> </ul> </li> <li>❖ <b>Q&amp;A</b></li> </ul>
14:00-14.30	<p><b>SESSION 8: DISCUSSIONS AND THE WAY FORWARD</b></p> <ul style="list-style-type: none"> <li>❖ <b>Discussions</b></li> <li>❖ <b>Recommendations &amp; Next Steps</b> <i>Speaker: Ms. Joan Warner, Chairperson, WorldDMB Asia-Pacific</i></li> </ul>
14.30-15:00-	<p><b>CLOSING SESSION</b></p> <ul style="list-style-type: none"> <li>❖ Closing Remarks by WorldDMB <i>Mr. Jorn Jensen, President, WorldDMB</i></li> <li>❖ Closing Remarks by ITU <i>Dr. Eun-Ju Kim, Regional Director, International Telecommunication Union (ITU) Regional Office for Asia and the Pacific</i></li> <li>❖ Closing Remarks by NBTC <i>Col. Dr. Natee Sukonrat, Vice-Chair of the National Broadcasting and Telecommunications Commission, Chair of the National Broadcasting Commission, Thailand</i></li> </ul>

**\*\*\*\*\* END OF WORKSHOP \*\*\*\*\***