DAB+ Digital Radio Workshop: Understanding the Business Case

Progress with DAB+ Trial: Thailand

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Office of NBTC, Thailand
Radio Broadcasting Landscape in Thailand

- AM 193 stations
- FM 313 Stations
- FM trial 5,730

Radio Listener in Thailand: 46% listen to Radio, 669 mins./wk

% Listener by Location
- Home: 50.91%
- In Car: 35.22%
- Office: 11.62%
- Others: 2.25%

% Listener by Device
- Radio in Car: 24.3%
- Kitchen Radio: 29.5%
- PC/notebook/tablet: 2.8%
- Mobile (via internet): 5.7%
- Mobile (via antenna): 3.5%
- SmartTV: 2.7%
- Radio in Car: 24.3%
- Kitchen Radio: 29.5%
- Mobile (via internet): 5.7%
- PC/notebook/tablet: 3.5%
- Mobile (via antenna): 2.8%
- SmartTV: 1.9%

% Listener by Content Category
- Song: 29.5%
- Info & News: 24.3%
- Traffic Report: 5.7%
- Live Sport: 2.8%
- Dhamma: 2.7%
- Talkshow: 1.9%
- Interview: 1.3%

Source: NBTC, user survey 2016
## NBTC Digital Radio Study Projects in Thailand

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
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<tbody>
<tr>
<td>Radio User Survey, Develop Radio Broadcasting Indicators, Cost Base Analysis to deploy Digital Radio</td>
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<tr>
<td>Capacity Building: Workshops/Conferences</td>
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<tr>
<td>Frequency Planning for Digital Radio Trial</td>
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</tbody>
</table>

Source: NBTC
NBTC Notification on Frequency Plan for Digital Radio Trial

Frequency Plan for Digital Radio Trial: 10 cities (9 provinces)

Source: NBTC

ITU-R BS.1160-7 (10/2015)
**Trial Coverage Prediction: Bangkok and Vicinity**

**Coverage Prediction**
- Coverage Area: 6,092 km²
- Radius: 44 km
- Coverage HHs: 4.55 mHHs

**Some Technical Parameters**
- System: DAB+ (ETSI EN 300 401 v2.1.1 (2017-01))
- Frequency Range: VHF Band III (174-230 MHz)
- Multiplex: OFDM
- Audio Coding: MPEG4 HE AAC v2 (ETSI TS 102 563 v1.2.1 (2010-05))
- Mode: DAB+ Mode1
- Bandwidth: 1,536 MHz
- Max ERP: 10 kW
- Protection Level: 3A
- Code Rate: ½
- C/N: 11.8 dB
- Bit Rate: 1,152 kbps

*Source: Broadcasting Technology and Engineering Bureau, NBTC*
Objective
- Finding proper network parameters in different environments
- To demonstrate interference free audio
- Introduce new services (Slideshow, Data, EWS, EPG, Pop-Up Services)
- Develop business models

Trial Area/Period
- Bangkok and Vicinity
- Target to on-air in April 2019
- Trial period: 20 months

Trial System/Network
- DAB+
- 1 Multiplex (up to 18 services)

Trial Programs
- 11 trial services (programs) + 1 Test Channel
- Selecting criteria
  - Top 10 popular channels (commercials)
  - Public services (Traffic info: Jor Sor 100)
  - Major incumbent radio broadcasters (RTA, MCOT, PRD)

Source: NBTC
Project DAB+ Digital Radio Trial: Scope

Technical Test: Signal measurement and monitoring, adjust parameters in each condition (indoors, in car)

Recievers: Table Radio, portable radio, radio in car, Hybrid Radio

Services Tests: Audio, new services (TPEG, EWS, EPG, Pop-up Radio, Service following Hybrid Radio)

Capacity Building and Cooperation with stakeholders & International Org.

Business Model Development, Project evaluation and User Survey

Distribute Receiver for test: 5 models/3,100 units

Source: NBTC
<table>
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<tr>
<th>Trial Radio Stations</th>
<th>Content Provider</th>
<th>Broadcaster</th>
</tr>
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<tbody>
<tr>
<td>01 LTM FM 95</td>
<td></td>
<td>MCOT</td>
</tr>
<tr>
<td>02 Cool Fahrenheit FM 93</td>
<td></td>
<td>RS</td>
</tr>
<tr>
<td>03 JS. 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04 FM One 103.5</td>
<td></td>
<td>BEC Tero Radio</td>
</tr>
<tr>
<td>05 HITZ FM 95.5</td>
<td></td>
<td>A-Time</td>
</tr>
<tr>
<td>06 Green Wave FM 106.5</td>
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<td>Radio Thailand FM 92.5</td>
<td>Radio Thailand</td>
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<tr>
<td>Bangkok Smile FM 94</td>
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<tr>
<td>ThaiPBS Radio</td>
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<tr>
<td>FM 101 Radio Report One</td>
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Ch12: Test Channels
Set up regular meeting for DAB+ digital radio trial

- DAB+ Trial Meeting: Broadcasters, Network Operators, Vendor, Receiver Manufacturers, Car Association of Thailand, Consultants, Office of NBTC, RTA,
- Discussion Issues: Test Plan, Rollout Progress, Service Scenarios, Communication Plan, Technical and Service Test, Receiver, User Survey and evaluation

Source: NBTC
DAB+ Trial in Thailand (Bangkok): 3 Phases

- DAB+ Trial Preparing (Nov 2018 - Mar 2019)

- **Phase 1 – Technical Test (Apr 2019 ->)**
  - Signal Measurement Test
  - Test Basic Services

- **Phase 2 – Launch Basic Services (Jul 2019 - >)**
  - Audio services
  - Metadata: DLS Text, SLS Slideshow images
  - Broadcast data: SI Logos, PI
  - Pop-up services
  - Test advance services
  - Digital Radio Workshop (SOMRI 5th:WG-ADB Meeting)

- **Phase 3 – Launch Advanced Services (Jan 2019 - > 2020)**
  - TPEG: Traffic information, Traffic conditions
  - Announcements: Traffic, News, Emergency Warnings (EWS)
  - Service Following DAB ⇔ FM
  - Hybrid Radio

Source: NBTC
THANK YOU

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