



Asia-Pacific  
Broadcasting  
Union



world **dab**

## DAB+ Digital Radio - Technical Workshop

*New developments in DAB+ systems*

18-20 July 2023



## Session : First DAB+ steps- Thailand

### 19<sup>th</sup> July 2023

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# Thailand National Plan for Digital Radio Broadcasting Services



Act on Organization to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunication Service (aka NBTC Org. Act.) B.E. 2553, 2560, 2562 (2010/2017/2019)



Thailand Digital Economy and Society Development Plan

NBTC: The first Thailand Broadcasting Master Plan (2012-2016, extended)  
Strategic No. 6 Transition from Analog to Digital Broadcasting



NBTC: The second Thailand Broadcasting Master Plan (2023-2025)  
Strategic No. Strategy 1: Developing Thailand's radio broadcasting business to meet international standards with dynamics in accordance with digital context

Target>>





# NBTC Study Projects on Digital Radio Broadcasting in Thailand



Reports are available on NBTC website <https://broadcast.nbt.go.th/home/>

**Develop Roadmap and Strategies to deploy Digital Radio Services**



**Radio User Survey, Develop Radio Broadcasting Indicators, Cost Base Analysis to deploy Digital Radio**



**Capacity Building: Workshops/Conferences**



**Study Radio Broadcasting Trend and Develop Guideline for regulation for future**



**Draft Radio Development Plan (Policy Paper), Social & Economics impact to deploy Digital Radio, Draft Radio Broadcasting Roadmap**



**Frequency Planning for Digital Radio Trial**



**Handbook: Guideline Digital Radio Broadcasting services (Regulatory Framework, Technology, Network Planning, Country Benchmarking, Guideline for trial)**



**Demand Survey on Digital Radio Broadcasting Services, Nationwide Planning and cost estimation (Y2023)**



THAMMASAT UNIVERSITY  
FACULTY OF PUBLIC HEALTH



# DAB+ Digital Radio Trial in Bangkok and main cities



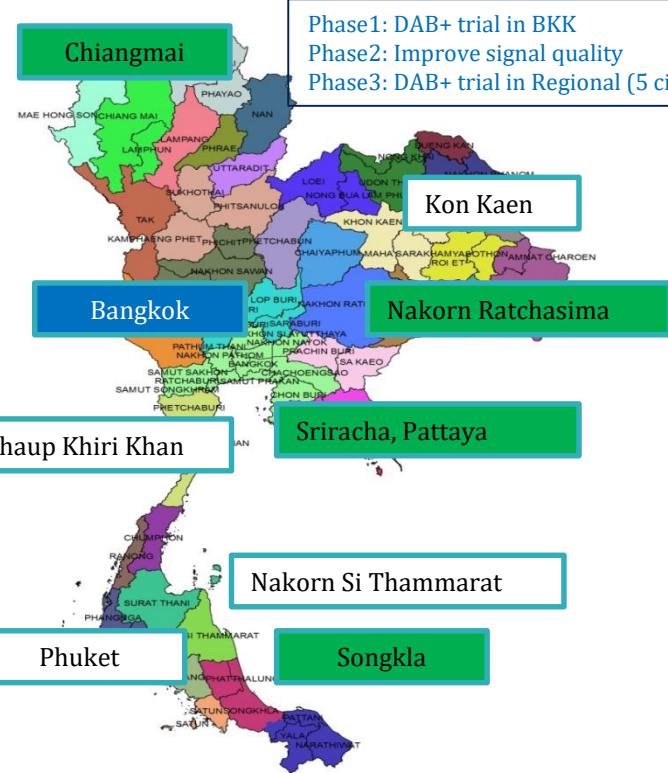
NBTC Notification on Frequency Plan for DAB+ Digital Radio Trial

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

## Some Technical Parameters

|                   |   |
|-------------------|---|
| System:           | DAB+<br>(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<br>(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:        | 1/2   |
| C/N:              | 11.8 dB   |
| Bit Rate:         | 1,152 kbps  |

ITU-R BS.1160-7 (10/2015)





# Project DAB+ Digital Radio Trial



## MOU-NBTC and Royal Thai Army

- 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

Technical Test:  
Signal measurement and monitoring, adjust parameters in each conditions (indoor, in car)

Receivers:  
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 on stakeholders & International Org.

Business Model Development, Project evaluation and User Survey





# Trial : Bangkok and Vicinity



## Coverage Prediction

## Broadcaster

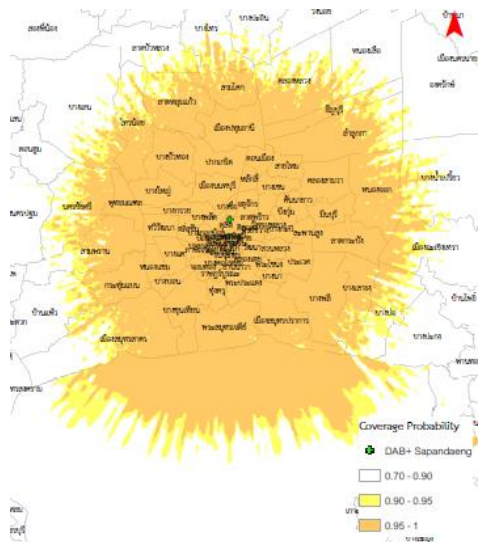
## Service Monitoring

## Digital Radio Logo Contest

Power: 10 kW ERP  
 •Center Freq.: 185.35MHz (Block 6C)  
 Mobile Reception : Pop Coverage 10.4 M  
 Portable Reception: Pop Coverage 9.5 M



## Services on Air





# Meeting/Conference/Capacity Building: Digital radio



- 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
- National and International Conference
- Capacity Building: Digital Radio Training in regional area



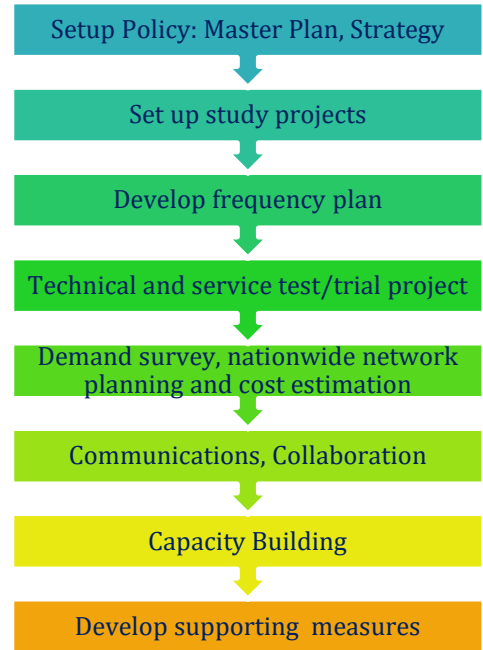


# Key Success Factors for Digital Radio Deployment



|                        |   |
|------------------------|---|
| Coverage               | 95% Population Coverage<br>Clear Network Deployment Plan<br>Phasing: Deploy in main cities, main roads and then expand to cover nationwide  |
| Service                | Improve Audio Quality<br>Reduce interference<br>Digital platform introduce new services (PAD, text, image, Slide show, PopUp Radio, EWS,) variety content, interactive that can create new value and increase listening time                          |
| Receiver               | Variety models: Fixed/Portable/ Mobile Receiver<br>Promote Receiver in Car<br>Support variety sales channels: Retail shop/Online  |
| Feedback from Listener | Conduct survey regularly to know/understand user behavior : to develop/ adjust strategy and content   |
| Policies, Licensing    | Clear policies, licensing frameworks and operations   |
| Share Network/Facility | To reduce redundant network cost  |
| Support Competition    | Market condition must flexible<br>Having competition in CONTENT   |
| Capital Investment     | CAPEX and OPEX to provide services<br>Financial condition of network providers and broadcasters must have good financial condition in the long run  |
| Collaboration          | Collaboration all stakeholders/sectors (Regulator, Network Providers, Broadcasters, Retail Shop, Car Manufacturers)   |
| Communications         | Create awareness, understanding, willing to adopt digital radio broadcasting services<br>All communication channels (Radio, TV, Print Media, Mass transportation, Billboard, Online)<br>Organized events in all sectors related to radio broadcasting |

## What need to be done





# THANK YOU



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