

# ABU Digital Broadcasting Symposium 2019: Digital Transition and Transformation



## DAB+ Digital Radio Workshop: Understanding the Business Case Progress with DAB+ Trial: Thailand 4 March 2019, Kuala Lumpur

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Office of NBTC, Thailand





# Radio Broadcasting Landscape in Thailand



## Main Radio Station



AM 193 stions



FM 313 Stations

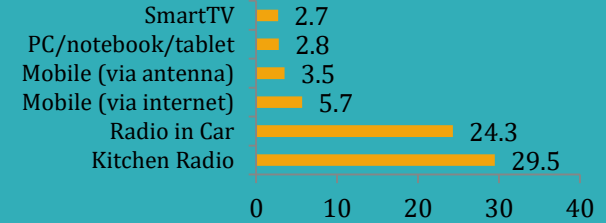
## Trial Radio Station (Temporary)



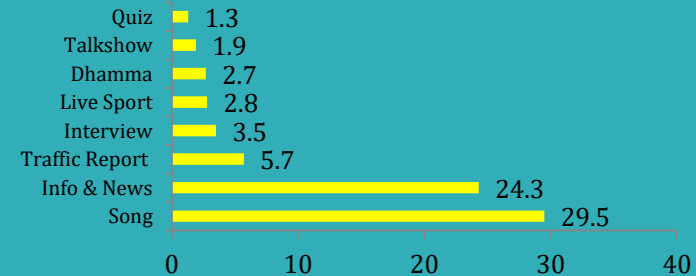
FM trial 5,730

## Listener By Device/ Content

### % Listener by Device

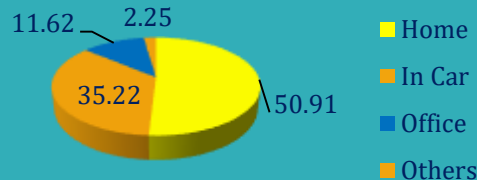


### %Listener by Content Category



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

### % Listener by Location



Source: NBTC, user survey 2016



# NBTC Digital Radio Study Projects in Thailand



**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**



**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)**



Source: NBTC



# NBTC Notification on Frequency Plan for Digital Radio Trial

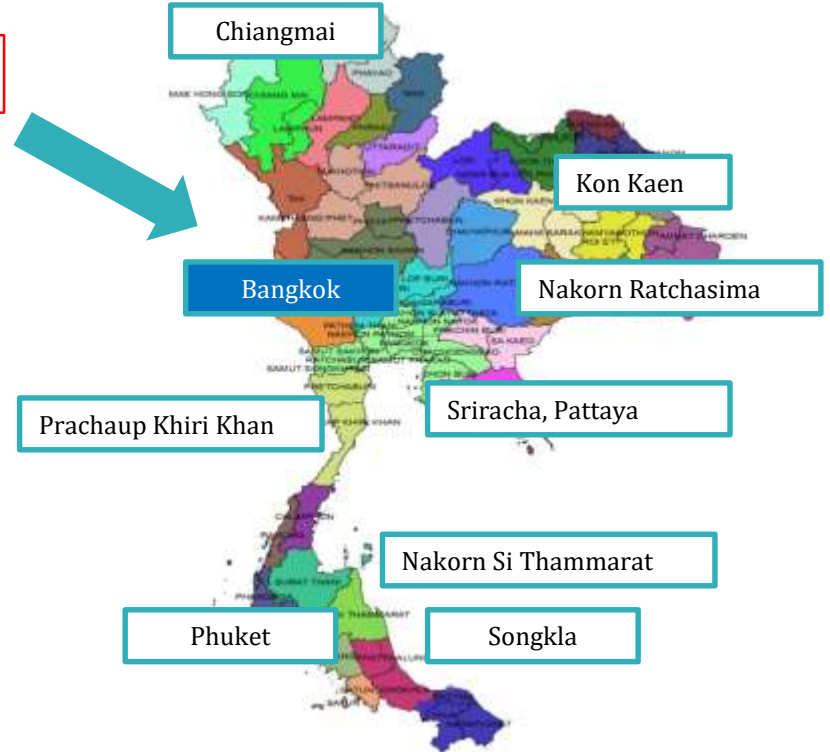


ตารางที่ 6 ตารางแผนความถี่วิทยุกระจายเสียงระบบดิจิทัลเพื่อการทดลองหรือทดสอบ

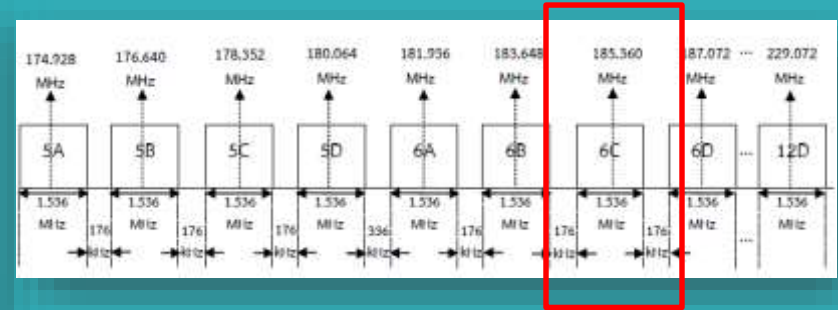
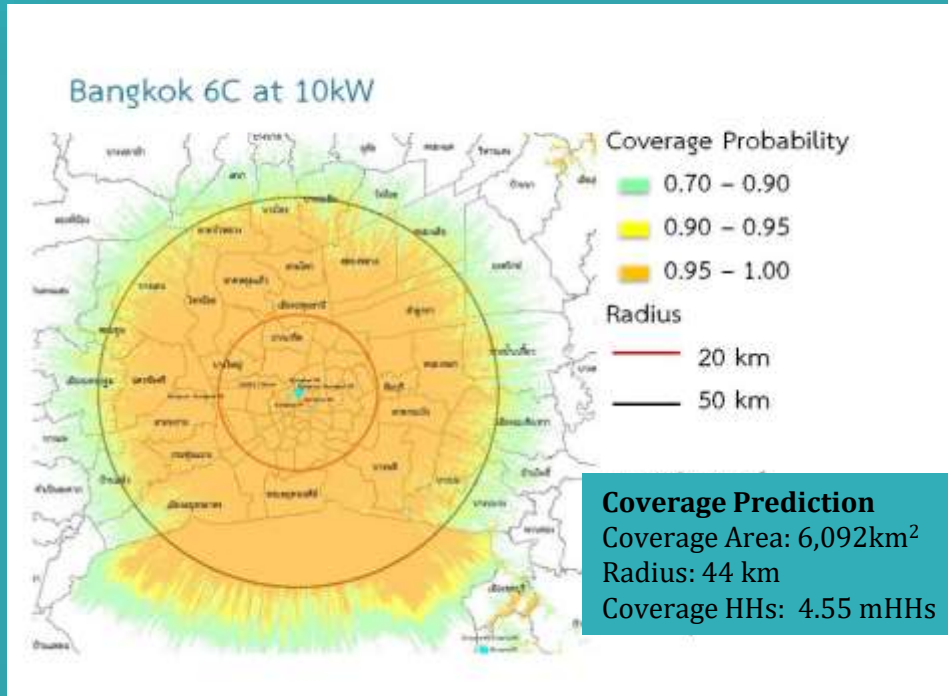
No.	Sub No.	Station Name	Lat (N)	Long (E)	Ch.	Block	Center Freq. (MHz)	Max. ERP (kW)	POL	Ht (m)
1.	1.1	Bangkok #1	13.790514	100.525346	6	B	183.648	1.00	V	185
	1.2	Bangkok #2	13.790514	100.525346	6	C	185.360	5.00	V	185
	1.3*	Bangkok #3	13.790514	100.525346	10	C	213.360	2.00	V	185
2.	2.1	Chiang Mai #1	18.853972	98.959528	6	C	185.360	10.00	V	120
	2.2	Chiang Mai #2	18.853972	98.959528	8	C	199.360	10.00	V	120
	2.3	Chiang Mai #3	18.853972	98.959528	10	C	213.360	10.00	V	120
3.	3.1 <sup>†</sup>	Pattaya #1	12.921483	100.866270	10	B	211.648	0.50	V	60
	3.2*	Pattaya #2	12.921483	100.866270	10	C	213.360	1.00	V	60
	3.3 <sup>‡</sup>	Pattaya #3	12.921483	100.866270	10	D	215.072	0.50	V	60
4.	4.1 <sup>†</sup>	Sriracha #1	13.189822	100.950564	10	B	211.648	0.40	V	43
	4.2*	Sriracha #2	13.189822	100.950564	10	C	213.360	2.00	V	43
	4.3 <sup>‡</sup>	Sriracha #3	13.189822	100.950564	10	D	215.072	0.50	V	43
5.	5.1	Khon Kaen #1	16.453378	102.950160	6	B	183.648	2.00	V	136
	5.2	Khon Kaen #2	16.453378	102.950160	6	C	185.360	10.00	V	136
	5.3	Khon Kaen #3	16.453378	102.950160	10	C	213.360	10.00	V	136
6.	6.1	Nakhon Ratchasima #1	14.947722	102.003760	9	C	206.352	0.50	V	153
	6.2	Nakhon Ratchasima #2	14.947722	102.003760	11	C	220.352	1.00	V	153
	6.3	Nakhon Ratchasima #3	14.947722	102.003760	11	D	222.064	0.25	V	153
7.	7.1	Nakhon Si Thammarat #1	8.366633	99.977356	6	C	185.360	0.20	V	97
	7.2	Nakhon Si Thammarat #2	8.366633	99.977356	8	C	199.360	0.20	V	97
	7.3	Nakhon Si Thammarat #3	8.366633	99.977356	10	C	213.360	0.20	V	97
8.	8.1	Phuket #1	7.898639	98.395630	8	B	197.648	0.20	V	70
	8.2	Phuket #2	7.898639	98.395630	8	C	199.360	0.25	V	70
	8.3	Phuket #3	7.898639	98.395630	10	C	213.360	0.20	V	70
9.	9.1	Prachuap Khiri Khan #1	12.565142	99.935176	6	D	187.072	10.00	V	55
	9.2	Prachuap Khiri Khan #2	12.565142	99.935176	8	B	197.648	2.00	V	55
	9.3	Prachuap Khiri Khan #3	12.565142	99.935176	8	C	199.360	10.00	V	55
10.	10.1	Song Khla #1	7.037696	100.518640	9	C	206.352	0.20	V	80
	10.2	Song Khla #2	7.037696	100.518640	9	D	208.064	0.10	V	80

หมายเหตุ \*<sup>†</sup>, \*<sup>‡</sup> และ \*<sup>‡</sup> หมายถึง ใช้งานด้วยความถี่แบบโครงข่ายความถี่เดี่ยว (Single Frequency Network)

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



# Trial Coverage Prediction: Bangkok and Vicinity



Source: Broadcasting Technology and Engineering Bureau, NBTC

## 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:  $\frac{1}{2}$

C/N: 11.8 dB

Bit Rate: 1,152 kbps

Source: NBTC



# Project Digital Radio Trial: 2018-2020



## MOU: NBTC and Royal Thai Army



### 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)



# Project DAB+ Digital Radio Trial: Scope



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  
of stakeholders  
& International  
Org.

Business Model  
Development,  
Project evaluation  
and User  
Survey

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

Table/Kitchen Radio



Hybrid Radio



Radio in Car



Portable





# Trial Radio Stations



Content Provider

Broadcaster

- 01 LTM FM 95
- 02 Cool Fahrenheit FM 93
- 03 JS. 100
- 04 FM One 103.5
- 05 HITZ FM 95.5
- 06 Green Wave FM 106.5



MCOT



RS



BEC Tero Radio



A-Time







# Trial Radio Stations



Content Provider

Broadcaster

- 07 MET 107
- 08 Radio Thailand FM 92.5
- 09 Bangkok Smile FM 94
- 10 ThaiPBS Radio
- 11 FM 101 Radio Report One



MCOT



Radio Thailand



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, Reciver, User Survey and evaluation



1Mar2019



22 Jan2019





# DAB+ Trial in Thailand (Bangkok): 3 Phases



- DAB+ Trial Preparing (Nov2018-Mar2019)
- **Phase 1 – Technical Test (Apr2019->)**
  - Signal Measurement Test
  - Test Basic Services
- **Phase 2 – Launch Basic Services(Jul2019->)**
  - Audio services
  - Metadata: DLS Text, SLS Slideshow images
  - Broadcast data: SI Logos, PI
  - Pop-up services
  - Test advance services
  - Digital Radio Workshop (SOMRI 5<sup>th</sup> :WG-ADB Meeting)

## **Phase 3 –Launch Advanced Services (Jan2019-> 2020)**

- TPEG : Traffic information, Traffic conditions
- Announcements :Traffic, News, Emergency Warnings (EWS)
- Service Following DAB ↔ FM
- Hybrid Radio

# THANK YOU



Ms. Orasri Srirasa



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VOLUME

