OUTLINE

5G TECHNICAL PREPARATION

IMT SPECTRUM ROADMAP
**Existing IMT Bands in Thailand**

- **850/900 MHz** (Total: 2 x 40 MHz)
- **1800 MHz** (Total: 2 x 75 MHz)
- **2100 MHz** (Total: 2 x 60 MHz)
- **2300 MHz** (Total: 60 MHz)
- **700 MHz** (Total: 2 x 30 MHz)
- **700 MHz** (Total: 2 x 15 MHz)
- **2600 MHz** (Total: 190 MHz)
- **3.4 GHz** (Total: 0.3 GHz)

**Bands soon to be used for IMT**

- **26 GHz** (24.25-27 GHz) (Total: 2.75 GHz)
- **28 GHz** (27-29.5 GHz) (Total: 2.5 GHz)
Thailand SMMP (B.E. 2562)

- 850/900 MHz
  - Annex 1

- 1800 MHz
  - Annex 1

- 700 MHz
  - T-P4
  - Annex 1

- 1500 MHz
  - T-P6

- 2600 MHz
  - T-P8

- 2300 MHz
  - T-P7

- 2100 MHz
  - Annex 1

- 450-470 MHz
  - T-P12
  - Annex 1

- 26 GHz
  - T-P12

- 28 GHz
  - T-P11

- 3.4 GHz

T-IMT

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Objective: To find the following optimal parameters for sharing and compatibility

1. Separation distance between FSS and IMT stations
2. Possible guard band
3. Possible filter for interference mitigation
Field Trial Setting

Case 1: Sub-urban
Case 2: Urban

Satellite
Operating Frequencies: 3.4-4.2 GHz

Technical Parameters
- Separation Distance
- Guard band
- Applied Filter

5G C-Band NR
Operating Frequencies: 3.4-3.7 GHz

Varied distance
TV Set
Spectrum Analyzer

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REGULATORY SANDBOX (enforceable)

In the sandbox

- Area based regulatory sandbox
- Loosen regulation during the phase of R&D and pre-commercial stage to allow some unexpected outcomes in confined and observed areas
- Manageable interference cases
- Maximum 2 years of license
- With privacy and security compliance

Outside the sandbox

Typical regulation in force
PILOT SANDBOX AREAS

Chiang Mai
Khon Kaen
Bangkok
Eastern Economic Corridor (EEC)
Songkhla (Hat Yai)
Regulatory Sandbox Process

1. Proposal Submission
2. Sandbox Approval
3. Inform public on Sandbox detail condition
4. Proposal submission (access sandbox area)
5. Grant permission to Sandbox user
6. User proposal submission
7. Disclose a list of licensees in Sandbox Area

- For research and development
- For testing the interference
- To test the network system before commercial use
NBTC IMT Roadmap

THE DRIVES TOWARD CONNECTED SOCIETY

NBTC   TELECOM
"Tentative" SPECTRUM ROADMAP FOR MOBILE TELECOMMUNICATIONS IN THAILAND (under consultation process)

**Proposals IMT 2020**
- Release 15: 5G Start for Enhanced MBB (eMBB)
- Release 16: Support Ultra Reliability and Low Latency Service (eMBB + uRLLC)
- Release 17: A Platform Servicing All Industry (eMBB + uRLLC + mMTC)

**ITU IMT 2020 Specifications**
- Release 15: 5G Start for Enhanced MBB (eMBB)
- Release 16: Support Ultra Reliability and Low Latency Service (eMBB + uRLLC)
- Release 17: A Platform Servicing All Industry (eMBB + uRLLC + mMTC)

**Frequency bands for mobile communication**
- 700 MHz
- 1500 MHz
- 1800 MHz
- 2600 MHz
- 3400-3700 MHz
- 26/28 GHz

**Criteria & Procedure**
- Auction & Licensing
- Refarming Process

**Total IMT Bandwidth**
- 3430 MHz

**5G Deployment and Commercialization**
- 5G Testbed with 4 universities
- 5G Interference monitoring

**NBTC | TELECOM 2019-2023**
- Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
5G: SPECTRUM ALLOCATION

700 MHz
Expected Use: 1 October 2020

“Tentative”

2.6 GHz

26 GHz
Expected Use: Q1 of 2020
MULTIBAND AUCTION 2.6GHz & 26/28GHz SPECTRUM PACKAGES

- **2.6 GHz TDD**
  - 190 MHz (2500 - 2690 MHz)
  - National licenses

- **26 GHz**
  - 1600 MHz

- **26 GHz**
  - 1100 MHz
  - Specific area licenses
  - Administrative Cluster: 18 Zones

“Tentative”

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Thank You