Considerations for 5G Spectrum Harmonization

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Why global harmonization?

Spectrum harmonization is important for:

- easiness of **global roaming** for mobile communication
- low cost device by global economy of scale
- avoidance of interference issue with neighboring countries
- value creation of spectrum for licensee

In reality, difficulty for IMT spectrum **below 6 GHz**:

- a few available bands due to heavy use of incumbent services and different usages in country by country
- not enough to get contiguous **wide bandwidth**
- not easy to coexist with existing services/applications taking into account IMT coverage
Why 5G in higher frequency band?

- **Opportunities** in bands above 6 GHz, esp. above 24 GHz
  - contiguous wide bandwidth for performance
  - tolerable path loss within small cells
  - easy coexistence due to small coverage and advancing technologies
  - maximized efficient data delivery by multi-beamforming

- WRC-19 Al 1.13 for IMT in 24.25-86 GHz (Res. 238)
  - 24.25-27.5 GHz*, 31.8-33.4 GHz**, 37-40.5 GHz, 40.5-42.5 GHz**, 42.5-43.5 GHz, 45.5-47 GHz, 47-47.2 GHz**, 47.2-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz

* to take into account EESS (s-E) and SRS (s-E) in the band 25.5-27 GHz

**may require additional mobile allocation on a primary basis
28 GHz band will be a practical solution for 5G initiation
  - introduce 5G trial at PyeongChang Winter Olympic Games in Feb. 2018 within the band 26.5-29.5 GHz (focusing on the band 27.5-28.5 GHz)
  - more than 30 stations using 28 GHz band are testing in Seoul, PyeongChang and other cities

* The band 3.4-3.7 GHz is positively considered for 5G as well as LTE.

Strategy for 5G Eco environments in higher band
  - prepare early 5G market in 28 GHz band and facilitate 5G commercialization
  - at WRC-19, achieve global/regional harmonization in 24.25-86 GHz taking into account technical solution
**Technical solution for harmonization**

**Harmonization by implementation aspects** (Doc. WRC-15/102A24R1)

- multi-band plan on a single device
- similar to 3GPP band plan implementation
- To give flexibility for administration to select band plan

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**Diagram:**

- **24.25-29.5GHz**
- **24.25 / 25.5**
- **27 or 27.5**
- **29.5**

- **Block A**
  - (Country A, B, C, ...) or (Region A, B, C, ...)

- **Block B**
  - (Country D, E, F, ...) or (Region D, E, F, ...)

**Legend:**

- **Same hardware implementation as single band**
- **Each region/administration can choose its preferred block**
Thank you!

Questions? Answers!