



# Spectrum Issues Related to 5G: A Satellite Industry Perspective

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# Big Challenges Requires Many Solutions Only a MIX of TECHNOLOGIES will realise 5G Objectives

Mind-sets must change











Satellite

By 2020, LTE will cover

63% of the worlds population but only

37% of the landmass.



### **5G Frequency bands**

#### **Finding Long-Term Sustainable Solutions**

- ◆ ITU WRCs convene the largest consensus-building process in the world
- They consider all countries needs: from the largest & richest to the smallest and poorest
- ICTs should be for all & are key to achieving SDGs
- ⇒ WRC outcomes should be respected
- **⇒** CEPT does respect WRC15 outcomes





## **5G Frequency bands 26 GHz (24.25 – 27.5 GHz)**

- ♦ Identified by global consensus at WRC15
- **♦** Candidate Band for Global Harmonisation

26GHz

- Need to respect technical study findings:
  - Measures to protect FSS space stations
    - **❖ Limit the aggregate IMT interference into FSS space receivers through a limit on the Total Radiated Power (TRP) for IMT base station of 37 dBm/200 MHz.**
    - The main beam of IMT base stations should not point above the horizon
    - These measures simply are following the assumptions made in the studies
  - Measures for FSS earth stations
    - **❖** Need to adopt provisions to enable deployment of future FSS earth station, www.esoa.net



**♦** Identified by global consensus at WRC15

37.5-43.5GHz

- **♦ NOT Candidate Band for Global Harmonisation**
- HDFSS identifications in ITU Region 1 are below 40.5 GHz. In order to provide a necessary balance we favor an IMT identification in Region 1 only <u>above</u> 40.5 GHz
  - Such identification would need appropriate regulatory measures to protect and enable sustainable, viable access for the FSS.
- ◆ CEPT has prioritized the band 40.5-43.5 GHz for IMT. There is no need to identify the entire range 37.5-43.5 GHz for IMT. IMT devices with a tuning range do not need IMT identifications to be effective
- ◆ The band will be used by future satellites some are already under construction

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- ♦ Identified by global consensus at WRC15
- **♦** Candidate Band for Global Harmonisation

66GHz+

- Close to 57-66 GHz: already designated / used for WiGig
- Existing primary ITU allocation for terrestrial mobile
- Doubles the available spectrum for terrestrial mobile 5G services
- Provides future-proofing for 5G/IMT-2020



- ♦ NOT identified at WRC15
- ♦ NOT Candidate Band for Global Harmonisation

28GHz

- **♦ CEPT position respects WRC15 outcomes**
- US position comes from a historically different approach to this band (no satellite co-primary status in US)
- Satellite had co-primary status in Rest of World => drove significant investments in this band
- By 2020, over 100 satellite systems using Ka Band globally



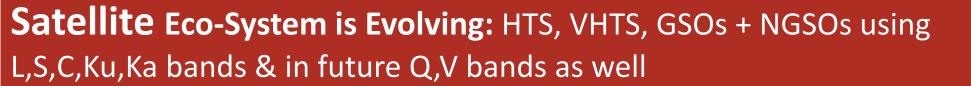
#### **Conclusion: All technologies have a role to play**

Each requires continued access to spectrum

Wi-Fi Eco-System is Evolving: Gigabit WiFi chips + devices becoming

available: 200m radios shipped in 2017, 2020: >1bn

"WiGiq"





#### **Mobile Eco-System is Evolving:**

Germany, Italy, Australia: carrier aggregation delivering up to 900 Mbps

Field Tests in UK & US: >20 Gbps delivered in 70GHz bands



- On commercially viable basis
- No interference with / loss of existing services
  - **Using Existing Spectrum** •