

Satellite Communications

TRANSFORMING LIVES

Spectrum Issues Related to 5G : A Satellite Industry Perspective

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20 operators • Global & Regional • CEO driven

Big Challenges Requires Many Solutions

Only a MIX of TECHNOLOGIES will realise 5G Objectives

Mind-sets
must
change



WiFi

~~OR~~
AND



Mobile

~~OR~~
AND



Satellite

By 2020, LTE will cover
63% of the worlds population but only
37% of the landmass

Source: OpenSignal

- ◆ 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



- ◆ 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



◆ Identified by global consensus at WRC15

◆ NOT Candidate Band for Global Harmonisation

37.5-43.5GHz

- ◆ 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 above 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

- ◆ 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 *“WiGig”*



Satellite Eco-System is Evolving: HTS, VHTS, GSOs + NGSOs using L,S,C,Ku,Ka bands & in future Q,V bands as well

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 •