

TSDSI Tech Deep Dive 2020 Conference

WRC19 Outcomes: Spectrum Assignment and Recommended Studies

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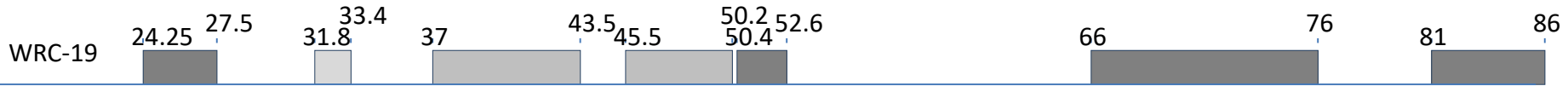
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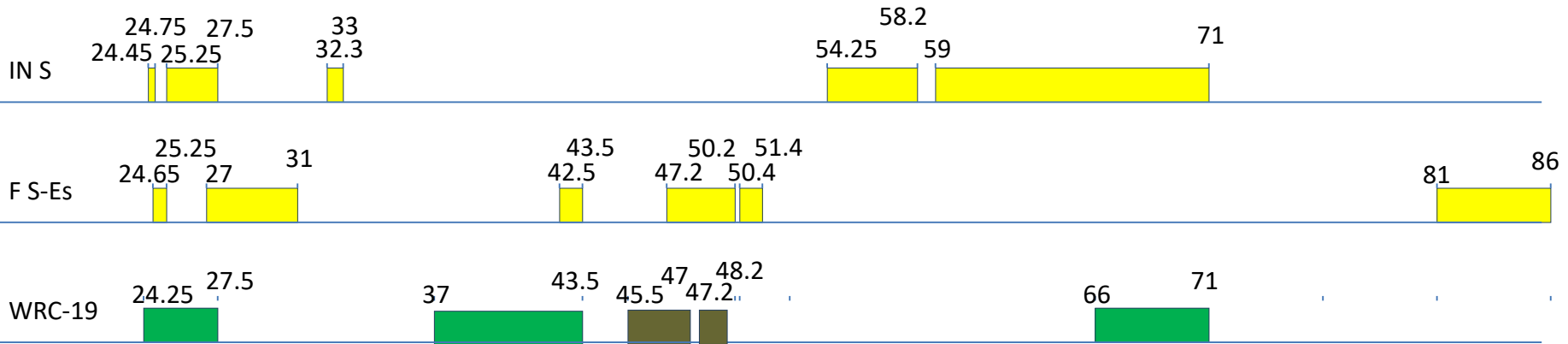
20 Oct 2020

Agenda item 1.13 (International Mobile Telecommunication)

Identified bands (in GHz) for study at ITU-R for IMT during WRC-15



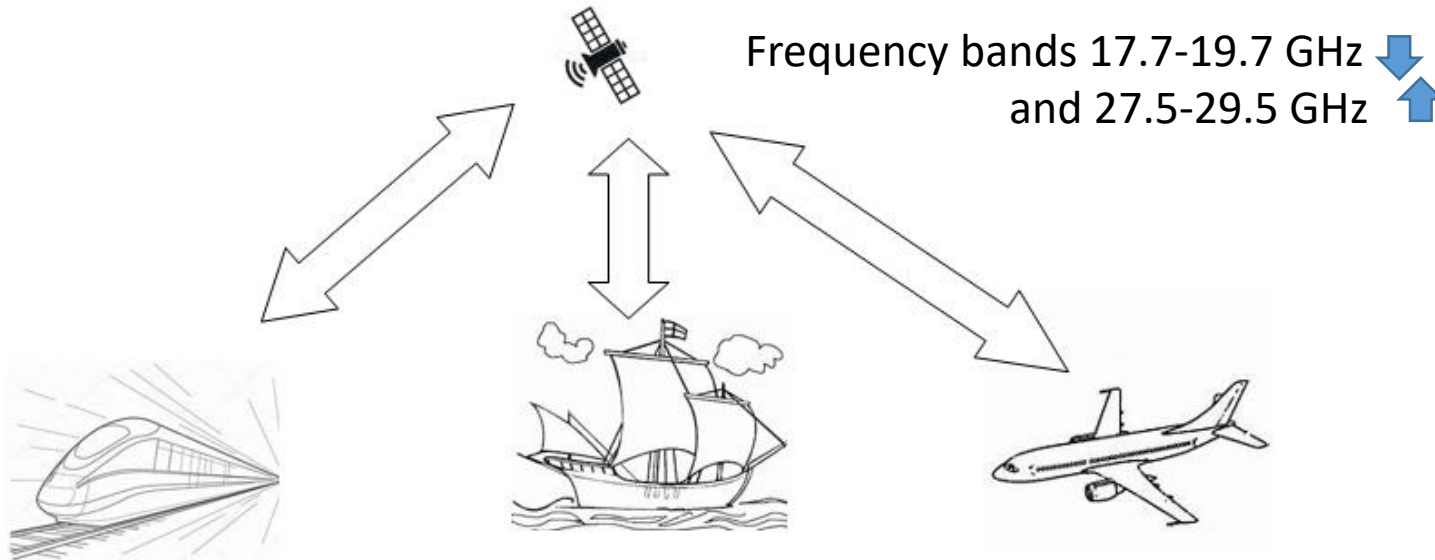
Outcome of WRC-19 for implementation of IMT



Technical limits/Regulatory framework:

- 1) Effective Isotropic Radiated Power (eirp), 30dBW/200MHz per beam, is limited from base station antenna beams with ± 7.5 degrees in the direction of Satellites in band 24.45-27.5 GHz, 42.5-43.5 GHz and 47.2-48.2 GHz.
- 2) Out-of-band emission, $-33/-29$ dBW/200 MHz, (from band 24.25-27.5 GHz to 23.6-24 GHz) is limited from base/mobile stations brought into use before 1 September 2027. And later limit of $-39/-35$ dBW/200 MHz.
- 3) Out-of-band emission, (TRP) $-43/-23$ dBW/200 MHz, (from band 37-40.5 GHz to 36-37 GHz) is limited from base/mobile stations.

Agenda item 1.6 (Earth stations in motion (ESIM))



ESIM (Land, Maritime and Aeronautical) vs Non-Geo stationary satellite

Eirp density defined toward NGSO

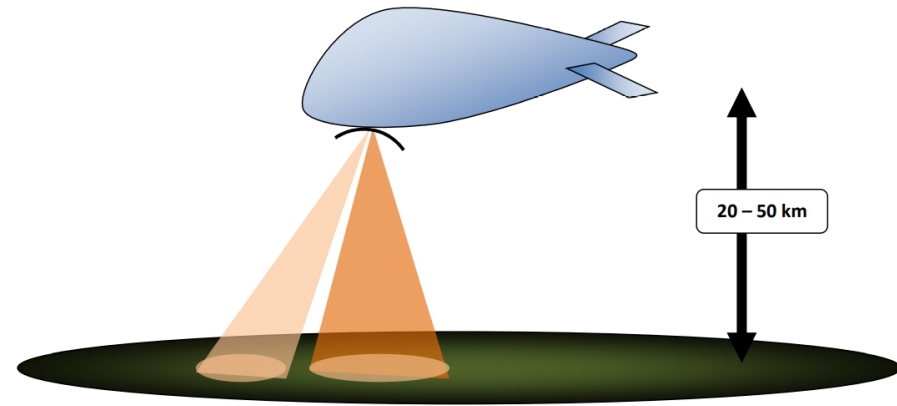
ESIM-Maritime vs terrestrial

Beyond 70 km no coordination with administration, and toward land e.i.r.p. spectral density towards the horizon shall be limited to 24.44 dB(W/14 MHz).

ESIM-Aeronautical vs terrestrial

In order to give protection two power flux density on the surface of Earth was approved one at above 3 km and second below 3 km.

High altitude platform station (HAPS) systems



Worldwide identification :

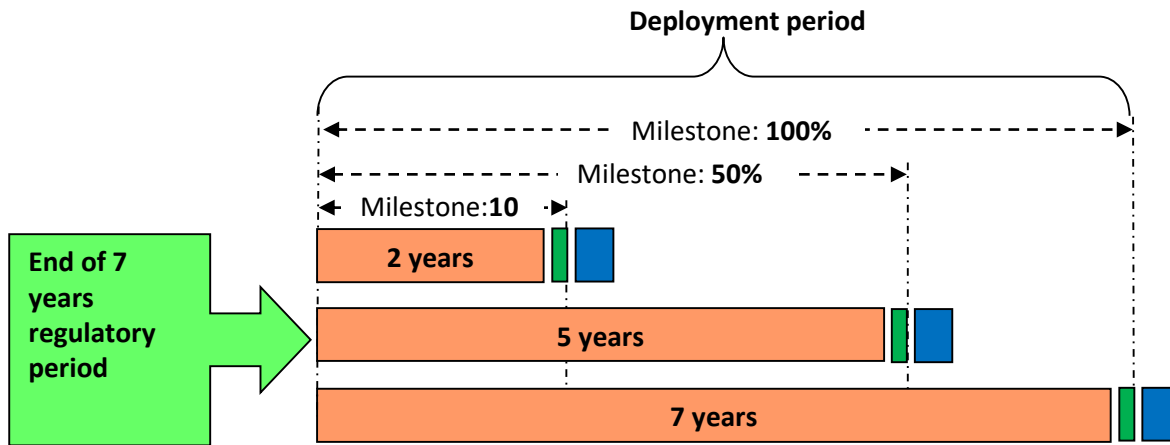
31-31.3 GHz, 38-39.5 GHz, 47.2-47.5 GHz and 47.9-48.2 GHz

Protection of service in 31-31.3 GHz

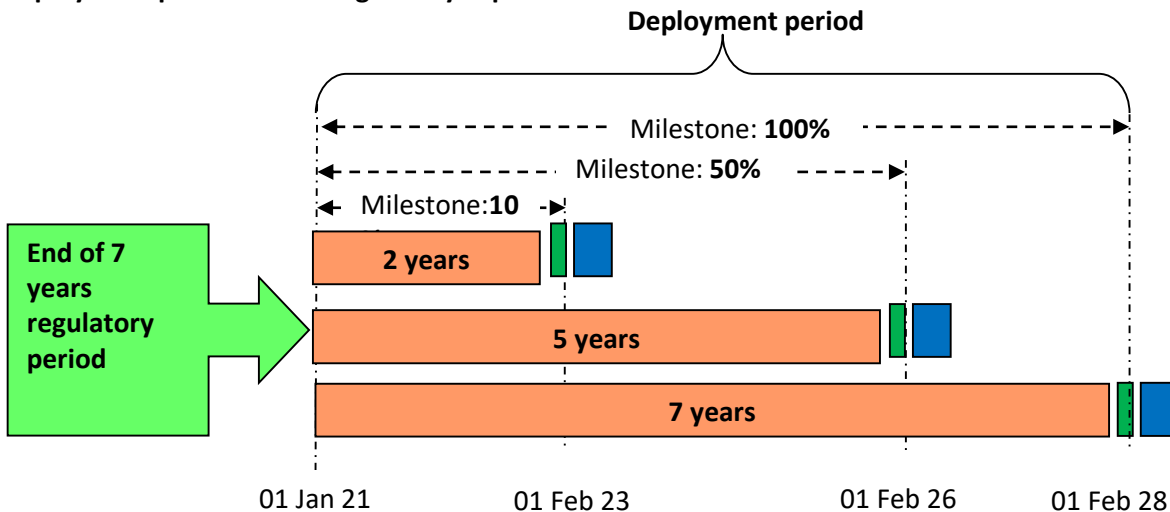
- i) Terrestrial service: Pfd at surface of Earth from HAPS, $-143 \text{ dBW}/(\text{m}^2 \cdot \text{MHz})$ at 0° , and $-90 \text{ dBW}/(\text{m}^2 \cdot \text{MHz})$ at 90°
- ii) EESS(passive): HAPS ground station transmitter out-of band pfd shall be limited to $-83 \text{ dB(W}/200 \text{ MHz)}$
- iii) EESS(passive): HAPS transmitter out-of band eirp density shall be limited to $-8.57 \text{ dB(W}/200 \text{ MHz)}$ at -4.53° , and $-35 \text{ dB(W}/200 \text{ MHz)}$ at 90° ,
- iv) RAS: HAPS ground station transmitter out-of band pfd shall be limited to $-141 \text{ dB(W}/(\text{m}^2 \cdot 500 \text{ MHz}))$
- v) RAS: HAPS transmitter out-of band density shall be limited to $-171 \text{ dB(W}/(\text{m}^2 \cdot 500 \text{ MHz}))$

7A Bringing into use of frequency assignments to all non-GSO systems

Deployment period whose regulatory expire on/after 01 Jan 2021



Deployment period whose regulatory expire before 01 Jan 2021



- 1) No regulation for NGSO
- 2) To deal with warehousing of radio-frequency spectrum and orbit
- 3) 10.70 – 51.40 GHz

WRC-23 agenda for IMT

Sharing and compatibility studies for IMT

- 1) 3 600-3 800 MHz and 3 300-3 400 MHz (Region 2);**
- 2) 3 300-3 400 MHz (Amend footnote in Region 1);**
- 3) 7 025-7 125 MHz (globally);**
- 4) 6 425-7 025 MHz (Region 1);**
- 5) 10 000-10 500 MHz (Region 2),**

Sharing and compatibility high-altitude platform stations as IMT base stations (HIBS)

- 1) 694-960 MHz;**
- 2) 1 710-1 885 MHz**
(1 710-1 815 MHz to be used for uplink only in Region 3);
- 3) 2 500-2 690 MHz**
(2 500-2 535 MHz to be used for uplink only in Region 3,
except 2 655-2 690 MHz in Region 3);

WRC-23 agenda for IMT

Non GSO FSS earth stations in motion

- 1) 17.7-18.6 GHz**
- 2) 18.8-19.3 GHz**
- 3) 19.7-20.2 GHz (space-to-Earth)**
- 4) 27.5-29.1 GHz**
- 5) 29.5-30 GHz (Earth-to-space)**

Review the spectrum in band 470-960 MHz in Region 1 and consider possible regulatory actions in the frequency band 470 694 MHz in Region 1

- Thank you

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