

WRC-27 Agenda items 1.1, 1.2, 1.3 & 1.13

(Arun Kumar)
DWA(ISR)
WPC Wing

Agenda item 1.1: A-ESIM and M-ESIM communicating with FSS space stations in the frequency band 47.2-50.2 GHz and 50.4-51.4 GHz

- A-ESIM and M-ESIM communicating with GSO and Non-GSO satellite networks/systems
 - FS and MS is primary in the bands, IMT in 47.2- 48.2 GHz in several countries and RAS in band 48.94 - 49.04 GHz
 - EESS passive, SRS passive and RAS in adjacent bands
 - Two Methods have been identified:
 - Method A: NOC
 - Method B : A new RR footnote and two new WRC Resolutions providing the regulatory provisions and technical conditions for the operation of aeronautical and maritime ESIMs and protection of the services
 - PFD limits on Earth Surface from A-ESIM and separation distance/EIRP density limits for M-ESIM
- **Preliminary Views:** Actively considering support for Method B. Support the development of an appropriate regulatory framework that facilitates the deployment of A-ESIM and M-ESIM operations with both GSO and non-GSO satellite systems, while ensuring the protection of incumbent services in the frequency bands 47.2-50.2 GHz and 50.4-51.4 GHz and in adjacent frequency bands, including passive services in adjacent and near-adjacent frequency bands in accordance with the results of ITU-R sharing and compatibility studies.

Agenda item 1.2: Revisions of sharing conditions in the frequency band 13.75-14 GHz to allow use of smaller ES antenna

- No. **5.502** and **5.503** provides the sharing conditions for protection of RLS/RNS and SRS in the frequency band 13.75-14 GHz respectively.
 - Studies have been submitted that shows sharing with smaller antenna sizes is possible for GSO networks. Some studies have shown that deployment of small fixed-satellite service (FSS) earth station is likely to have limited or no impact on radiolocation service (RLS) operations outside that administration.
 - Currently, several methods have been identified for Issue A (No. 5.502) and Issue B (No. 5.503). Some of these methods may be merged at the next meeting of WP 4A.
- **Preliminary Views:** Support the ongoing ITU-R studies under Agenda Item 1.2 in accordance with Resolution **129 (WRC-23)**. The studies conducted thus far indicate that the deployment of small fixed-satellite service (FSS) earth station within an administration is likely to have limited or no impact on radiolocation service (RLS) operations outside that administration. In view of the growing demand for additional Ku-band uplink spectrum to support increasing connectivity requirements, we may support an appropriate method that enables the use of smaller antennas.

Agenda item 1.3: Gateway earth stations communicating with Non-GSO systems in the FSS(E-s) (1/2)

- WRC-19 allocated the frequency band 51.4-52.4 GHz to the FSS (Earth-to-space) on a primary basis - limiting the use to gateways ES of GSO networks.
- The in-band and adjacent band services include: FS, MS, FSS, EESS(passive), RAS, SRS(passive), MSS (secondary)
- Three Methods have been identified:
 - Method A : Add 51.4-52.4 GHz band in Table **22-2** to include epfd limits
 - Method B: Allow use of the 51.4-52.4 GHz band by gateway ES communicating with non-GSO FSS space stations - extend the provisions of Nos. **22.5L** and **22.5M**, and associated Resolutions to this new allocation.
 - Method C: Allow use of the 51.4-52.4 GHz band by gateway ES communicating with non-GSO FSS space stations - new provisions for protection of GSO FSS networks from single-entry and aggregate unacceptable interference from non-GSO FSS gateway earth stations
 - All three methods include update to Resolution **750 (Rev.WRC-19)** to ensure protection to EESS (passive) operations in the frequency band 52.6-54.25 GHz and update RR Appendix 7.

Agenda item 1.3: Gateway earth stations communicating with Non-GSO systems in the FSS(E-s) (2/2)

- ▶ **Preliminary Views:** Support the development of an appropriate regulatory framework, including technical conditions and regulatory provisions, for the use of the frequency band 51.4–52.4 GHz by non-GSO gateway earth stations, while ensuring the protection of incumbent primary services and the continued protection of GSO networks.

Support the principle that ITU-R regulatory frameworks for the protection of incumbent primary services should be applied consistently across frequency bands, taking into account the specific technical and operational characteristics of each band.

We note the ongoing discussions regarding the suitability of different regulatory approaches for ensuring the protection of GSO networks in the 51.4–52.4 GHz band. Further ITU-R studies are required, as appropriate, to assess these approaches, including the determination of any necessary technical parameters, protection criteria etc., with a view to ensuring protection of incumbent services and GSO networks.

Agenda item 1.13: MSS allocations for direct connectivity between space stations and IMT user equipment to complement terrestrial IMT network coverage (1/3)

- The candidate frequency bands considered under this agenda item are organized into five Ranges.
- For each range five Methods are under consideration:
 - Method X1: NOC
 - Method X2: a primary allocation to the MSS limited to DC-MSS-IMT systems and draft WRC Resolution
 - Method X3: a secondary allocation to the MSS limited to DC-MSS-IMT systems and draft WRC Resolution
 - Method X4: a new RR footnote to the Table of Frequency Allocations allocating the band to the MSS on a secondary basis to provide DC-MSS-IMT and draft WRC Resolution
 - Method X5: a new RR footnote to the Table of Frequency Allocations associated with the existing MS allocation, enabling the use of MSS limited to provide DC-MSS-IMT, without an allocation to the MSS
- Studies shows that sharing is not feasible with the DC-MSS IMT system with existing operations of MSS systems in the 2 655-2 690 MHz (Earth-to-space) & 2 500 - 2 535 MHz (space-to-Earth). There are also studies with incumbent primary services – BSS, RDSS where the sharing would not be feasible.
- Sharing in the TDD bands may also not be feasible.

Agenda item 1.13: MSS allocations for direct connectivity between space stations and IMT user equipment to complement terrestrial IMT network coverage (2/3)

► Preliminary Views:

- Support on going ITU-R studies under this Agenda Item.
- Frequency bands to be considered under this agenda item should only be from within the frequency bands and their arrangements as included in the Recommendation ITU-R M.1036 and should only be in FDD arrangement.
- Do not support new allocation of the DC-MSS-IMT system in the 2500-2690 MHz band due to incompatibility of sharing the band with incumbent usage by RDSS, existing MSS and BSS systems.
- Support a new secondary allocation to MSS in the table of Frequency allocations with an associated footnote and an accompanying WRC Resolution in the following frequency bands or parts thereof:

Band No.	Uplink Frequency Band (MHz)	Downlink Frequency Band (MHz)
1	703-748	758-803
2	824-844	869-889
3	890-915	935-960
4	1 710-1 785	1 805-1 880
5	1 920-1 980	2 110-2 170

Agenda item 1.13: MSS allocations for direct connectivity between space stations and IMT user equipment to complement terrestrial IMT network coverage (3/3)

► Preliminary Views (contd.):

- The use of the above frequency bands by the mobile-satellite service (MSS) should be limited to direct connectivity between MSS space stations and IMT terminals.
- DC-MSS-IMT operations shall not cause harmful interference to, nor claim protection from, stations operating under the mobile services, including IMT systems. Appropriate aggregate power flux-density (PFD) limits should be established to ensure the protection of mobile /IMT networks. The aggregate PFD produced at the Earth's surface within the territory of any other administration shall not exceed these limits, unless the explicit agreement of the affected administration has been obtained.
- Any action under this agenda item shall ensure the technical measures and regulatory provisions are defined to prevent cross border interference and unauthorized operation of DC-MSS-IMT systems from territory of neighbouring country that has not authorized such operations and clearly define the responsibilities of the notifying administration for the satellite network and the administration authorizing such services within its territory.

THANK YOU