

# **National Workshop on Learnings from WRC-23 and the way forward**

## **WRC-27: Introduction to the Agendas on Satellite services**



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# Outline of Agendas on Satellite services



1

**Communication Services**

2

**Protection of Satellite services from new services**

3

**Space Science services**

4

**Other relevant agenda items**



# Communication Services

## ***Agenda Item 1.1: New Service, ESIMs for in V band (47.2-50.2 GHz and 50.4-51.4 GHz)***

### ***Background:***

- ESIMs, in V band for both GSO and N-GSO (~4 GHz).
- Previous WRC's identified ESIMs for GSO's and N-GSO's in Ka band.
- Aeronautical and Maritime ESIMS , Land ESIMS subject to national prerogative.
- Not to be used for Safety of life applications
- Globally this band is being used mainly for feeder link, Alphasat.
- Frequency band used on GSAT-29 satellite .

### ***Studies required:***

- Protection of existing services:
  - ✓ Already existing FSS.
  - ✓ Feeder links to BSS.
  - ✓ EESS(passive) and SRS(passive)
  - ✓ Radio astronomy
- Regulatory provisions and administration responsibility for operation of ESIMS.
- New recommendation for NCMC

## ***Agenda Item 1.2: Reduction in antenna diameter in 13.75-14 GHz***

### ***Background:***

- WARC-92 allocated 13 GHz band to FSS.
- Asymmetry in Ku band allocation.(↑: 750 MHz; ↓: 1050 MHz)
- GSO Antenna size: 1.2m, N-GSO Antenna size: 4.5m.
- Congestion in the GSO orbit.
- Enhancement of operating conditions required for efficient usage.
- Frequency band used on GSAT-31 and GSAT-7A satellites.

### ***Studies required:***

- Protection of existing services:
  - ✓ Radio Location Service.
  - ✓ Space Research Service.

### ***ISRO View:***

***ISRO supports this Agenda item as this increases the efficient use of this band.***



## WRC-23 Outcome (Satellite services)

### ***Agenda Item 1.3: Use of 51.4-52.4 GHz by gateway earth stations of N-GSO systems***

#### ***Background:***

- Band identified for GSO networks.
- Spectrum requirement exists for N-GSO feeder link

#### ***Studies required:***

- Protection of existing services:
  - ✓ FSS.
  - ✓ EESS (Passive).
  - ✓ Radio astronomy

#### ***ISRO View:***

***Subject to protection of in band and adjacent services, ISRO supports this additional allocation.***

## ***Agenda Item 1.4: FSS (↓) in 17.3-17.7 GHz and BSS (↓) in 17.3-17.8 GHz***

### ***Background:***

- Broadband applications and UHD TV applications.
- In R3, covered under ITU RR AP30A category (↑)
- Asymmetry in Ka band allocation.(↑: 4 GHz; ↓: 3.5 GHz)
- Harmonized radio regulations
- Frequency band used on GSAT-24 satellite (↑).

### ***Studies required:***

- Protection of existing services:
  - ✓ FSS.
  - ✓ Feeder link to BSS (AP30A)

### ***ISRO View:***

***ISRO supports this Agenda item due to increased spectrum usage.***



## ***Agenda Item 1.6: Equitable access in Q/V band***

### ***Background:***

- Planned FSS: C& Ku band (ITU RR AP30B)
- Planned BSS: Ku (↓), Ka (↓)
- PP 2022, Resolution 219
- Frequency band used on GSAT-29 satellite.

### ***Concern:***

- Lack of flexibility in technical parameters
- Constraint in global coverage

### ***ISRO View:***

Further follow up and careful deliberations required.

# Protection of Satellite Services

## **Agenda Item 1.7: Identification of IMT in 4400-4800 MHz , 7125-8400 MHz and 14.8-15.35 GHz**

- The band 4500-4800 MHz is used for :
  - ✓ VSAT services
  - ✓ TT&C
  - ✓ Feeder links for DRT and SAR

Carried onboard 5 communication satellites and 3 Meteorological satellites

- Ubiquitous terminals
- Band segment is Planned band under ITU RR AP30B
- The band 7125-8400 MHz is used for :
  - ✓ Space research services (Aditya mission)
  - ✓ Earth Exploration satellite service (IRS/CARTOSAT series of satellites)

### **ISRO View:**

- 4500-4800 MHz has to be protected, as used for VSAT & strategic services.
- 7/8 GHz Remote Sensing and Space Science services have to be protected.



# Protection of Satellite Services

***Agenda Item 1.13: New allocations to MSS for direct connectivity between space and IMT user equipment.***

***Background:***

- 3GPP Release 17 has identified as one of the NTN.
- IMT systems support terrestrial and satellite components.
- Space-X and Blue Walker satellite.
- Use of terrestrial spectrum or MSS band.
- MSS in the frequency band 694/698 MHz and 2.7 GHz.
- IMT frequency arrangements in ITU-R M-1036

***ISRO View:***

- ISRO supports technology.
- BSS and MSS services in the frequency band 2.5-2.69 GHz band has to be excluded.

## **Space Science Services**

### **Agenda Item 1.15: Identification of frequency band for Lunar surface communications**

#### **Background:**

- *UHF and S-band are predominantly used for Lunar surface communication.*
- *Possible new or modified space research service (space-to-space) allocations in UHF, S, X and Ka band*
- *Communications on the lunar surface and between lunar orbit and the lunar surface*

#### **ISRO View:**

- *ISRO supports additional allocations for Lunar missions.*



## Other relevant Agenda items

AI	Details
1.11	ISL in L and S-band 1 518-1 544 MHz, 1545-1559 MHz, 1610-1645.5 MHz, 1646.5-1660 MHz, 1670-1675 MHz and <b>2483.5-2 500 MHz</b>
1.5	Regulatory measures, to limit the unauthorized operations of non-geostationary-satellite orbit (non-GSO) earth stations in FSS and MSS
1.14	New MSS allocations in S-band.
1.10	Regulatory provisions for FSS,MSS& BSS in E-Band (71-76 &81-86GHz)

### *ISRO View:*

Further follow up and careful deliberations required.



Thank you for your attention