

ITUEvents

2nd ITU Inter-regional Workshop on WRC-23 Preparation

**29 November – 1 December 2022
Geneva, Switzerland**

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#ITUWRC

**Sections 6 and 7
Satellite Issues**

**WRC-23 agenda items
1.15, 1.16, 1.17,
1.18, 1.19**

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Agenda Item 1.15

GSO ESIM in Appendix 30 B

- **AI 1.15** - to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally
Resolution 172 (WRC-19)

- **Background**

GSO ESIM are 'Earth Stations in Motion' communicating with GSO FSS space stations

Two types of ESIM are considered within the agenda item:

- ESIM on aircraft (aeronautical ESIM), and
- ESIM on ships (maritime ESIM)

To provide broadband communications, including Internet connectivity to aircraft and ships in Appendix 30B band 12.75-13.25 GHz (Earth-to-space)

Agenda Item 1.15

GSO ESIM in Appendix 30 B

- **Summary of studies**

Summary and analysis of ITU-R studies are available in sections 4/1.15/3.5 and 4/1.15/3.6 of the draft CPM report

Supporting material can be found in Annex 13 of document WP4A/856

Agenda Item 1.15

GSO ESIM in Appendix 30 B

- **Method A**

- No Change to the RR due to uncertainties in implementation of course of action in Resolution associated with Method B
- Suppression of Resolution 172 (WRC-19)

- **Method B**

- Add a new footnote No. **5.A115** in RR Article 5 and a new WRC Resolution
- Specify conditions for ESIM operation and protection of incumbent services
- Suppression of Resolution 172 (WRC-19)

Agenda Item 1.15

GSO ESIM in Appendix 30 B

- **Points for discussions at CPM23-2**

Consideration of downlink frequency bands for GSO ESIMs associated to 12.75-13.25 GHz uplink

Clarify the use of article **6.25** Appendix **30B**

Identification of the notifying administration in case of interference

Update of Annex 1 of new Resolution (ESIM Appendix 30B list) in conformity with resolves 1.1.1

Methodology for compliance of A-ESIM with pdf masks (terrestrial services)

ESIM Software and Hardware capabilities (Annex 5 of new resolution)

Agenda Item 1.16

NGSO ESIM in Ka band

- **AI 1.16** - to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by non-GSO FSS earth stations in motion, while ensuring due protection of existing services in those frequency bands
Resolution 173 (WRC-19)

- **Background**

Two types of NGSO ESIM are considered for the development of technical and regulatory provisions:

- ESIM on aircraft (aeronautical ESIM), and
- ESIM on ships (maritime ESIM),

To provide broadband communications, including Internet connectivity in bands 17.7-18.6 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz (↓), 27.5-29.1 GHz 29.5-30 GHz (↑)

Agenda Item 1.16

NGSO ESIM in Ka band

- **Summary of studies**

Summary and analysis of ITU-R studies are available in sections 4/1.16/3.3 and 4/1.16/3.4 of the draft CPM report

Supporting material can be found in Annex 14 of document WP4A/856

Agenda Item 1.16

NGSO ESIM in Ka band

- **Method A**

- No Change to the RR
- Suppression of Resolution 173 (WRC-19)

- **Method B**

- Add a new footnote No. **5.A116** in RR Article **5** and a new WRC Resolution
- Specify conditions for ESIM operation and protection of incumbent services
- Suppression of Resolution 173 (WRC-19)

Agenda Item 1.16

NGSO ESIM in Ka band

- **Points for discussions at CPM23-2**

Protection of terrestrial services (secondary services in footnote 5.542)

Identification of notifying administration in case of interference

Methodology for compliance of A-ESIM with pdf masks (terrestrial services)

Compatibilty with EESS services in the frequency band 18.6-18.8 GHz

ESIM Software and Hardware capabilities (Annex 4 of new resolution)

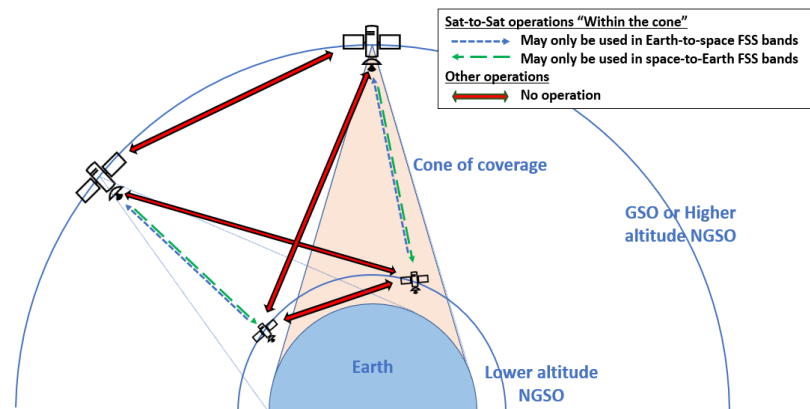
Agenda Item 1.17

Inter Satellite Links in Ku / Ka bands

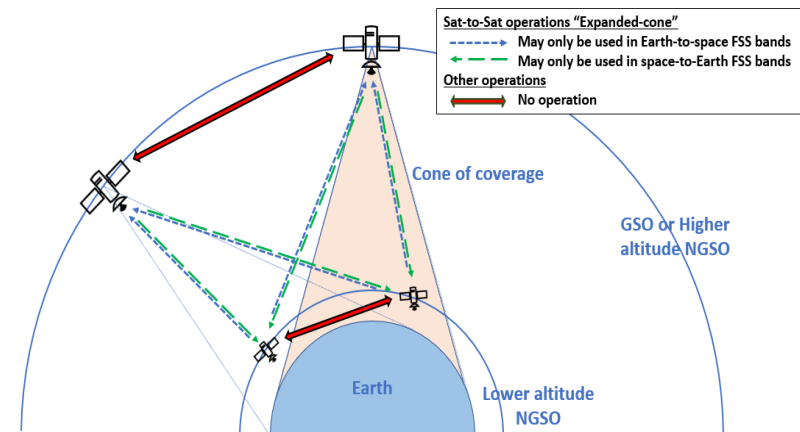
- **AI 1.17** - to determine and carry out, on the basis of the ITU R studies, the appropriate regulatory actions for the provision of inter-satellite links in specific frequency bands, or portions thereof, by adding an inter-satellite service allocation where appropriate
Resolution 773 (WRC-19) (11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz, 27.5-30 GHz)
- **Background**

Two concepts of operation :

Within cone of coverage FSS space station



Expanded cone of coverage of FSS space station



Agenda Item 1.17

Inter Satellite Links in Ku / Ka bands

- **Summary of studies**

Summary and analysis of ITU-R studies are available in section 4/1.17/3.3 of the draft CPM report

Supporting material can be found in Annex 17 of document WP4A/856

Agenda Item 1.17

Inter Satellite Links in Ku / Ka bands

- **Method A**
 - No Change to the RR
 - Suppression of Resolution 773 (WRC-19)
- **Method B1**
 - Allow satellite-to-satellite operation with a FSS (space-to-space) allocation
 - Operations “within the cone” concept
 - Suppression of Resolution 773 (WRC-19)
- **Method B2**
 - Allow satellite-to-satellite operation with an ISS allocation
 - Operations “within the cone” concept
 - Suppression of Resolution 773 (WRC-19)

Agenda Item 1.17

Inter Satellite Links in Ku / Ka bands

- **Method B3**
 - Allow satellite-to-satellite operation with a FSS (space-to-space) allocation
 - Operations within “expended cone” concept
 - Suppression of Resolution 773 (WRC-19)
- **Method B4**
 - Allow satellite-to-satellite operation with an ISS allocation
 - Operations within “expended cone” concept
 - Suppression of Resolution 773 (WRC-19)
- **Method B5**
 - Any of the methods B with the exclusion of the frequency band 11.7-12.7 GHz

Agenda Item 1.17

Inter Satellite Links in Ku / Ka bands

- **Points for discussions at CPM23-2**

Concept of operation: inside cone / expended cone

Nature of new allocation: ISS / FSS

FSS NGSO protection: mitigation measures, total maximum eirp, altitude separation distance, problem of loss of synchronization

GSO protection: NGSO service provider (epfd / cordination), GSO service provider (coordination)

Protection of EESS (passive) in 18.6-18.8 GHz

Protection of terrestrial services

Need for Network Control and Monitoring Center (NCMC as for AI 1.15 / 1.16)

Agenda Item 1.18

MSS for narrow band systems

- **AI 1.18** - to consider studies relating to spectrum needs and potential new allocations to the mobile-satellite service for future development of narrowband mobile-satellite system
Resolution 248 (WRC-19)

- **Background**

NGSO narrowband MSS systems : transfer data collected from user terminals deployed over a geographic area (region or sub-region)

Agenda item addresses spectrum needs / potential allocation to the MSS for low data rate systems for the collection of data from, and management of, terrestrial devices in the MSS

Ambiguity of Resolution 248 -> technical characteristics not agreed to by the responsible group, so no technical studies were conducted

Agenda Item 1.18

MSS for narrow band systems

- **Summary of studies**

Summary and analysis of ITU-R studies are available in section 4/1.18/3 of the draft CPM report

Supporting material can be found in Annex 5 of document WP4C/388

Agenda Item 1.18

MSS for narrow band systems

- **Method A**
 - No Change to the RR
 - Suppression of Resolution 248 (WRC-19)
- **Method B**
 - No Change to the RR and its Appendices
 - Revision of Resolution 248 (WRC-19)

Agenda Item 1.19

New FSS allocation in 17.3-17.7 GHz in R2

- **AI 1.19** - to consider a new primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2, while protecting existing primary services in the band Resolution 174 (WRC-19)

- **Background**

In R1, 17.3-17.7 GHz is allocated to FSS (space-to-Earth)

In R2, 17.3-17.7 GHz is allocated to BSS (similar to FSS)

A new allocation in R2 would provide for harmonization across Regions

Agenda Item 1.19

New FSS allocation in 17.3-17.7 GHz in R2

- **Summary of studies**

Summary and analysis of ITU-R studies are available in section 4/1.19/3.3 of the draft CPM report

Supporting material can be found in Annex 19 of document WP4A/856

Agenda Item 1.19

New FSS allocation in 17.3-17.7 GHz in R2

- **Method A**

- No Change to the RR
- Suppression of Resolution 174 (WRC-19)

- **Method B**

- Modify footnotes **5.516A**, **5.517** and **5.484A** in RR Article 5 to include the allocation of the frequency band 17.3-17.7 GHz in Region 2 to the FSS in the space-to-Earth direction

Agenda Item 1.19

New FSS allocation in 17.3-17.7 GHz in R2

- **Points for discussions**

Footnote 5.516 A: inclusion of FSS in the band 17.3-17.7 GHz in R2 shall not cause interference in the Appendix 30A BSS feeder link in R1 & R3.

Footnote 22.5F.Y : inclusion of the 3 Regions in the footnote

THANK YOU!

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