Caribbean Spectrum Management Task Force

Main WRC-23 results

Radiocommunication Bureau, ITU

Role of World Radiocommunication Conferences

- Allocate spectrum for emerging radio applications <-> protect existing users
- Maintain balance between all radiocommunication services
- Achieve spectrum harmonization -> economies of scale and equipment interoperability
- Create regulatory certainty for spectrum users, regulators and industry

- WRCs are organized every 3-4 years
- WRCs update the Radio Regulations (RR)
- RR is intergovernmental treaty, which is are ratified by governments –> mandatory for application by countries

WRC-23 in numbers

20 November – 15 December 2023

3987
Delegates

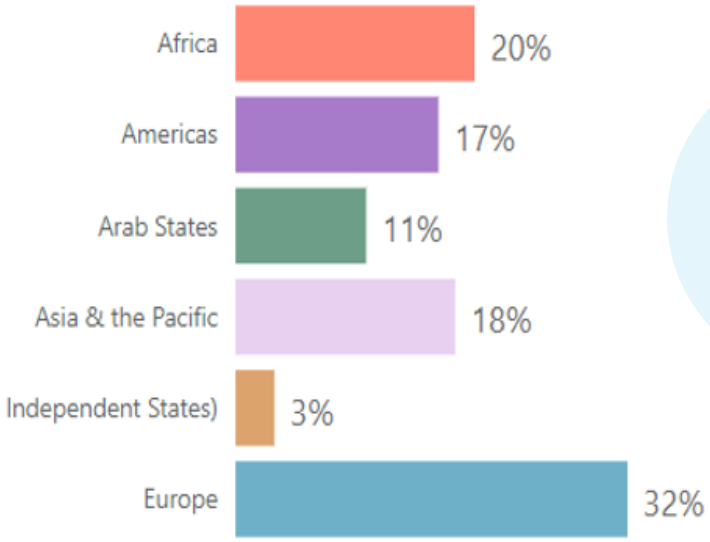
163
Member States

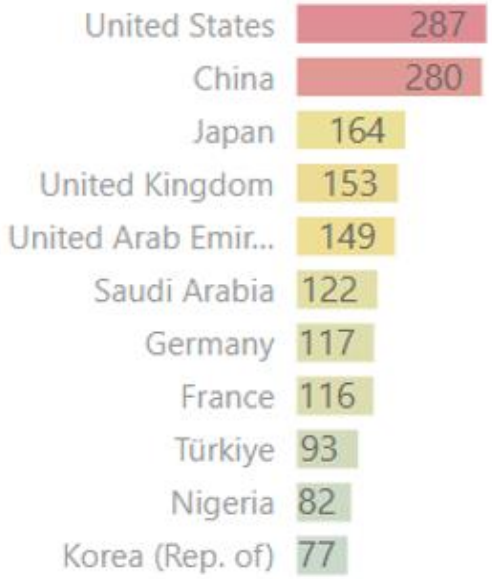
967
Docs.

4
weeks

151
observers

6 024
proposals





Fixed, Mobile and Broadcasting issues

(agenda items 1.1, 1.2, 1.3, 1.4 and 1.5)

Agenda item 1.1 – IMT in 4 800-4 990 MHz, protection of aircraft and ships in international airspace and waters

470 – 694 MHz

694 - 2700 MHz

3 300-3 400 MHz

3 600-3 800 MHz

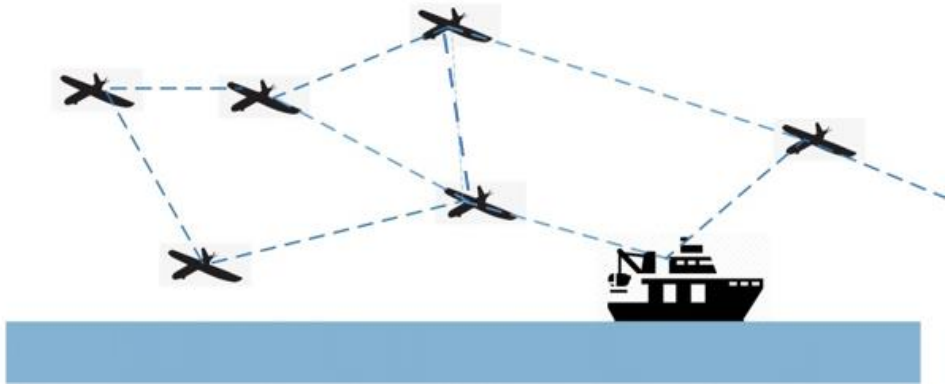
4 800-4 990 MHz

6 425-7 125 MHz

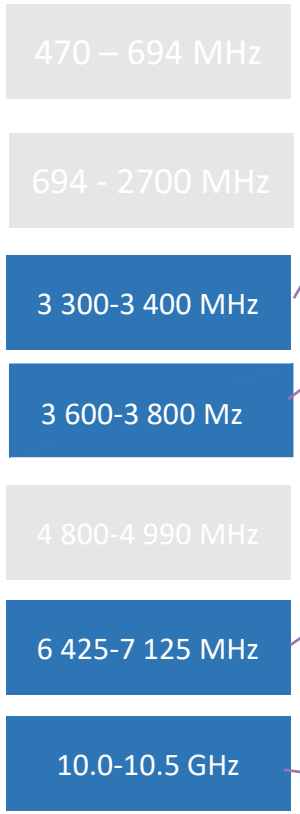
10.0-10.5 GHz

- **Background**
  - WRC-19 identified 4800-4990 MHz for IMT in 39 countries by RR **5.441B**, subject to a PFD limit and agreement seeking procedure of No. **9.21**
  - PFD limit protects aircraft, ships in international waters but it is very stringent: exclusion zone for IMT > 500 km from the coast to comply with this limit

- **Results**
  - No change in PFD limit
  - No change in the list of countries excluded from the limit in Res. 223
  - 14 R1 and R2 countries were added to RR **5.441B**, 7 R1 countries deleted



Agenda item 1.2 – IMT identifications in frequency ranges 3.3 GHz, 3.7 GHz, 6 GHz and 10GHz



3.3 - 3.4 GHz: allocated to MOB, identified for IMT for entire R2.
identified for IMT in 17 additional countries of R1 and R3
Non-interference basis vis-à-vis radiolocation

3.7 GHz: 3.6–3.7 GHz - identified for IMT in entire R2
3.7–3.8 GHz - identified for IMT in 15 R2 countries,
IMT identification is subject to coordination with FSS

6 GHz: 6 425-7 125 MHz - identified for IMT in entire R1 and 2 R2 states
Region 3: 6 425-7 025 MHz identified for IMT in 3 R3 countries
7 025 – 7 125 MHz identified for IMT in entire R3.

10 GHz: IMT identification in 12 countries of R2

Summary of Agenda item 1.2 decisions

Band, MHz	Region	WRC-23 decisions	RR provisions
3 300 – 3400	R1	IMT identification in 16 additional countries (mainly African)	MOD 5.429B
	R2	Allocation for MOB and identification for IMT for entire R2	MOD Table, 5.429D
	R3	IMT identification in 1 additional country (Singapore)	MOD 5.429F
3 600 – 3 700	R2	IMT identification for entire R2	MOD 5.434
3 700 – 3 800	R2	IMT identification in 15 countries	ADD 5.435B (5.36A12)
6 425-7 125	R1	IMT identification for entire R1	ADD 5.457E (5.6A12)
	R2	IMT identification in 2 R2 countries (Brazil, Mexico)	ADD 5.457F (5.6C12)
6 425-7 025	R3	IMT identification in 3 R3 countries (Cambodia, Lao P.D.R., Maldives)	ADD 5.457D (5.6B12).
7 025-7 125	R3	IMT identification for entire R3	ADD 5.457E (5.6A12)
10-10.5 GHz	R2	IMT identification in 12 R2 countries	ADD 5.480A (5.10B12)

Agenda items 1.3 and 1.5 – IMT identifications in 3.6 – 3 8 GHz and below 694 MHz and in Region 1

470 -694 MHz

694 – 2700 MHz

3 300-3 400 MHz

3 600-3 800 MHz

4 800-4 990 MHz

6 425-7 125 MHz

10.0-10.5 GHz

AI 1.5: frequency band 470 – 694 MHz:

- 470-694 MHz - secondary allocation to MS (– AMS) in 44 states, WRC-31 review
- 614-694 MHz- primary allocation to MS(-AMS) + IMT identification in 11 states
- 614-694 MHz - secondary allocation to MS in 8 African countries

All allocations are subject to field strength limit corresponding to GE06 and the first two allocations are also subject to RR9.21

AI 1.3: frequency band 3.6 – 3.8 GHz:

- upgrade of MOB (– AMS) in 3.6 – 3.8 GHz in the entire R1.
- IMT identification 3.6–3.8 GHz in 60 countries, 3.6–3.7 GHz in 6 countries

Agenda item 1.4 – High-altitude platform stations as IMT base stations (HIBS)

WRC-23 identified for HIBS the following bands:

470 – 694 MHz

694 - 2700 MHz

3 300-3 400 MHz

3 600-3 800 MHz

4 800-4 990 MHz

6 425-7 025 MHz

10.0-10.5 GHz

< 1 GHz

- 694 – 960 MHz — R1
- 698 – 960 MHz — R2 + 6/R3
- parts of 703 – 960 MHz — 8/R3

Resolution **213** COM4/3

2 GHz

- 1 710 – 1 980 MHz — Global
- 2 010 – 2 025 MHz — R1,3
- 2 110 -2 160 MHz — Global
- 2 160 – 2 170 MHz — R1,3

MOD Resolution **221 (Rev. WRC-23)**

2.5 GHz

- 2 500 – 2 690 MHz — R1,2
- 2 500 – 2 655 MHz — R3

Resolution **218** (COM4/4)

Implications: HIBS – a new platform to provide mobile broadband with minimal infrastructure using the same frequencies and devices as IMT networks. Extending IMT coverage in remote and rural areas. Maintaining connectivity in case of natural disasters

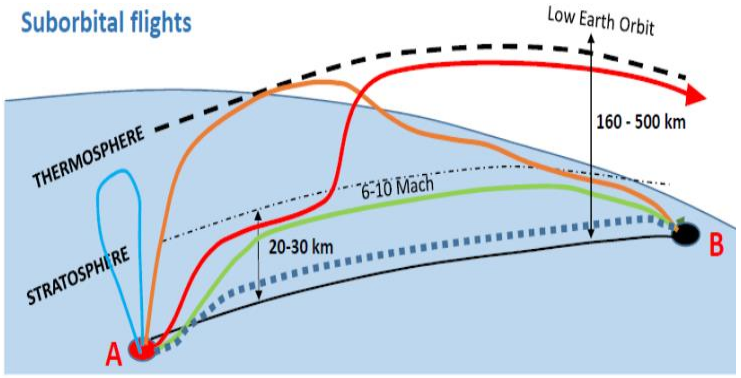
WRC-23 – fixed, mobile, broadcasting

Aeronautical and maritime issues

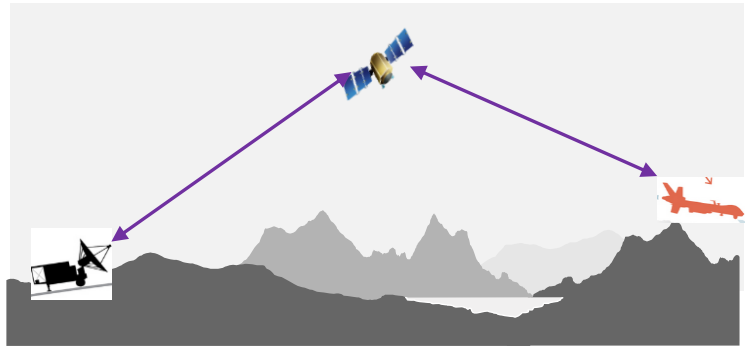
(agenda items 1.6, 1.7, 1.8, 1.9, 1.10 and 1.11)

Agenda item 1.6 and 1.8

- **AI 1.6 Suborbital flights**
  - NOC under this agenda item
  - WRC-23 could not reach agreement on any regulations for suborbital flights

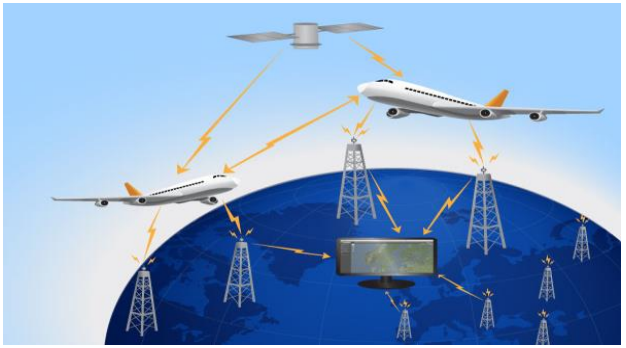


- **AI 1.8 -** FSS for Unmanned Aircraft Systems
  - No decision for using fixed-satellite service for UAS command and control (CNPC) under Res. 155 (Rev.WRC-19)
  - WRC-23 suspended any further action on Res. 155, instructed to study AMS(R)S for command and control of UAS



Agenda item 1.7 and 1.9

- **AI 1.7** VHF satellite communications with aircraft
  - allocation 117.975 – 137 MHz to aeronautical mobile-satellite (R) service. Protection of terrestrial VHF links, adjacent science services.
  - ***Implications:*** relaying ground-to-pilots communications via NGSO satellites Complements terrestrial VHF links, enabling communications with planes everywhere, in oceanic and remote areas.



- **AI 1.9 –** digitalization of HF aeronautical bands
  - WRC-23 added new provisions to RR Appendix 27 to allow the aggregation of existing 3 kHz HF channels and using digital signals
  - ***Implications:*** opens possibility to introduce digital wideband HF systems. HF comms are still extensively used by aviation for long-range communications over oceanic, polar and remote areas.

Agenda item 1.10 – aeronautical non-safety communications
Agenda item 1.11 – modernization of GMDSS

22-22.2 GHz

15.41-15.7 GHz

HF

MF

1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz

2483.59-2499.91 MHz

AI 1.10 15.41-15.7 GHz allocated to secondary AM(OR)S in R1 and 1 R3 country
22-22.2 GHz allocated to primary AM(OR)S in R1 and 5 R3 countries

***Implications**: enable transfer large data from aircraft, helicopters, drones for different purposes, e.g., surveillance, monitoring, mapping, etc.*

AI 1.11, Issue A: GMDSS modernization

- removal of NBDP for distress and safety purposes
- introducing automatic connection system (ACS) using DSC in 2/4/6/8/12/16 MHz
- introducing navigation data system (NAVDAT) in MF and HF bands
- **AI 1.11, Issue B: E-Navigation** – NOC

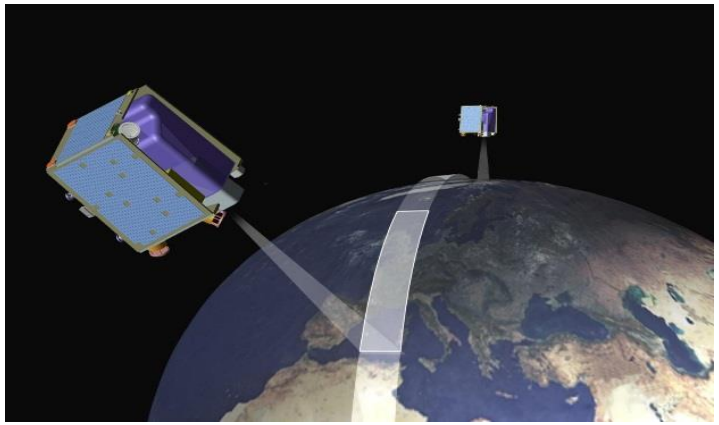
***Implications**: WRC-23 endorsed several modern maritime technologies to support GMDSS significantly contributing to the safety of life at sea.*

AI 1.11, Issue C: introduction of additional GMDSS satellite provider

Provisional Beidou recognition subject to completion of coordination and elimination of interference, *see Res. 365 (COM4/5)*

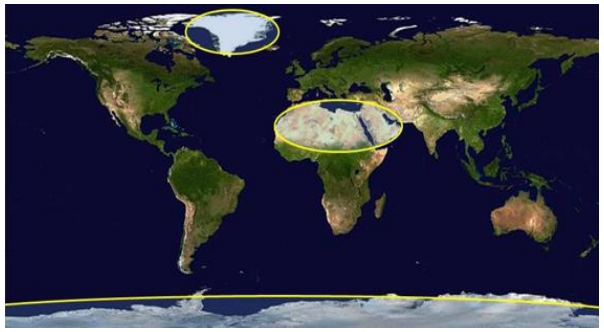
Space science services

(agenda items 1.12, 1.13, 1.14)

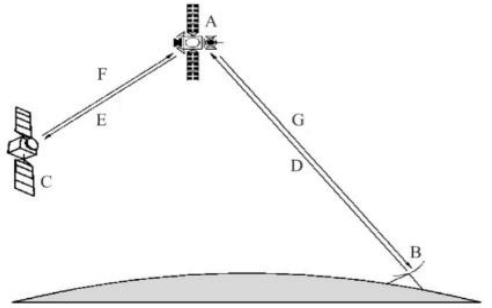


Agenda item 1.12 and 1.13

- **AI 1.12 -** secondary allocation for EESS (active) for spaceborne radar sounders in 40-50 MHz. Protection of existing services by geographical, time, PFD limitations, *see Res. 677 (COM5/6)*
  - ***Implications:*** *enable collection of data from space-based ground penetrating radars on ice in the polar zone*



- **AI 1.13 -** Upgrade of SRS allocation to primary in the 14.8-15.35 GHz for operation in space-to-space, space-to-Earth and Earth-to-space directions. Protection of FX, MOB, RA, *see Res. 678 (COM5/7)*
  - ***Implications:*** *will allow for transmission of future scientific data at higher rates*

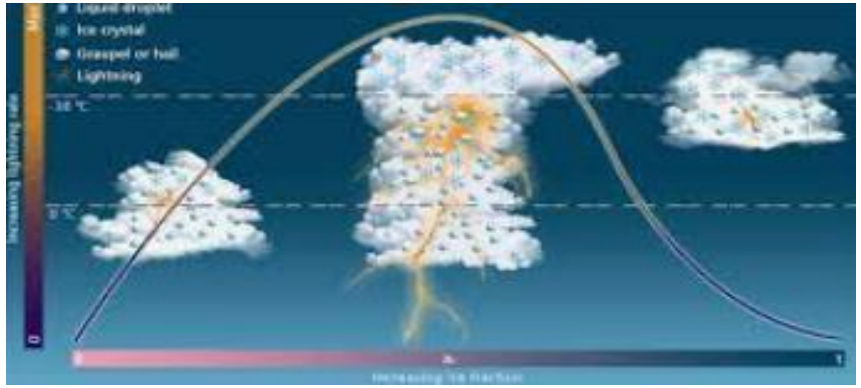


A: DRS
B: DRS earth station
C: DRS user spacecraft
D: Forward feeder link
E: Forward inter-orbit link (IOL)
F: Return IOL
G: Return feeder link

SA.2141-01

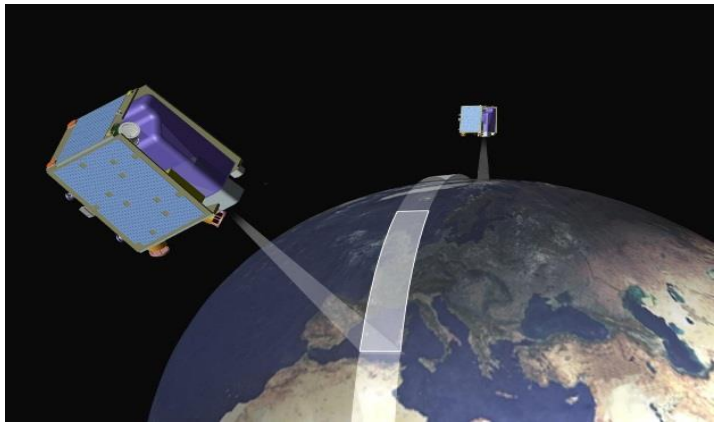
Agenda item 1.14 – EESS (passive) in 231.5-252 GHz

- **AI 1.14 -** allocations to EESS (passive) in 239.2-242.2 GHz and 244.2-247.2 GHz bands. Non-interference basis vs. terrestrial services in 235-238 GHz.
- ***Implications:*** *enable ice cloud imaging, measurement of chemical processes, including ozone, isotopic oxygen, etc.*



Satellite issues

(agenda items 1.15, 1.16, 1.17, 1.18, 1.19, 7)

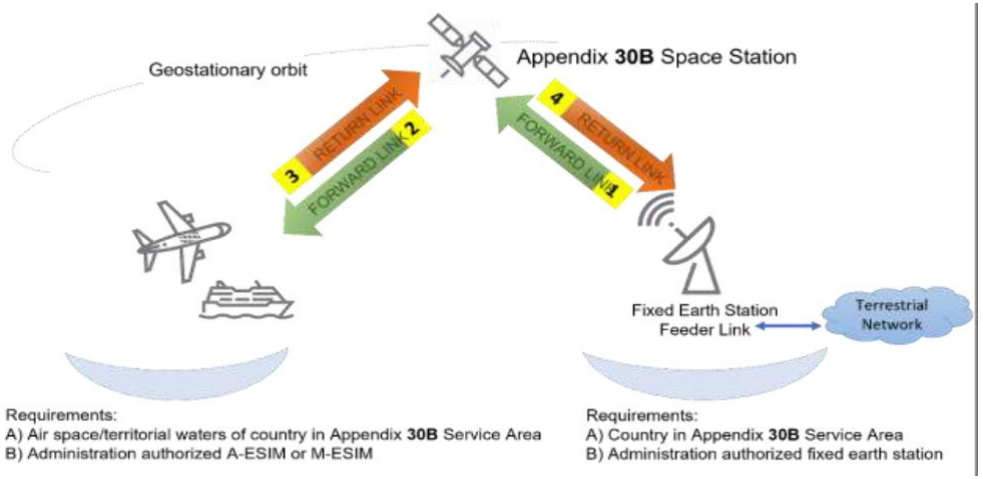


Agenda items 1.15 and 1.16

- **AI 1.15 - GSO ESIMs in 13 GHz**

WRC-23 allowed ESIMs on aircraft and vessels to operate in 12.75-13.25 GHz (uplink) via GSO systems. Protection of AP30B and List, in-band and adjacent band services, compatibility between ESIMs, *see Res. 121 (COM5/2)*

➢ ***Implications:*** *satisfying growing requirements for non-safety communications with aircraft and ships*



- **AI 1.16 - NGSO ESIMs in K_a band**

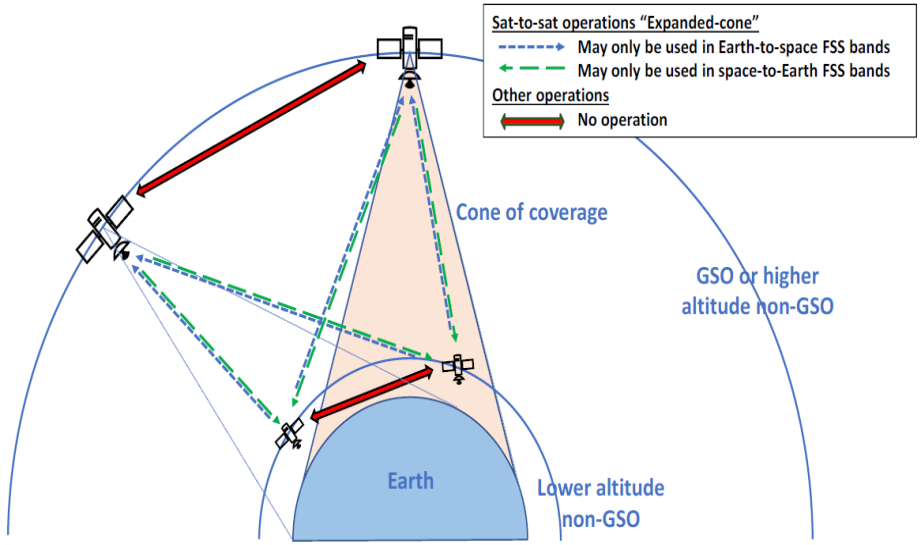
WRC-23 allowed aeronautical and maritime NGSO ESIMs in FSS in 17.7-18.6 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz (downlink) and 27.5-29.1 GHz, 29.5-30 GHz (Uplink). Protection of FX, MOB, satellite and science services. Complex commitment regime monitored by BR, *see Res. 123 (COM5/3).*

Agenda item 1.17 and 1.18

- **AI 1.17 - inter-satellite links in K_a band**

Primary allocation of 18.1-18.6, 18.8-20.2 and 27.5-30 GHz to inter-satellite service. Limited to space research, space operation and/or EESS, and data transmissions of from industrial and medical activities in space. *Res. 679 (COM5/8)*

Implications: *facilitate satellite to satellite data traffic, mainly from/to NGSO satellites which generate the data, e.g. during space, earth science, human exploration missions*



- **AI 1.18 – narrow-band MSS between 1 695 and 3 400 MHz**
  - NOC (No change) to RR, due to insufficient sharing studies.
  - But the issue is included in the WRC-27 agenda item 1.13 to support IoT requirements

Agenda item 1.19 – FSS in R2 in 17.3-17.7 GHz

- **AI 1.19 – fixed-satellite service in Region 2 in the band 17.3 – 17.7 GHz**

➢ Primary allocation to FSS in R2 in 17.3-17.7 GHz (space-to-Earth) for GSO and non-GSO networks with protection of existing services, including AP30A BSS feeder-links

Implications: *aimed at harmonization of the band with a similar FSS allocation for Region 1*

- **AI 7 – regulatory issues for satellite services**

13 various topics related to advance publication, coordination, notification and recording procedures for frequency assignments and other regulatory provisions pertaining to satellite networks

Agenda item 7, Topics 7a and 7b

- **7A – Orbit tolerances for NGSO space stations in FSS, BSS, MSS**

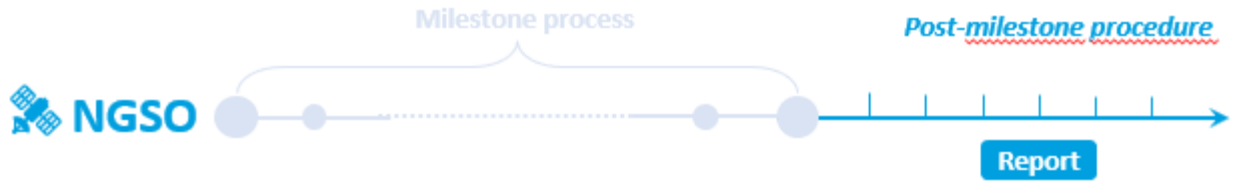
  WRC-23 defined tolerances for orbital characteristics of NGSO FSS, BSS and MSS, e.g. apogee altitude, perigee altitude, angle of inclination of the orbital plane, Res. 8 (COM5/4)

  Implications: *more efficient use of the orbit and spectrum resources*

- **7B – post-milestone procedure for bringing into use NGSO space station**

➢ Modified frequency bands and services for application of the milestone approach

➢ Introduction of a 4-year periodic report of the deployment information, including the number of satellites deployed. Annual reporting in case the number falls below the notified number. Resolution 35, *see resolves 19 - 23*



Agenda item 7, other Topics

Topic	Title	WC-23 decision
7C	Protection of GSO MSS networks in 7/8 GHz and 20/30 GHz from NGSO	Introduction of a non-interference basis for NGSO networks to protect GSO networks in the same bands
7D1	Modifications to Appendix 1 to Annex 4 of RR Appendix 30B	Correction of formula for calculating aggregate C/I ratio by mentioning correct values of the orbital separation
7D2	New RR AP 4 parameters for Rec. ITU-R S.1503 updates	MOD AP4 to reflect approved modifications in Recommendation ITU-R S.1503
7D3	BR Reminders for BIU and BBIU	BR sends reminders for 90-day requirement for BIU and BBIU. Reminders on completion of 90-day BBIU shall be sent 15 days after the end of the period
7E	RR Appendix 30B improved procedures for new Member States	Modification of Article 7 of Appendix 30B to facilitate creation of new FSS Plan allotments for ITU Member States without any allotment
7F	Excluding uplink service area in AP30A for Regions 1,3 and AP30B	Administration can object to being included in the feeder link service area of any assignment any time (during or after the 4-month period)
7G	Revisions to Resolution 770 (WRC-19) to allow its implementation	Modification of Resolution 770 to add the value of 10% of the probability of non-zero rain attenuation to the parameters of generic GSO reference links
7H	Enhanced protection of APP 30/30A in Regions 1 and 3 and AP 30B	For affected assignment in R1&3 Plan, no decision to assistance reminder = no objection. A commitment to respect the pfd and timeline = agreement
7I	Special agreements under RR Appendix 30B	Possibility to restore reference situation of allotment when assistance under §§ 6.13-6.15 applied by introducing agreement between concerned administrations
7J	Modifications to Res. 76 (protection GSO FSS and BSS from NGSO)	Regular meetings for non-GSO FSS operators to assess interference. Invitation to develop a methodology for calculating aggregate epfd produced by non-GSO FSS
7K	MOD Res. 553 to remove restrictions preventing effective using Resolution	Several mods to the application of the special procedure, e.g., possibility to apply it to 1 network at time, to change, withdraw CR/C sent under normal procedure

Agenda item 10 – agenda for WRC-27

FIXED-SATELLITE AND BROADCASTING-SATELLITE

- **1.1** **Aeronautical/maritime earth stations in motion**
  47.2-50.2 GHz / 50.4-51.4 GHz
- **1.2** 13.75-14 GHz – **FSS earth stations with smaller antennas**
- **1.3** 51.4-52.4 GHz – **Gateway earth stations for NGSO FSS**
- **1.4** 17.3-17.7/8 GHz – **FSS/BSS allocations in 17 GHz in Region 3**
- **1.5** **Unauthorized operations of NGSO earth stations**
- **1.6** **Equitable access to FSS in the bands**
  37.5-42.5 GHz / 42.5-43.5 GHz / 47.2-50.2 GHz / 50.4-51.4 GHz
- **7** **Satellite regulatory issues**

MOBILE-SATELLITE

- **Space-to-space links** **1.11**
  1 518-1 544 MHz / 1 545-1 559 MHz
  1 610-1 645.5 MHz / 1 646.5-1 660 MHz
  1 670-1 675 MHz / 2 483.5-2 500 MHz
- **MSS - IoT development** **1.12**
  1427-1432 MHz / 1645.5-1646.5 MHz 1880-1920 MHz / 2010-2025 MHz
- **MSS - IMT- direct connectivity** **1.13**
- **MSS – additional allocation** **1.14**

FIXED, MOBILE AND RADIOLOCATION

- **1.7** 4400-4800 MHz / 7125-8400 MHz / 14.8-15.35 – **IMT**
- **1.8** 231.5-275 GHz / 275-700 GHz – **Radiolocation**
- **1.9** **Aeronautical mobile (OR) high frequency modernization**
- **1.10** 71-76 GHz / 81-86 GHz – **Power flux-density / power limits**

SCIENCE

- **Lunar communications** **1.15**
- **Radio Quiet Zones** **1.16**
- **Space weather sensors** **1.17**
- ≥ 76 GHz – **Earth exploration and radio astronomy** **1.18**
- **Earth exploration-satellite service** **1.19**
  4200 – 4400 MHz / 8400-8500 MHz

WRC-27 agenda – FSS, BSS and MSS issues

No.	WRC-27 Agenda Item	Description	WRC-23 Resolution	Responsible ITU-R Group
1.1	Aeronautical/maritime ESIMs 47.2-50.2 GHz / 50.4-51.4 GHz	Studies for M-ESIMs/A-ESIMs, actions at WRC-27 to meet increasing needs in mobile satellite broadband	176	WP 4A
1.2	FSS earth stations with smaller antenna in 13.75-14 GHz	Revise sharing conditions in 13.75-14 GHz to allow FSS ES with smaller antennas, to provide for more spectrum	129 (COM6/1)	WP 4A
1.3	Enabling gateway stations in 51.4-52.4 GHz for NGSO FSS	Revise conditions in 51.4-52.4 GHz to enable FSS NGSO gateways for broadband services	130 (COM6/3)	WP 4A
1.4	FSS/BSS allocations in 17 GHz in Region 3	FSS allocation in 17.3-17.7 GHz and BSS in 17.3-17.8 GHz in R3, to globally harmonize FSS, provide BSS spectrum	726 (COM6/24)	WP 4A
1.5	Unauthorized operation of NGSO earth stations	Limit unauthorized operation of NGSO earth stations of FSS/MSS and associated issues of the service area	14 (COM6/6)	WP 4A
1.6	Equitable access to FSS in 40 GHz, 42GHz, 48GHz, 50 GHz	Technical, regulatory measures for equitable access to FSS 37.5-42.5 GHz/42.5-43.5 GHz/47.2-50.2 GHz/50.4-51.4 GHz	131 (COM6/7)	WP 4A
1.11	Space-to-space links in MSS bands 1.5/1.6 GHz, 2.5 GHz	Space-to-space links in MSS bands 1.5/1.6 GHz, 2.5 GHz, for near-real time relay of data to or from the ground	249	WP 4C
1.12	MSS allocations for IoT developments	MSS allocations in 1 427-1 432 MHz, 1 645.5-1 646.5 MHz, 1 880-1 920 MHz for development of IoT through NGSO	252 (COM6/8)	WP 4C
1.13	MSS – IMT direct to device connectivity	MSS allocations in 694 - 2 700 MHz for direct connectivity between space stations and IMT terrestrial devices	253 (COM6/9)	WP 4C
1.14	Additional MSS allocations	Additional MSS allocations in 2 010-2 025 MHz, 2 160-2 170 MHz in R1&3 and in 2 120-2 160 MHz globally	254 (COM6/10)	WP 4C

WRC-27 agenda – Fixed, mobile, science services

No.	WRC-27 Agenda Item	Description	WRC-23 Resolution	Responsible ITU-R Group
		Fixed, mobile, radiolocation services		
1.7	IMT in 4400-4800 MHz / 7125-8400 MHz / 14.8-15.35 GHz	IMT identifications in in 4400-4800 MHz / 7125-8400 MHz / 14.8-15.35 GHz, mainly for IMT-2030 and beyond	**256 (COM6/26)**	WP 5D
1.8	Radiolocation in 231.5-275 GHz / 275-700 GHz	Allocations/ identification to RLS in 231.5-275 GHz/275-700 GHz for radars and radiometers for imaging and localization	**663**	WP 5B
1.9	Modernization of AP26 – High Frequency AM(OR)S	Introduction of wide-band digital channels in **AP26** – Plan for HF aeronautical mobile (off-route) service	**411 (COM6/2)**	WP 5B
1.10	PFD and EIRP limits in 71-76 GHz, 81-86 GHz	Inclusion pfd, e.i.r.p. limits in Article **21** for FSS, MSS, BSS to protect fixed and mobile services in 71-76 GHz, 81-86 GHz	**775**	WP 5C
		Science services		
1.15	SRS for lunar communications	New/modified SRS allocations for systems on lunar surface and between systems in lunar orbit and on lunar surface	**680 (COM6/4)**	WP 7B
1.16	Radioastronomy operating in specific Radio Quiet Zones	Protection of radioastronomy from NGSO systems in Radio Quiet Zones in some bands between 10.6 and 134 GHz	**681 (COM6/11)**	WP 7D
1.17	Space weather sensors	Allocations to MetAids service for receive-only space weather sensors and developing protection criteria	**682 (COM6/12)**	WP 7C
1.18	EESS and Radioastronomy above 76 GHz	Protection of EESS (passive) and radio astronomy above 76 GHz from unwanted emissions of active services	**252 (COM6/8)**	WP 7C
1.19	EESS (passive) in 4 200-4 400 MHz and 8 400-8 500 MHz	Global allocations to EESS in 4200-4400 MHz, 8 400-8 500 MHz for measurements of sea surface temperature	**674 (COM4/8)**	WP 7C

Post-conference activities

- **All WRC-23 decisions** will enter into force on **1.01.2025,** except the ones listed in Resolution 99 (Rev.WRC-23)

- **WRC-23 provisional Final Acts** are available at R-ACT-WRC.15-2023-PDF-E.pdf (itu.int) in 6 languages free of charge. All WRC-23 documents can be found here.
- **WRC-23 definitive Final Acts** are scheduled for April 2024

- **New Radio Regulations,** edition 2024 in August – September 2024

- **BR issued Circular Letters** CA/270 of 26.01.24 on the results of CPM27-1: organization of studies for WRC-27, responsible ITU-R Working Parties, structure of the CPM Report, rapporteurs, etc.

- Administrations need to **update the relevant national documentation**, e.g., National Frequency Allocation Tables

RESOLUTION 99 (REV.WRC-23)

Provisional application of certain provisions of the Radio Regulations as revised by the 2023 World Radiocommunication Conference and abrogation of certain Resolutions and Recommendations

resolves

1 that the date of entry into force of the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz and 2 483.59-2 499.91 MHz, Nos. **5.111Z**, **5.368**, **33.50**, **33.53**, as well as Appendix **15** for the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz and 2 483.59-2 499.91 MHz is stipulated in *resolves* 5 of Resolution **COM4/5 (WRC-23)**;

2 that, as of 16 December 2023, the following provisions of the Radio Regulations shall provisionally apply:

– Appendix **30**: 4.1.10d; 4.1.13*bis*; 4.1.13*ter*; 4.1.30; 4.1.31; 4.1.32; 5.1.6*bis*;

– Appendix **30A**: 4.1.10d; 4.1.13*bis*; 4.1.13*ter*; 4.1.34; 4.1.35; 4.1.36; 5.1.10*bis*;

– Appendix **30B**: 6.4*bis*; 6.15; 6.15*quat*; 6.15*quin*; 6.27*bis*; 6.29*bis*; 6.29*ter*; 8.10*bis*; 8.10*ter*,

THANK YOU!

WRC-23 Resolutions

Provisional numbers for new Resolutions from WRC-23

Res. No.	Provisional No.	Res. No.	Provisional No.	Res. No.	Provisional No.
COM4/1	364	COM5/7	678	COM6/12	682
COM4/2	406	COM5/8	679	COM6/13	721
COM4/3	213	COM5/9	126	COM6/14	910
COM4/4	218			COM6/15	133
COM4/5	365	COM6/1	129	COM6/16	683
COM4/6	219	COM6/2	411	COM6/17	255
COM4/7	220	COM6/3	130	COM6/18	366
COM4/8	674	COM6/4	680	COM6/19	684
		COM6/5	712	COM6/20	685
COM5/1	675	COM6/6	14	COM6/21	686
COM5/2	121	COM6/7	131	COM6/22	722
COM5/3	123	COM6/8	252	COM6/23	813
COM5/4	8	COM6/9	253	COM6/24	726
COM5/5	676	COM6/10	254	COM6/25	814
COM5/6	677	COM6/11	681	COM6/26	256