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English only

Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
Sixty-first session
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Item 4 of the provisional agenda*

The International Telecommunication Union (ITU): results of the Radiocommunication Assembly and World Radiocommunication Conference 2023

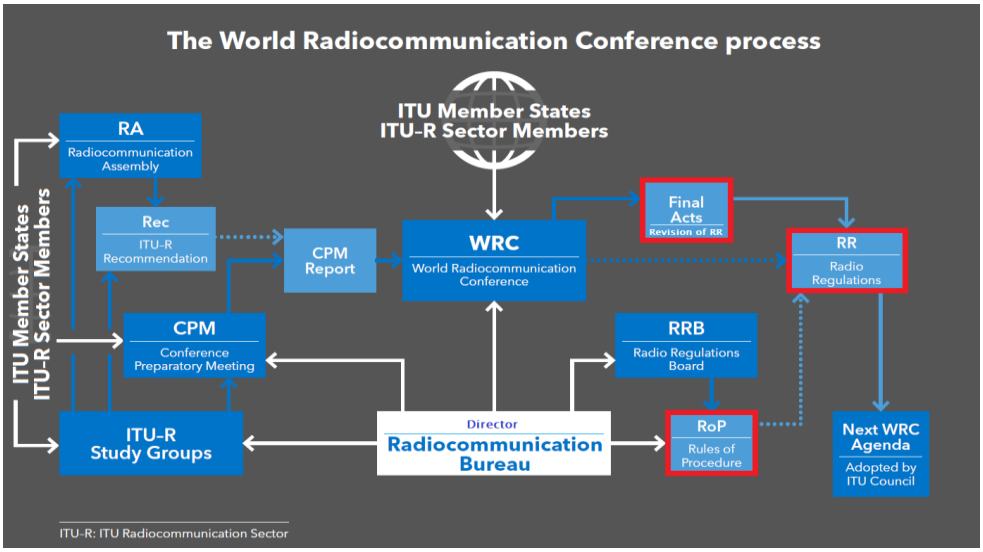
Note by the Secretariat

I. Introduction

1. Within the International Telecommunication Union (ITU), the United Nations' specialized agency for information and communication technologies – ICTs, the ITU Radiocommunication Sector (ITU-R) mission is to ensure the rational, efficient, economical and equitable use of the radio-frequency spectrum by all radio services, and any associated orbits, including the geostationary-satellite orbit.[1] In implementing this mission through the Radio Regulations,[2] ITU-R aims at creating the conditions for harmonized development and efficient operation of existing and new radiocommunication systems, taking due account of all parties concerned.

2. The Radio Regulations[3] (RR), an international treaty, has been evolving since 1906. The last review within the framework of the Radiocommunication Assembly (RA-23) followed by the World Radiocommunication Conference (WRC-23) (see Schema 1) took place from 13 November to 15 December 2023, in Dubai, United Arab Emirates. Nearly 3900 delegates from 163 Member States and Sector Members from industry, the private sector and Academia made decision by consensus on the technical and regulatory analysis of the ITU-R Study Groups.[4] The decided amendments are available in the provisional Final Acts.[5]

* A/AC.105/C.1/L.412.
[1] Article 44 of the ITU Constitution.
[2] https://www.itu.int/pub/R-REG-RR/en.
[3] https://www.itu.int/pub/R-REG-RR/en.
[4] https://www.itu.int/en/ITU-R/study-groups.
[5] https://www.itu.int/wrc-23/documents/.



Schema 1: The World Radiocommunication Conference process

3. The WRC-23 had nineteen agenda items (1.1 to 1.19), with eleven separate topics under the Agenda Item 7 and four more topics under Agenda Item 9. Among those agenda items and topics, the following are particularly related to the work of the Committee of Peaceful Use of Outer Space (COPUOS) and its sub-committees.

4. **Agenda Item 1.6**: *Consideration of regulatory provisions to facilitate the introduction of sub-orbital vehicles.* Resolution 772 (WRC-19)

5. The ITU-R was invited to study the spectrum needs to accommodate radio stations[6] ("stations") on board sub-orbital vehicles to facilitate radiocommunications that support aviation to safely integrate sub-orbital vehicles into airspace and to ensure interoperability with international civil aviation.

6. From the three Methods proposed, the Conference decided not to modify the RR, to abrogate Resolution 772 (WRC-19) and not to reconvene the subject on the agenda of the next WRC in 2027.

7. Agenda **Item 1.12**: *Possible secondary allocation to the Earth exploration-satellite service (EESS) (active) for spaceborne radar sounders in the range of frequencies around 45 MHz*. Resolution 656 (Rev. WRC-19)

8. The Conference decided on a new secondary allocation to the EESS for spaceborne radar sounders in the frequency band 40-50 MHz while taking into account the protection of incumbent services including those in adjacent bands. A new Resolution defines the condition of use of the allocation in accordance with the geographical area restrictions to the polar areas and the associated operational and technical conditions.

9. **Agenda Item 1.13**: *Examination of a possible upgrade to primary status of the secondary allocation to the space research service (SRS) in the frequency band 14.8-15.35 GHz*. Resolution 661 (WRC-19).

10. For transmitting future scientific data at high data transmission speeds, the Conference decided to upgrade the allocation to the space research service on a primary basis for satellite systems operating in the space-to-space, space-to-Earth and Earth-to-space directions at distances from the Earth of less than 2×10^6 km in the frequency band 14.8 to 15.35 GHz.

11. A new Resolution determines the associated technical and regulatory conditions to ensure the protection of the current use and future development of the existing

[6] RR No **1.61** defines a station as, *"One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service."*

primary services and the radio astronomy service (RAS) in the adjacent frequency bands 15.35-15.4 GHz. Protection of existing systems such as the aeronautical mobile service (AMS), helicopter television transmission systems (HTTS) and deep space missions are also considered.

12. Agenda **Item 1.14**: *Review of frequency allocations for the Earth exploration-satellite service (EESS) (passive) in the frequency range 231.5-252 GHz and consideration of possible adjustment according to observation requirements of passive microwave sensors*. Resolution 662 (WRC-19)

13. The Conference decided to allocate the frequency bands 239.2-242.2 GHz and 244.2-247.2 GHz to the EESS (passive) , in order to ensure alignment with more up-to-date remote sensing observation requirements, mainly Ice Cloud Measurements and atmosphere gases measurement. The Conference also decided to shift the current fixed service (FS) and mobile service (MS) allocations in the frequency band 239.2-241 GHz to the frequency band 235-238 GHz.

14. **Agenda Item 7 Topics A and B**: *non-geostationary orbit (non-GSO) constellations orbital tolerance and post-milestone deployment*.

15. For topic A, the Conference decided of a new Resolution establishing tolerances for the orbital characteristics of the space stations for certain orbital characteristics of non-GSO space constellations in the fixed, mobile, or broadcasting satellite services. It assesses differences between recorded values in the Master International Frequency Register (Master Register) and the actual deployment and establish the procedure to address them.

16. For Topic B, the Conference decided to apply provisionally until a future competent Conference, additional resolves to the existing Resolution 35 setting a milestone-based deployment process for certain non-GSO systems. They address the deployment reporting procedure after milestones completion, up to 11 years and then every four years, for non-GSO constellations that experience a sustained reduction in the number of space stations.

17. **Agenda Item 7 Topics E, F, H and I**: *Long-term protection of the Space Plans for ensuring equitable access to the geostationary orbit (GSO) in the fixed or broadcasting satellite services.*

18. For topic E, the Conference introduced a new annex in RR Appendix 30B modifying the procedure for the addition of a new national allotment to the Plan in response to the coordination challenges faced when an allotment or an assignment are still identified as being affected. The objective is to ensure equitable access to the GSO for all ITU Member States within certain fixed-satellite service (FSS) frequency bands.

19. For topic F, the Conference decided to add a mechanism allowing administrations with no system in the List to benefit from an increased priority and assistance from the Radiocommunication Bureau, under certain conditions. The Appendices 30A and 30B were also amended to introduce provisions allowing administrations to request the exclusion of their territory from the feeder-link service area of other satellite networks.

20. For topic H, the Conference decided to enhance the long-term protection of Space Plans in ITU Regions 1 and 3, by modifying of the procedure to mitigate the degradation of the reference situation of assignments and allotments due to the "implicit agreement" mechanism.

21. For topic I, the Conference decided to address the issue of low overall aggregate carrier-to-interference levels (below 21 dB) in certain national allotments of the Space Plans of the RR Appendix 30B without changing the orbital position. A new type of agreement is added between administrations until the bringing into use of the assignment stemming from the national allotment.

22. **Agenda Item 7 Topic K**: *review of the special procedure in the Resolution 553 for enhancement of equitable access to broadcasting-satellite networks in the frequency band 21.14-22 GHz in ITU Regions 1 and 3.*

23. For topic K, the Conference eliminated certain restrictions outlined in Resolution 553 (Rev. WRC-15) to enable administrations to more effectively utilize the special procedure designed to facilitate access to the frequency band 21.14-22 GHz in ITU Regions 1 and 3.

24. **Agenda Item 9.1-a**: *Protection of radio spectrum-reliant space weather sensors used for global prediction and warnings*. Resolution 657 (Rev. WRC-19)

25. Space weather observations detect solar activity events that can impact national economies, human welfare and national security.

26. The Conference decided to add a new Article 29B in the RR on the radio service related to space weather observation indicating that such sensors may operate under the meteorological aids service in the subset “MetAids (space weather)” allocations. A new Resolution relates the importance of space weather observations and highlights their service designation. It resolves that the following definition for space weather shall be used: *space weather*: natural phenomena, mainly originating from solar activity and occurring beyond the major portion of the Earth’s atmosphere, that impact Earth’s environment and human activities.

27. Studies will continue until WRC-27 in the context of a new WRC resolution on space weather sensor systems. See Agenda Item 10 below.

28. **Agenda Item 9.1-d**: *Protection of EESS (passive) in the frequency band 36-37 GHz from non-GSO FSS space stations*.

29. The Conference decided to add a new footnote to the table of frequency allocations so that non-GSO systems in the fixed-satellite service operating in the frequency band 37.5-38 GHz with an altitude of apogee ranging from 407 km to 2 000 km shall not exceed an unwanted emission e.i.r.p. density of −21 dB(W/100 MHz) per space station (for certain angles) in the frequency band 36-37 GHz in order to protect the EESS (passive).

30. The Conference made decisions to **other agenda items** related to space services, such as: new aeronautical mobile-satellite service (AMS(R)S) allocation in the VHF range to complement the existing terrestrial aeronautical system, harmonization of use of spectrum and new communication for Earth Stations In Motion (ESIMs), inter-satellite links allocation, etc.

31. About the Resolution 559 (WRC-19), the Conference also endorsed the successful application of the special procedure by **41 national Administrations to regain spectrum and orbital resources in the BSS Plan.**

32. **Agenda Item 10**: *proposal of agenda items to recommend to the Council for the next WRC in 2027.* Resolution 804 (Rev. WRC-19)

33. The Conference finally adopted the draft agenda of the next WRC in 2027 based on proposals received from Member states. The following are particularly related to the work of the COPUOS and its sub-committees:

A**genda Item 1.5** to consider regulatory measures, and implementability thereof, to limit the unauthorized operations of non-geostationary-satellite orbit earth stations in the fixed-satellite and mobile-satellite services and associated issues related to the service area of non-geostationary-satellite orbit satellite systems in the fixed-satellite and mobile-satellite services.

(b) **Agenda Item 1.6** to consider technical and regulatory measures for fixed-satellite service satellite networks/systems in the frequency bands 37.5-42.5 GHz (space-to-Earth), 42.5-43.5 GHz (Earth-to-space), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) for equitable access to these frequency bands.

(c) **Agenda Item 1.15** to consider studies on frequency-related matters, including possible new or modified space research service (space-to-space) allocations, for future development of communications on the lunar surface and between lunar orbit and the lunar surface.

(d) **Agenda Item 1.16** to consider studies on the technical and regulatory provisions necessary to protect radio astronomy operating in specific Radio Quiet Zones and, in frequency bands allocated to the radio astronomy service on a primary basis globally, from aggregate radio-frequency interference caused by non-geostationary-satellite orbit systems.

(e) **Agenda Item 1.17** to consider regulatory provisions for receive-only space weather sensors and their protection in the Radio Regulations, taking into account the results of ITU Radiocommunication Sector studies.

(f) **Agenda Item 1.18** to consider, based on the results of ITU Radiocommunication Sector studies, possible regulatory measures regarding the protection of the Earth exploration-satellite service (passive) and the radio astronomy service in certain frequency bands above 76 GHz from unwanted emissions of active services.

34. Before the WRC-23, the **RA-23[7] adopted Resolution ITU-R 74** on Activities related to the sustainable use of radio-frequency spectrum and associated satellite-orbit resources used by space services, recognizing the existing mandate and current work being done within the COPUOS to advance the long-term sustainability of outer space and the importance of not duplicating work already being done elsewhere in the UN system.

35. The Resolution emphasises the continuation of technical activities, including those on radio interference assessment and mitigation techniques among non-GSO systems in support of long-term sustainability in the scope of ITU-R, taking into account the special needs of the developing countries and the geographical situation of particular countries.

36. Additionally, there is a directive to develop a Handbook on best practices for the sustainable use of frequencies and associated non-GSO orbits, including individual experiences and guidelines adopted by Member States and Sector Members.

37. The Resolution instructs the ITU-R to develop a new Recommendation providing guidance on safe and efficient deorbit and/or disposal strategies and methodologies for non-GSO space stations focusing on the radio-frequency spectrum and associated satellite-orbit resources.

38. It also instructs the Director of the Radiocommunication Bureau to create a website, containing a compendium of links to available and reliable information on the subjects described in resolves 2 of this Resolution, and to collaborate and exchange information with other United Nations organizations dealing with space activities, as well as with UNOOSA and COPUOS, during the studies performed in the scope of this resolution.

39. In addition to this Resolution, the Plenary meeting of the RA-23 instructed the ITU-R to consider how to facilitate a satellite operator to get the relevant **information on radio astronomy sites**, including the contact point of the Administration in the territory of which the radio astronomy site, and/or its potential radio quiet zone, is located.

40. **RA-23 and WRC-23 generally encourage COPUOS and subcommittee members to follow and participate in the work of the ITU-R study cycle and to stay informed through liaison activities between the ITU and COPUOS**.

[7] https://www.itu.int/ra-23/documents/