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RSPG Report

on the result of the

ITU-R World Radiocommunication

Conference 2023

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1. Introduction

The World Radiocommunication Conference 2023 (WRC-23) of the International Telecommunication Union (ITU) took place in Dubai, UAE, from 20 November to 15 December 2023. The conference is the peak of a preparation period of several years after WRC-19. The Conference was attended by 163 Member States and over 4000 participants.

The preparation with technical studies towards the elaboration of common proposals for the 46 members of European Conference of Telecommunication and Postal Administrations (CEPT) was done by the Conference Preparatory Group, as for previous WRC. This included also in-depth analysis of the positions and proposals of the five other regional groups acknowledged by the ITU.

Inside the Union, the Radio Spectrum Policy Group (RSPG), the European Commission as well as the Council worked closely and in a timely manner on the Union's position for WRC-23 on those Agenda items for which a decision of the WRC may affect common rules or alter their scope. The role of the RSPG is to assist and advise the European Commission on radio spectrum policy issues, on coordination of policy approaches, on the preparation of multiannual radio spectrum policy programmes and, where appropriate, on harmonised conditions with regards to the availability and efficient use of radio spectrum necessary for the establishment and functioning of the internal market. The RSPG notes that the reasons for concluding that a Union objective can be better achieved at Union level shall be substantiated by qualitative and, wherever possible, quantitative indicators.

In its Opinion on WRC-23¹, the RSPG provided recommendations for an EU position on those Agenda items for which an EU position was considered necessary. With a view to WRC, the RSPG emphasised in its Opinions the importance of relying on the strength of CEPT inside the ITU.

Based on the RSPG Opinion, the European Commission developed a proposal for an EU position for the WRC-23 to the Council, which addressed all elements identified by the RSPG and in addition Agenda items 1.7 and 9.2 GNSS. Those Agenda items, covered by the Council Decision², were related to Maritime safety and traffic management (Agenda item 1.11), Aeronautical safety and traffic management (Agenda item 1.7, 9.2 GNSS protection), International Mobile Telecommunication -5G- (Agenda items 1.2, 1.3, Art. 21), Broadcasting (Agenda item 1.5), Space Systems (Agenda items 1.14, 1.15, 1.16, 9.1 topic a, 9.1 topic d, Protection of Satellite Navigation (9.1 topic b) and relevant issues for the future Agenda for WRC-

¹ RSPG22-040final - https://radio-spectrum-policy-group.ec.europa.eu/document/download/61378c81-1e03-45a6-aa49-6190809ee3ed_en?filename=RSPG22-040final-RSPG_Final_Opinion_on_WRC23.pdf

² Council decision on the position to be taken on behalf of the European Union in the International Telecommunication Union (ITU) World Radiocommunication Conference 2023 (WRC-23), adopted by the Council of the European Union (Agriculture and Fisheries) in its 3698th meeting held on 18 September 2023 - (<https://data.consilium.europa.eu/doc/document/ST-13144-2023-INIT/en/pdf>)

27 (Agenda item 10). After consideration and amendments to the European Commission proposal, the Council approved a Decision on an EU position for WRC-23². Member States were obliged to do their utmost to ensure that the objectives foreseen in the EU position were preserved in the outcomes of the WRC-23 and the attainment of these objectives were not subject to burdensome conditions.

Member States and the European Commission worked closely together to provide a united view within the CEPT and at the conference to achieve the possible best results at WRC-23 for the Union.

This Report describes and analyses the results of WRC-23 compared to the EU positions in the Council Decision and evaluate further the effectiveness of the EU coordination during WRC-23. This takes also into account views from stakeholders presented in a specific meeting. In general, all stakeholders welcome this opportunity and invited RSPG to continue this transparent initiative.

2. WRC-23 results regarding European Union positions

WRC-23 adopted modifications to the Radio Regulations (RR), which consist an international treaty applied by all ITU Member States, in order to preserve access to spectrum and orbit resources in all parts of the world, without harmful interference and to facilitate the efficient and effective operation of all radiocommunication services.

2.1. WRC-23 Agenda item 1.2 (IMT mid-band identifications)

This Agenda item considered, based on the results of sharing and compatibility studies, possible identification of various frequency bands for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis as appropriate. The list of bands depends on the ITU Region (Europe is part of Region 1):

- 3 600-3 800 MHz (Region 2);
- 3 300-3 400 MHz (Region 2);
- 3 300-3 400 MHz (amend footnote in Region 1);
- 6 425-7 025 MHz (Region 1); 7 025-7 125 MHz (globally);
- 10 000-10 500 MHz (Region 2)

a) 3 600-3 800 MHz (Region 2)

There was no EU position for this frequency band in Region 2³.

b) 3 300-3 400 MHz (Region 2)

The EU position requested the Member States to “*oppose any change of regulatory provisions applicable to stations of International Mobile Telecommunications (IMT) in the frequency band 3 300 – 3 400 MHz in the ITU Region 2, in particular any relaxation of these provisions regarding the radiolocation services.*”

WRC-23 decided to identify this frequency band for IMT, previously limited to few countries in Region 2, to the whole Region 2 but kept unchanged the provisions applicable to IMT regarding the coexistence

³ Noting for completeness: The frequency band 3 600 – 3 700 MHz has been identified for IMT in Region 2, and the frequency band 3 700 – 3 800 MHz in twelve countries of Region 2 as well as in the French overseas departments and communities in Region 2, Greenland, and the overseas countries and territories within the Kingdom of the Netherlands in Region 2. Administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to ensure the protection of the fixed-satellite service (space-to-Earth).

with the radiolocation service.

c) 3 300-3 400 MHz (amend footnote in Region 1)

The frequency band 3 300-3 400 MHz is a NATO harmonised band used by military radars, including on-board ships and aircraft, and therefore relevant to the Common Security and Defence Policy (CSDP).

The EU Position requested the Member States to:

- *“Oppose any change in the existing IMT identification in the frequency band 3 300 – 3 400 MHz in the ITU Region 1 that would result in the extension of the IMT identification to the entire ITU Region 1.*
- *Oppose any change of regulatory provisions applicable to IMT stations in the band, in particular any relaxation of **these provisions regarding the radiolocation services.**”*

WRC-23 confirmed a general No Change position. However, offline discussions on the inclusion of certain countries footnotes Nos. **5.429A** and **5.429B** for the mobile service and IMT identification respectively took place, but did not reach consensus due to concerns regarding the protection of the critical radiolocation service in the band, used nationally as well as in international waters and air space by NATO countries. In particular it is ensured, that any national implementation of IMT stations shall not cause harmful interference to, or claim protection from, systems in the radiolocation service outside the territories of those countries and are subject to agreement of neighbouring countries.

d) 6 425 – 7 025 MHz (Region 1) and 7 025 – 7 125 MHz (globally)

The EU position requested the Member States to *“accept, after assessing proposals made at WRC-23, an IMT identification of the frequency bands 6 425 – 7 025 MHz and 7 025 – 7 125 MHz or a portion thereof without advocating or actively supporting such identification, and only on the conditions that:*

- *the incumbent services and applications in these bands can continue to operate and are protected through relevant provisions in the ITU Radio Regulations, and no candidate frequency band within the frequency range 7 125 MHz – 30 GHz, which would jeopardise usages relevant to the Common Security and Defence Policy or to the Union’s Space policy, is considered to be studied for IMT identification at the WRC-27, and*
- *additional provisional safe harbor allocations are accepted for sea surface temperature ‘SST’ measurements in other frequency bands.”*

WRC-23 decided to make an IMT identification for the frequency bands *6 425 – 7 025 MHz* and *7 025 – 7 125 MHz*, while the protection of the incumbents was ensured, specifically the FSS is protected with an e.i.r.p.-mask above horizon in line with the proposal from CEPT and EU Member States. Further, the RLAN usage of the bands was reflected in the new IMT identification footnote.

Finally, WRC-23 decided to propose a new Agenda item 1.19 for WRC-27 that will allow for the permanent establishment of a new safe harbour for SST, meaning possible new allocations in the 4 200 – 4 400 MHz and 8 400 – 8 500 MHz ranges for EESS passive, where a clear commitment of the Member States is necessary to achieve this objective at WRC-27.

The European position taken by the Member States was heavily questioned during the related discussions for the condition regarding an Agenda item on IMT identification at WRC-27. Those regional groups and administrations outside the EU and CEPT tried intensively to steer the evolvement of the position during the conference. Under this pressure, the Member States managed in a common effort to get the conditions related to use of the upper 6 GHz band to be included in the discussions under Agenda item 1.2 and achieved those. The condition related to a WRC-27 Agenda item has been discussed only under Agenda item 10.

e) 10 000-10 500 MHz (Region 2)

The EU position requested the Member States to “*oppose any IMT identification in the frequency band 10 – 10.5 GHz in the ITU Region 2, in order to ensure the protection of Earth Exploration-satellite service in the same and in adjacent frequency bands, and radars, both operating globally*”.

Notwithstanding that, WRC-23 decided to identify the frequency band 10 – 10.5 GHz for IMT, via footnote No. **5.480A** for 12 countries in Region 2, while addressing and ensuring the protection of the incumbent services including EESS. Member States were able to agree to this IMT identification since very restrictive technical and regulatory limitations are included, determining possible implementations only with very low transmission power, leading to micro-cell deployments for IMT usage. Further, high performance antennas are required to suppress the side-lobes to the necessary levels to protect incumbent services. Those -combined- requirements will lead to appropriate and continued protection of the relevant missions in the Earth Exploration-Satellite service and Radiolocation service of European interest.

f) Summary for Agenda item 1.2

In summary, negotiations were especially difficult and complex for this Agenda item, but at the end all positions of the Council Decision have been reached, except the condition regarding a new WRC-27 Agenda item on possible IMT identifications within the frequency range 7 125 MHz - 30 GHz (due to the interlinkage between Agenda items in the EU position). See also Agenda item 10.

2.2. WRC-23 Agenda item 1.3 (MS 3 600 – 3 800 MHz)

This Agenda item considered the possible upgrade of the allocation of the 3 600 – 3 800 MHz band to the mobile service, except aeronautical mobile service, on a primary basis, within Region 1. It is noted that the frequency band 3 600 – 3 800 MHz is already allocated on a primary basis in Europe⁴.

The EU position requested from the Member States to “*support the upgrade of the allocation of the frequency band 3 600 – 3 800 MHz in the ITU Region 1 to the mobile service, except aeronautical mobile service, on a primary basis under regulatory and technical conditions, which are consistent with Commission Decision 2008/411/EC in order to also facilitate Member State coordination with non-EU countries in line with the Radio Regulations. In addition, support the regulatory safeguards for the protection and continued operations and development without undue constraints of the incumbent co-primary fixed-satellite service and fixed service in the frequency band 3 600 – 3 800 MHz.*”

WRC-23 decided to upgrade the allocation of the 3 600 – 3 800 MHz band to the mobile service to primary in Region 1, while ensuring protection to the fixed and fixed-satellite services through a power flux-density (pfd) limit and coordination procedures.

For the protection of stations in the fixed and fixed-satellite services, before an administration in Region 1 brings into use a station in the mobile service in the frequency band 3 600 – 3 800 MHz, it shall ensure that the pfd produced at the border of the territory of any other administration does not exceed the pdf limit, otherwise coordination according to No. **9.21** will also apply.

Further to the upgrade of the frequency allocation, some country footnotes were agreed for countries outside CEPT, who chose either not to upgrade the allocation in the band 3 700 – 3 800 MHz or to identify parts of the frequency range for IMT.

⁴ For further information see the European Common Allocation Table (CEPT ERC-Report 25) - <https://efis.cept.org/sitecontent.jsp?sitecontent=ecatable>

In summary, the position of the Council Decision has been reached on this Agenda item.

2.3. WRC-23 Agenda item 1.5 (UHF Review)

This Agenda item dealt with a review on the spectrum use and spectrum needs of existing services in the frequency band 470 – 960 MHz in Region 1 and with possible regulatory actions in the frequency band 470 – 694 MHz band, based on the review.

The review considered -in particular- spectrum requirements of the broadcasting and mobile, except aeronautical mobile, services. Beside these two services, the frequency band 470 – 960 MHz is also allocated to a number of other services⁵.

The EU Position requested Member States to “*to ensure that a regulatory decision of WRC-23 regarding the frequency band 470 – 694 MHz in the ITU Region 1 is compliant with Decision (EU) 2017/899⁶, in particular as regards providing priority to broadcasting and programme making and special events (PMSE) usage until at least the end of 2030.*”

To this end, Member States were requested to “*support a secondary allocation to the mobile service, except aeronautical mobile service, of the frequency band 470 – 694 MHz in the ITU Region 1 at WRC-23 and support the inclusion of the agenda item for WRC-31 to consider a possible allocation of that band in the ITU Region 1 to the primary mobile service, except aeronautical mobile service.*”

There was no proposal to change the primary allocation of the broadcasting service. Consequently, WRC-23 retained the allocation unchanged.

WRC-23 decided on:

1. a new secondary mobile, except aeronautical mobile, footnote allocation was adopted for 43 CEPT administrations through footnote No. **5.295A**, which applies to the entire frequency band 470 – 694 MHz. Italy and Spain were objected by neighbouring countries (Algeria and Tunisia) and so could not be included. Any deployment of the mobile service is subject to agreement under No. **9.21** of the RR and therefore requires co-ordination with neighbouring countries. In addition, this allocation needs to comply with the Geneva 2006 Agreement and as such shall in no way adversely affect the broadcast development or undermine new entries of the broadcast service to the GE06 Plan.
2. a new primary mobile footnote allocation, except aeronautical mobile, and IMT identification was agreed for implementation through a country footnote No. **5.307A**, which applies to the frequency range 614 – 694 MHz for ten ASMG countries. The use is subject to the agreement obtained under No. **9.21**. Stations in the mobile service of the countries listed in this footnote shall not cause harmful interference to or claim protection from the existing and future broadcasting stations of the neighbouring countries operating in accordance with the GE06 Plan.
Furthermore, a new secondary mobile, except aeronautical mobile, footnote allocation was adopted for 8 African administrations through footnote No. **5.307B** which applies to the frequency band 614 – 694 MHz.
3. Resolution 224 has been consequently modified, amongst other items, to ensure, that

⁵ Allocations in the band 470 – 960 MHz for Region 1: fixed, radiolocation, land mobile ancillary to broadcasting and programme-making, radio astronomy, aeronautical radionavigation, mobile-satellite except aeronautical mobile-satellite (R)

⁶ Decision (EU) 2017/899 of the European Parliament and of the Council of 17 May 2017 on the use of the 470-790 MHz frequency band in the Union, OJ L 138, 25/05/2017, p. 131 – <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32017D0899>

administrations take into account the need to protect existing and future broadcasting stations.

4. Resolution 235 has been consequently modified to, amongst other items, enable a review, after WRC-27, of the spectrum use of the frequency band 470 – 694 MHz or parts thereof for some countries in Region 1 and, based upon this review, consider:
 - i. possible regulatory actions in the frequency band 614 – 694 MHz at WRC-31;
 - ii. possible regulatory action to protect radio astronomy services in the frequency band 608 – 614 MHz.

The regulatory status of PMSE by footnote No. **5.296** remains unchanged, so (parts of) the frequency band can be used for PMSE purposes.

The position of the Council Decision concerning the inclusion of another review by an Agenda item for WRC-31 was met, with the amendment, that a possible upgrade to primary is limited to 614 – 694 MHz range, instead of 470 – 694 MHz. It needs to be noted that the final Agenda for WRC-31 will be set at WRC-27.

Even if this Agenda item was one of the most difficult items, with very diverging views within CEPT, the EU Member States managed to satisfactorily reach the position of the Council Decision.

2.4. WRC-23 Agenda item 1.7

This Agenda item considered a possible allocation to a new aeronautical mobile-satellite (R) service (AMS(R)S) for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975 – 137 MHz, while preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands.

The Agenda item dealt with the definition of the relevant technical characteristics, compatibility studies between proposed AMS(R)S systems within the 117.975 – 137 MHz band and existing primary services in adjacent bands, and the allocation of the necessary spectrum for the new technology. The space-based VHF concept is based on the use of existing airborne equipment and may be used in geographically remote and oceanic areas in combination with satellite ADS-B to support radar-like separation of aircraft.

The EU Position requested Member States to “*support a new primary allocation to the aeronautical mobile-satellite (route) service in all or a part of the frequency band 117.975 – 137 MHz, provided that the use of the new allocation is limited to non-geostationary and internationally standardized aeronautical systems. In addition, by applying relevant provisions, taking into account the ongoing studies, support the protection of incumbent services in this frequency band and in the adjacent bands, and no imposition of additional operational restrictions on these services.*”

WRC-23 decided on a new primary allocation to the aeronautical mobile-satellite (route) service (AMS(R)S) in all the frequency band 117.975 – 137 MHz, associating the new allocation with two footnotes. Footnote No. **5.198A** addresses the application of No. **9.11A** (excluding No. **9.16**), limits the use of the new AMS(R)S allocation to non-geostationary satellite systems operated in accordance with international aeronautical standards and refers to the new Resolution **406 (WRC-23)**. Footnote No. **5.198B** indicates that the use of the frequency band 117.975 – 137 MHz by the aeronautical mobile (R) service shall have priority over use by the AMS(R)S.

The new Resolution **406 (WRC-23)** details certain elements of the regulatory framework, including the out-of-band pfd-limit for AMS(R)S emissions into the frequency band 137 – 138 MHz (–170 dB(W/(m² · 14 kHz)) at the Earth’s surface) to protect incumbent services, and provisions to indicate that

AMS(R)S space station receivers shall be designed to be resilient to the interference environment resulting from satellite systems operating in the frequency band 137 – 138 MHz. The Resolution stipulates that the identification or selection of channels for use by the AMS(R)S shall take into account the operational deployment of stations in the AM(R)S and when available, in the AM(OR)S, and not adversely affect the potential future modifications of AM(R)S channel planning.

In summary, the position of the Council Decision has been reached on this Agenda item.

2.5. WRC-23 Agenda item 1.11 (GMDSS)

This Agenda item dealt with possible regulatory actions to support three different issues which should be treated separately; actions needed to implement a GMDSS modernisation (issue A), actions needed to implement the e-navigation in the maritime mobile service (issue B), and actions to support the introduction of an additional satellite system into the GMDSS (issue C). Those three different issues are based on possible decisions to be taken within the International Maritime Organisation (IMO).

For issue A and C the EU Position requested the Member States:

- *“Under issue A, to support regulatory actions needed to implement the Global Maritime Distress and Safety System (GMDSS) modernisation in the Radio Regulations based on decisions made by the International Maritime Organisation (IMO).*
- *Under issue C, to not support regulatory actions in the RR for the introduction of an additional satellite system for the provision of GMDSS unless protection of the radio astronomy service is ensured, spectrum needs for such an additional satellite system are demonstrated, and there is no impact on the regulatory status of other radiocommunication services and assignments.”*

WRC-23 decided:

Under issue A, to adopt the measures proposed in the European Common Proposals to modernize GMDSS regulations, with a slight difference regarding the frequency band 1 645.5 – 1 646.5 MHz. This difference did not affect the objective of studying this frequency band for consideration for possible low data rate mobile satellite service operations at WRC-27.

Under issue C, to provisionally introduce Beidou Message Service System in the GMDSS, which will enter into force only after harmful interferences to other MSS systems have been eliminated and successful coordination of frequency assignments is completed. The characteristics of the GMDSS operation have been strictly limited to those of the IMO Resolution, i.e. GSO operations over a specific area around China. The Director of the Radiocommunication Bureau will report to WRC 27 the status of the implementation of this Resolution and any potential difficulties.

In summary, the position of the Council Decision has been satisfactorily reached on this Agenda item.

2.6. WRC-23 Agenda item 1.14 (EESS (passive) 250 GHz)

This Agenda item aimed to review existing frequency allocations to the Earth exploration-satellite service (EESS) (passive) in the frequency range 231.5 – 252 GHz and to assess potential adjustments or establish new primary allocations, to align with the latest observation needs of passive microwave sensors.

The EU position requested Member States to *“support a primary allocation to the Earth exploration-satellite service (EESS) (passive) in the frequency bands 239.2 - 242.2 GHz and 244.2 - 247.2 GHz, without unduly constraining other primary services with existing allocations in these frequency bands.”* This endorsement was contingent upon the confirmation of compatibility and sharing studies.

WRC-23 decided to adopt new global allocations for EESS (passive) in the bands 239.2 – 242.2 and

244.2 – 247.2 GHz and the shift of the fixed service (FS) and mobile service (MS) allocations from 238 – 241 GHz to 235 – 238 GHz. Furthermore, to address sharing concerns in the 235 – 238 GHz band, footnote No. **5.563AA** was introduced stipulating that the EESS (passive) in this frequency range shall not claim protection from the FS and MS.

With this adjustment, the newly allocated bands for the EESS can now be utilised for Ice Cloud Imager (ICI) measurements, a functionality incompatible with FS and MS. Consequently, these latter services secure a total of 7.7 GHz of uninterrupted spectrum within the 231.5 – 239.2 GHz band.

In summary, the position of the Council Decision has been reached on this Agenda item.

2.7. WRC-23 Agenda item 1.15 (GSO ESIM Ku-band)

This Agenda item dealt with the development of globally harmonised technical conditions and regulatory provisions for the operation of earth stations on aircraft and vessels communicating with GSO⁷ space stations in the fixed-satellite service (FSS) operating in the frequency band 12.75 – 13.25 GHz (Earth-to-space), taking into account the provisions of Appendix 30B (AP30B - FSS plan: nationally planned and pre-coordinated utilisation) of the RR, in order to respond to an increased need for broadband in-flight and maritime connectivity where only satellite infrastructure exists.

The EU position requested the Member States to *"support establishing a regulatory framework and technical requirements for the operation of earth stations on aircraft and on vessels that communicate or plan to communicate with geostationary space stations in the fixed-satellite service (FSS) in the frequency band 12.75 – 13.25 GHz (Earth-to-space), as well as protecting the services with existing allocations in this frequency band and in bands adjacent to it and avoiding any impact on procedures and existing rights under the Appendix 30B of the Radio Regulations."*

WRC-23 determined a regulatory framework for the frequency band 12.75 – 13.25 GHz, allowing the use of those bands for earth-stations in motion (ESIM) onboard vessels and aircrafts communicating with GSO satellites. Filings for satellite networks to enter the new ESIM List in AP30B will be possible from November 2024 onwards.⁸

Relevant provisions, inter-alia, are:

- a course of actions in case of unacceptable interference;
- regulatory conditions and a filing procedure based on the new ESIM List in AP30B;
- technical conditions for ESIM operations (e.g. pfd limits or distances) for the protection of terrestrial services;
- ESIM minimum requirements for the protection of NGSO satellite systems;

and are referred to in Resolution **121 (WRC-23)**.

With this, the negotiations under WRC-23 Agenda item 1.15 can be considered successful for Europe and the position of the Council Decision has been reached.

2.8. WRC-23 Agenda item 1.16 (Non-GSO ESIM Ka-band)

This Agenda item dealt with the development of globally harmonised 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-

⁷ Geostationary Orbit

⁸ Furthermore, ITU-R is invited to develop, as a matter of urgency, a new Recommendation on ESIM operations, Network Control and Management Centre (NCMC) and switching facilities.

GSO⁹ FSS earth stations in motion (ESIM), while ensuring the required protection of GSO systems and other services operating in the same frequency bands and in adjacent bands, including passive services. Non-GSO ESIM will enable the provision of broadband connectivity for a variety of applications, with the added benefits of increased flexibility/security and decreased latency.

The EU Position requested Member States to:

- *“Support the development of an international regulatory framework to allow earth stations in motion (ESIMs) of non-geostationary satellite systems (non-GSO) to use the frequency bands 17.7 – 18.6 GHz, 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).*
- *Support, within such a framework, the protection of geostationary-satellite systems and other services operating in the same and in adjacent frequency bands, including passive services in general, and EESS (passive) sensors in the frequency band 18.6 – 18.8 GHz, in particular, with the objective to ensure global protection of the European satellite system Copernicus.”*

WRC-23 defined a regulatory framework for the frequency bands 17.7 – 18.6 GHz, 18.8 – 19.3 GHz, 19.7 – 20.2 GHz (space-to-Earth) and 27.5 – 29.1 GHz, 29.5 – 30 GHz (Earth-to-space), allowing the use of those bands for earth-stations in motion (ESIM) on-board vessels and aircrafts communicating with non-GSO satellites, with relevant provisions (referred in Resolution **123** of WRC-23) such as

- the notifying administration remains responsible to eliminate the harmful interference while other potentially involved administrations may collaborate on a voluntary basis.
- the ESIM authorizations will not be published.

Furthermore, in case of unacceptable interference, the Radiocommunication Bureau (BR) will request this information from the notifying administration on a bilateral basis.

In the meantime, ESIM can operate under a commitment of the notifying administration to remove any unacceptable interference.

Technical conditions to ESIM operations for the protection of terrestrial services are laid out in the new Resolution **123 (WRC-23)**.⁸

In summary, the negotiations under WRC-23 Agenda item 1.16 can be considered successful for Europe and the position of the Council Decision has been reached on this Agenda item.

2.9. WRC-23 Agenda item 9.1

This Agenda item was to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention, on the activities of the Radiocommunication Sector since WRC-19. The four topics listed under this Agenda item requested studies to be performed in ITU-R by the membership in accordance with the respective WRC Resolutions or decisions. The Director of the Radiocommunication Bureau reported on these results of the studies to be considered by the Conference, WRC-23.

2.9.1. WRC-23 Agenda item 9.1 topic a (Protection of space weather sensors)

Topic a under Agenda item 9.1 addressed the protection of radio spectrum-reliant space weather sensors used for global predictions and warnings. Various types of sensors, active and passive, operate in a wide

⁹ Non-Geostationary Orbit

range of frequencies for observing space weather phenomena, in particular for the detection of solar activity and the impact of solar activity on the Earth, its atmosphere and its geosphere.

The EU Position requested Member States to “*support the recognition of space weather sensors through an appropriate definition in the Radio Regulations and, under a new agenda item for WRC-27, the identification of priority frequency bands used for providing data that are critical for space weather forecasting/warnings.*”

WRC-23 decided to include service designation for space weather sensors through the new Article **29B** under Chapter VI of the RR. Article **29B** also includes a reference to the new Resolution **675 (WRC-23)** on the importance of space weather observation, in which a definition of space weather is included.

WRC-23 further decided for an Agenda item for WRC-27 with a view to take regulatory action for receive-only space weather sensors, i.e. to allocate on a primary basis possible new frequency bands for the radiocommunication service MetAids (space weather).

In summary, the position of the Council Decision has been reached on this Agenda item.

2.9.2. WRC-23 Agenda item 9.1. topic b (RNSS protection from Amateur service at 1 300 MHz)

Topic b under Agenda item 9.1 was to perform a detailed review of the different systems and applications used in the amateur and amateur-satellite services with secondary allocations in the frequency band 1 240 – 1 300 MHz and to study possible technical and operational additional measures to ensure the protection of the receivers of the radionavigation-satellite (space-to-Earth) service operating in the same band in accordance with Resolution **774 (WRC-19)**.

The EU Position requested Member States to *support the establishment of technical conditions applicable to the secondary amateur and amateur-satellite service that provide adequate protection of the radionavigation-satellite service (RNSS), including various Galileo services, in the frequency band 1 240 – 1 300 MHz by means of an ITU-R Recommendation for incorporation by reference in the Radio Regulations at WRC-23. In the case the text of such Recommendation is not available or satisfactory, support a WRC Resolution at WRC-23.*”

WRC-23 decided to include in a footnote the reference of the relevant new Recommendation ITU-R M.2164-0 providing “*guidance on technical and operational measures for the use of the frequency band 1 240 – 1 300 MHz by the amateur and amateur-satellite service in order to protect the radionavigation-satellite service (space-to-Earth)*” after its approval and adoption by the Radiocommunication Assembly 23, without incorporation by reference.

In summary, the objective from the position of the Council decision on this Agenda item is fulfilled, as there is a reference in the RR to the appropriate ITU-R Recommendation.

2.9.3. WRC-23 Agenda item 9.1. topic d (EESS (passive) 37 GHz)

Topic d under Agenda item 9.1 dealt with the protection of EESS (passive) sensors operating in the 36 – 37 GHz band from any interference by non-GSO FSS space stations downlinks in large constellations in the frequency band above 37.5 GHz.

The EU Position requested the Member States to “*support the protection of EESS (passive) sensors operating in the frequency band 36 – 37 GHz from non-GSO FSS systems operating in the band 37.5 – 38 GHz and the inclusion of relevant conditions (such as an unwanted emission limit) that would ensure such protection in the Radio Regulations.*”

WRC-23 reached consensus on a limit of -21 dBW/100 MHz in the band 36 – 37 GHz per satellite in the

fixed-satellite service (all beams) for angles greater than 65° from the satellite nadir. This value has been inserted in footnote No **5.550CA** of the RR.

In summary, the position of the Council Decision has been reached on this Agenda item.

2.9.4. Studies in relation with RR Article 21

As a follow up of decisions on the identification of the 26 GHz frequency band for 5G/IMT, WRC-19¹⁰, instructed ITU-R to study urgently the application of the No. **21.5** to IMT Active Antenna Systems (AAS) station and the update of Table **21-2** of Article **21**. No. **21.5** provides a protection of satellite reception from interference of terrestrial stations by limiting the power transmitted to the antenna. However, in the case of active antenna system used for 5G/IMT, the antenna includes the power amplifiers and the Radiocommunication Bureau of the ITU cannot check the compliance of 5G/IMT station. Therefore, WRC-23 was expected to address this issue in response to the Report from the Director of the BR.

The EU Position requested Member States to “*support an update of Article 21 of the Radio Regulations to include technical conditions for the frequency band 24.45 - 29.5 GHz, which are applicable to IMT base stations using Active Antenna Systems (AAS), in order to ensure protection of satellite receivers from cumulative interference from IMT base stations using AAS.*”

WRC-23 decided to include technical conditions in the RR for protecting satellite receivers from IMT base stations using AAS, as proposed in the European Common Proposal, through a different provision than Article **21**.

In summary, the position of the Council Decision has been reached on this Agenda item.

2.9.5. WRC-23 Agenda item 9.2 - GNSS protection

This issue under Agenda item 9.2 considered measures to prevent and/or mitigate harmful interference to the global navigation-satellite service (GNSS) in the frequency band 1 559 – 1 610 MHz.

The EU Position requested Member States to “*support a recommended action stemming from the Report of the Director of the Radiocommunication Bureau, proposing a Resolution as regards strengthening civil-military coordination in line with the Radio Regulations and the ITU Constitution, in particular with its Article 48, in order to prevent and/or mitigate effectively the cases of harmful interference to the GNSS operating in the frequency band 1 559 – 1 610 MHz that could jeopardise the safety in civil aviation, without prejudice to the right of administrations to deny access to RNSS for security or defence purpose.*”

WRC-23 adopted the new Resolution **676 (WRC-23)** on the prevention and mitigation of harmful interference to the radionavigation-satellite service in the frequency bands 1 164 – 1 215 MHz and 1 559 – 1 610 MHz resolving to urge administrations as a summary, to apply necessary measures to avoid the proliferation, circulation and operation of unauthorized transmitters, to take various actions to prevent and mitigate harmful interference affecting the RNSS operating in the frequency bands 1 164 – 1 215 MHz and 1 559 – 1 610 MHz without prejudice to the right of administrations to deny access to the RNSS, for security or defence purposes and to report cases in accordance with Article **15**.

In summary, the position of the Council Decision has been reached on this Agenda item.

¹⁰ see document WRC-19/550-E <https://www.itu.int/md/R16-WRC19-C-0550/en>

2.10. WRC-23 Agenda item 10 - New Agenda WRC-27

Agenda items for inclusion in the Agenda for the next World Radiocommunication Conference (WRC-27), and items for the preliminary agenda of future conferences, in accordance with Article 7 of the ITU Convention and Resolution **804 (Rev.WRC-19)** were developed under Agenda item 10. Final decision on the Agenda for the next WRC is then taken by the ITU Council.

The EU Position requested the Member States to:

- *“Oppose considering for studies for IMT identification at WRC-27 any candidate frequency band within the frequency range 7.125 – 30 GHz, which would jeopardise usages relevant to the Common Security and Defence Policy or to the Union’s Space policy.*
- *Support the inclusion of an agenda item for WRC-31 to consider a possible co-primary allocation to the mobile service, except aeronautical mobile service, in the frequency band 470 – 694 MHz in the ITU Region 1.*
- *Oppose consideration at WRC-27 of any possible additional spectrum allocation to the mobile service in the frequency band 1 300 – 1 350 MHz.*
- *Support consideration at WRC-27 of additional new safe harbour allocations for sea surface temperature ‘SST’ measurements outside the 6 425 – 7 125 MHz frequency band.*
- *Support consideration of the identification at WRC-27 of frequency bands used for providing data that are critical for space weather forecasting warnings.”*

WRC-23 agreed on the future agendas for WRC-27 (see Annex 1) and WRC-31 (see Annex 2).

37 proposals were discussed for the items to be included or suppressed in the (preliminary) agendas of WRC-27 and WRC-31 and some proposals were grouped together. With this grouping and suppression of some items the number of remaining proposals was still more than 30. Three of the above proposed Agenda items (2nd, 4th and 5th bullet) with EU relevance were included (see also Agenda item 1.5). In addition, the WRC-27 agenda does not contain any consideration of possible allocation of the band 1 300 – 1 350 MHz to the mobile service. However, some frequency bands have been included for consideration for IMT identification at WRC-27 which may jeopardize usages relevant to the Common Security and Defence Policy or to the Union’s Space policy, i.e. 4 400 – 4 800 MHz, 7 250 – 8 400 MHz and 14.8 – 15.35 GHz (see also Agenda item 1.2).

Although some elements of the Council Decision were fulfilled, some other were not. In summary the objective of the Council position has been partly reached and it is noted that for the objectives which have not been achieved the RSPG will consider an appropriate way forward during its work towards WRC-27.

3. Views from stakeholders

The RSPG decided that it would be beneficial to collect also views from stakeholders by its Subgroup on WRC. Stakeholders have been invited to a specific meeting (hearing) to provide their views on the preparatory process, the conference and the results.

In summary, the following specific views have been provided and were taken into account in the lessons learned or for the preparatory process towards WRC-27:

- On Agenda item 1.2 diverging views have been expressed. In general, stakeholders draw attention to the difficult negotiations and the balanced result, but highlighted also that some difficulties arose from the European approach to set a dependency to the result on Agenda item 10. This should be carefully reconsidered.
- Some stakeholders highlighted the importance of the result on Agenda item 1.3 as very positive with regards to harmonisation and border coordination between EU and non-EU countries;

- The transparent preparation and negotiation on the European level on Agenda item 1.5 has been mentioned as positive. The result has been received as positive to all interested stakeholder as well. Some critical comments were made on the appointment process of chairpersons during the conference. Some highlighted the result of retaining the existing usage of broadcasting and PMSE, where others focused more on new opportunities for mobile services in the future. The RSPG is currently working further on the use of this band in its subgroup on the future of UHF.
- Several stakeholders said that at the WRC-23 the use of informal high-level-groups (of ITU Regions' representatives) did not ensure enough transparency in negotiations and invited the Member States to enhance the transparency in particular regarding the work on new WRC-27 Agenda items.
- Some criticised that the EU positions were not publicly available.
- Stakeholders highlighted the importance of positions of other regional groups,
- Some stakeholders expressed the wish that the flow of information needs to be enhanced.
- Regarding the preparatory process of the RSPG, some stakeholders suggested that their positions/views may be invited more often and have a continuous open dialogue.

In summary, all stakeholders welcome the opportunity to review the conference and invited RSPG to continue this transparent initiative.

4. EU coordination at WRC-23 negotiations

4.1. Experience from WRC-23

The WRC-23 was the second WRC when EU Member States were guided by a Council Decision for negotiating Agenda items with particular EU relevance, also in the context of the European Common Proposals developed by the CEPT.

The number of Agenda items, requiring coordination by the EU, was higher compared to WRC-19 (14 instead of 10). This resulted in more EU coordination meetings organised by the Presidency of the Council, i.e. the delegation of Spain, and the European Commission (EC) compared to three at WRC-19, mainly on the request of EU Member States. It needs to be noted that the representation of the EC at WRC-23 was very limited. Consequently, the participation at the WRC-23 required an exceptional commitment and professional excellence of the EC representative(s).

The limited number of the EC representatives resulted further in a strong prioritisation of Agenda items with close monitoring and more intense EU coordination. The EU Member States recognised the added value of the EU coordination meetings and called for them even for preparing strategies for daily progresses. However, as challenging issues arose in short timeframes during WRC-23, EU coordination could be more reactive if the necessary information and collaboration between all involved parties is enhanced.

CEPT and the EU engaged before the Conference in order to support coherence during the preparation. The EC attended CEPT meetings regularly, which enabled the EU and CEPT to support common interests, also during WRC.

Where the CEPT coordinator was not from an EU Member State (Agenda item 1.16 and some topics under Agenda item 1.2), an EU Rapporteur from an EU Member State was designated so in case negotiations lead to a deviation from the relevant EU position, they reported to the EU coordination meeting. In addition, EU rapporteurs/CEPT coordinators informed points of contacts of Member States on the progress

of the negotiations on Agenda items via email correspondence.

During the Conference, EU coordination meetings were kept to the minimum necessary as recommended by the RSPG¹¹. In particular, EU coordination meetings did not address Agenda items where the evolving CEPT position stayed in line with the EU position.

Furthermore, WRC-23 used extensively proceedings of offline and high-level negotiations. This resulted in a lack of information to several EU Member States and stakeholders regarding the status of the negotiations. Overall, the transparency of the procedures applied and inclusiveness could be increased.

Despite tough negotiations, especially in the final days, with many discussions (including in smaller negotiating groups) held simultaneously, the EU Member States together with the European Commission maintained unity in defending the EU interests in line with the common EU position defined in the Council Decision.

Overall and outlined by all stakeholders, the results of WRC-23 are considered to be satisfactory for the EU, EU Member States and stakeholders. EU Member States agreed on the view that the EU position was consistently advocated for and that the best outcome possible was achieved in relation to the objectives of the Council Decision, taking account of the complexity of the negotiations and the need to reach compromises and consensus among all ITU countries.

4.2. Lessons learnt

4.2.1. Development of an EU position

As regards the process of substantiating and adopting the EU position, a stronger interplay than during previous preparations between the RSPG recommendations, CEPT process and the EU position was noted. Indeed, as soon as the RSPG Opinion on WRC-23 was adopted (in December 2022), Member States started to insert its elements in the CEPT preparatory process, at least for the most controversial issues, like the upper 6 GHz band and the UHF band review, and vice versa, as the discussions in CEPT evolved, certain CEPT solutions were reflected in the EU position, like the requirement for spectrum for the sea surface temperature (SST) measurement.

The late adoption of the Council Decision, two months before WRC-23, created some uncertainty and delay in the process of ensuring that European Common Proposals developed by CEPT were in line with the EU position. Generally, the Council Decision should be proposed and adopted timely (e.g. adoption at least 6 months before a conference). This also requires that the RSPG Opinion is adopted in a timely manner.

The EU Member States assuming the Presidency of the EU just before a particular WRC should be aware of their role in the process, following the development of recommendations for the EU position inside the RSPG subgroup and taking their part of responsibility in timely adoption of the Council Decision.

Interlinkage between Agenda items in the EU position creates some negotiation challenges. Dependencies between agenda items, in particular linking the position on one agenda item with the outcome on another, create procedural difficulties and objections, which makes it difficult to defend efficiently the EU position. It should be reflected how to address such cases in the future and a risk assessment and potential steps to mitigate the vulnerabilities should be developed.

¹¹ see RSPG Opinion on EU coordination (RSPG19-009) - https://radio-spectrum-policy-group.ec.europa.eu/document/download/cfb06e5c-1901-4d27-830a-ca800ecdfe84_en?filename=RSPG19-009final_RSPG_Opinion_EU-coordination.pdf

It is worth considering the value of aiming for an EU position when the position among the Member States is very diverging. In addition, European Common Proposals with complicated structure and with conditions unlikely to be achieved should be avoided.

The EU position should stay at a high level to provide Member States sufficient guidance for preparation and negotiation, thus allow a degree of flexibility and thus room for adaptation to unpredictable developments, in particular at the WRC.

Notwithstanding that it is important that the Member states need to ensure, in a continued effort over the whole cycle, that the essential high level EU objectives are reflected in development of relevant CEPT positions.

4.2.2. EU coordination

As regards EU coordination, the cooperation between EC and Spanish presidency was constructive and based on mutual trust. The whole process worked smoothly due to a good and timely preparation (preparatory work started 3 months before the conference) and could be taken as a role model for future WRCs.

At the WRC-23, EU coordination meetings were more extensively used to discuss substance (as compared to the WRC-19). However, there still prevails a perception that the EU coordination should only be called, if the EU position needs to be adapted, which may be a reason why EU coordination regarding the 3.3 – 3.4 GHz band issue was called late.

As such it needs to be emphasized that the scope of EU coordination is to ensure a common position and negotiation of EU Member States, hence it shall be able to respond to urgent developments with significance to EU positions and not only to adapt the EU position.

The EU coordination involves, among others, the appointment of EU Rapporteurs on each EU-relevant Agenda item. Their primary task is to closely follow the developments and alert the EU Presidency and EC team on any potential divergence from the EU position. They need to be aware of the EU position on the Agenda item they are following and their role before and during the WRC, to ensure effective safeguarding of EU interest which requires the consistency of available information regarding the process towards the development of the EU position and its results.

Additionally, it should be ensured that all EU rapporteurs, especially those that are at the same time also CEPT coordinators, are providing comprehensive and up-to-date information to the EU coordination, with the support of the EC team, in order to achieve a high-level of awareness of all Member States' representatives.

It was experienced during WRC-23 that more EU Rapporteurs were needed in short notice, depending on the negotiations process, in particular in AI 10. Member States should be aware that the progress of negotiations on Agenda item 10 may require additional support during the conference.

Successful EU coordination builds on the mutual trust between the Commission, Member States' and CEPT representatives. As regards the interplay/coordination between the EU and the CEPT, the EC team on spot fulfils its responsibilities in strong reliance on the information exchange within CEPT. Therefore, it is essential, the EC team has access to CEPT coordination meetings and to the online CEPT coordination tool. The purpose of EC involvement is not to influence CEPT discussions (in line with the EC observer status) but to be duly informed on the WRC developments, in order to ensure effective EU coordination, which further mutually benefits the CEPT coordination (given the majority status of EU-27 in the CEPT).

5. RSPG Conclusions

The RSPG adopted this Report and drew the following conclusions:

- The Commission proposal to the Council for an EU position took utmost account of the recommendations of RSPG in particular the objective to allow active negotiations.
- The RSPG notes that the Commission informed RSPG in advance about the additions that it wanted to include in the draft Council Decision so as to enable RSPG to provide further strategic advice.
- The RSPG notes that, the Council Decision should be stable enough on time (e.g. 6 months before WRC) for Member States to adopt a position within CEPT in a timely manner.
- EU coordination meetings were purposeful and kept to the minimum necessary.
- EU Rapporteurs often identical with the CEPT Coordinators, have been appointed and worked closely together within CEPT.
- It would be of value to consider the availability of additional EU Rapporteurs, when necessary.
- The Member States stayed united on all issues of the Council Decision and defended them actively. In case where an evolvement of the EU position was necessary, it was kept to a minimum possible.
- Update(s) on possible deviations from an EU position have been made in time to ensure active negotiations by all Member States in support of the EU position.
- The RSPG notes the concerns regarding the principles of transparency and equality of Member States at international fora on the applied procedure at WRC-23, in particular when negotiations were made in smaller, closed groups with representatives of the ITU regional groups. The RSPG invites the Member States to collaborate within CEPT to improve the negotiation processes at WRCs.
- The existing WRC preparation process via CEPT is to the utmost benefit of the EU and should be continued. RSPG will carefully monitor the processes and invite all parties concerned to improve it. Further, it is essential for the Union to independently develop its position on those Agenda items related to essential EU interests. RSPG will carefully identify those Agenda items.
- Future EU positions should stay at a high level to provide Member States guidance for the negotiation, thus allowing a degree of flexibility.
- Members States are reminded of their responsibilities to provide EU Rapporteurs in case a CEPT coordinator is from a Non-EU country. Those Rapporteurs should be aware of their role¹² at a WRC and the EU position, including possible changes on the relevant Agenda item(s).

¹² see RSPG Opinion on EU coordination (RSPG19-009)- https://radio-spectrum-policy-group.ec.europa.eu/document/download/cfb06e5c-1901-4d27-830a-ca800ecdfe84_en?filename=RSPG19-009final_RSPG_Opinion_EU-coordination.pdf

- The EU Member States carrying out the Presidency of the EU before and during a WRC should be aware of their role¹² in the process, follow the development of recommendations for the EU position inside the RSPG subgroup and take their part of responsibility in timely adoption of the Council Decision.
- All elements highlighted by the RSPG in its Opinion(s) have been taken into utmost account, in particular on the identified Agenda items with relevance to EU policies. As such the process of RSPG to address EU interests on WRC-23 was again fully satisfying.

The EU positions on specific WRC-23 Agenda items have been reached with limited deviations:
WRC-23 was a success for the EU!

References

RSPG Opinions and Reports

- RSPG Opinion on the ITU-R World Radiocommunication Conference 2023 ([RSPG22-040final](#))
- RSPG Interim Opinion on WRC-23 ([RSPG21-031final](#))
- RSPG Opinion on EU Coordination at ITU-R Radiocommunication Conferences ([RSPG19-009final](#))
- RSPG Opinion on the Preparation of ITU World Radiocommunication Conferences ([RSPG09-294final](#))

Council Decision

- Council Decision on the position to be taken on behalf of the European Union in the International Telecommunication Union (ITU) World Radiocommunication Conference 2023 (WRC-23) (<https://data.consilium.europa.eu/doc/document/ST-13144-2023-INIT/en/pdf>)

Annex 1: Agenda items of WRC-27

Annex 2: Preliminary Agenda items of WRC-31

ANNEX 1

AGENDA FOR WRC-27

Resolution 813 (WRC-23)

[...]

- 1.1 studies and regulatory measures on the use of 47.2-50.2 GHz and 50.4-51.4 GHz (Earth-to-space) for aeronautical and maritime earth stations in motion communicating with space stations in the fixed-satellite service with geostationary and non-geostationary satellites;
- 1.2 possible revisions of sharing conditions in the frequency band 13.75-14 GHz to allow the use of uplink fixed-satellite service earth stations with smaller antenna sizes;
- 1.3 studies relating to the use of 51.4-52.4 GHz by gateway earth stations transmitting to non-geostationary-satellites;
- 1.4 possible new primary allocations to the fixed-satellite service (space-to-Earth) in 17.3-17.7 GHz and broadcasting-satellite service (space-to-Earth) in the frequency band 17.3-17.8 GHz in Region 3, and to consider epfd limits to be applied in Regions 1 and 3 to non-geostationary-satellites in 17.3-17.7 GHz;
- 1.5 regulatory measures to limit unauthorised operations of non-GSO FSS and MSS earth stations and associated issues related to the service area of non-GSO FSS and MSS satellite systems;
- 1.6 technical and regulatory measures for fixed-satellite service satellite networks/systems in 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;
- 1.7 studies on International Mobile Telecommunications (IMT) in 4400-4800 MHz, 7125-8400 MHz (or parts thereof), and 14.8-15.35 GHz;
- 1.8 possible additional primary allocations to the radiolocation service in 231.5-275 GHz and possible new identifications for radiolocation service applications within 275-700 GHz for millimetric and sub-millimetric wave imaging systems;
- 1.9 regulatory actions to update Appendix 26 of the Radio Regulations in support of aeronautical mobile (OR) HF modernisation;
- 1.10 to develop power flux-density (pfd) and equivalent isotropically radiated power (e.i.r.p.) limits for inclusion in Article 21 of the Radio Regulations for fixed-satellite, mobile-satellite and broadcasting-satellite services to protect the fixed and mobile services in 71-76 GHz and 81-86 GHz;
- 1.11 technical and operational issues, and regulatory provisions, for space-to-space links among non-geostationary and geostationary satellites in 1518-1544 MHz, 1545-1559 MHz, 1610-1645.5 MHz, 1646.5-1660 MHz, 1670-1675 MHz, and 2483.5-2500 MHz allocated to the mobile-satellite service);
- 1.12 possible allocations and regulatory actions on mobile-satellite service (MSS) in 1427-1432 MHz (space-to-Earth), 1645.5-1646.5 MHz (space-to-Earth) and (Earth-to-space), 1880-1920 MHz (space-to-Earth) and (Earth-to-space) and 2010-2025 MHz (space-to-Earth) and (Earth-to-space) required for the future development of low-data-rate non-geostationary mobile-satellite systems;
- 1.13 possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage;

- 1.14 possible additional allocations to the mobile-satellite service;
- 1.15 studies on 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;
- 1.16 studies of technical and regulatory provisions necessary to protect radio astronomy (RAS) operating in specific Radio Quiet Zones and, in RAS primary allocated frequency bands globally, from aggregate radio-frequency interference caused by non-GSO systems;
- 1.17 regulatory provisions for receive-only space weather sensors and their protection in the Radio Regulations;
- 1.18 possible 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.
- 1.19 possibility of a future allocation to EESS (passive) in 4200-4400 MHz and 8400-8500 MHz.

[...]

ANNEX 2

PRELIMINARY AGENDA FOR WRC-31

Resolution 814 (WRC-23)

[...]

- 2.1 potential new allocations to fixed, mobile, radiolocation, amateur, amateur-satellite, radio astronomy, Earth exploration-satellite (passive and active) and space research (passive) services in 275-325 GHz;
- 2.2 [possible frequency bands for Non-beam and Beam Wireless Power Transmission (WPT) to avoid harmful interference to the radiocommunication services caused by WPT];
- 2.3 aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in 12.75-13.25 GHz;
- 2.4 inter-satellite service allocations in 3700-4200 MHz and 5925-6425 MHz, and associated regulatory provisions, to enable links between non-geostationary orbit satellites and geostationary orbit satellites;
- 2.5 possible primary allocation in [694-960 MHz in Region 1], 890-942 MHz in Region 2, [3400-3700 MHz in Region 3] to the aeronautical mobile service (AMS) for the use of International Mobile Telecommunications (IMT) user equipment in terrestrial IMT networks by non-safety applications;
- 2.6 identification of the frequency bands [102-109.5 GHz, 151.5-164 GHz, 167-174.8 GHz, 209-226 GHz and 252-275 GHz] for IMT;
- 2.7 improving the utilisation of VHF maritime radiocommunication;
- 2.8 improving the utilisation and channelization of maritime radiocommunication in the MF and HF bands, including potential revisions of Article **52** and Appendix **17**;
- 2.9 possible allocations to the radionavigation-satellite service (RNSS) (space-to-Earth) in [5 030-5 150 MHz and 5 150-5 250 MHz];
- 2.10 possible new primary allocation to the Earth exploration-satellite service (Earth-to-space) in 22.55-23.15 GHz;
- 2.11 upgrade of the secondary allocation to the Earth exploration-satellite service (EESS) (space-to-Earth) in the [37.5-40.5 GHz] band or possible new worldwide primary frequency allocations to the EESS (space-to-Earth) within [40.5-52.4 GHz];
- 2.12 possible new allocations to the Earth exploration-satellite service (active) in the frequency bands [3 000- 3 100 MHz] and [3 300-3 400 MHz] on a secondary basis
- 2.13 coexistence between spaceborne synthetic aperture radars (SAR) operating in the Earth exploration-satellite service (active) and radiodetermination service in the frequency band 9 200-10 400 MHz, with possible actions as appropriate;
- 2.14 possible regulatory actions, including a review of the allocation of the frequency band 614-694 MHz to the mobile service for countries listed in No. **5.15A**.

[...]

Editorial Note: The square brackets in the Agenda items were included by WRC-23 and are the indication of the provisional status of the frequency bands for consideration of WRC-31.