EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR COMMUNICATIONS NETWORKS, CONTENT AND TECHNOLOGY

Connectivity
Radio Spectrum Policy Group
RSPG Secretariat

Brussels, 09 December 2022
DG CNECT/B4/RSPG Secretariat

RSPG22-040 FINAL

RADIO SPECTRUM POLICY GROUP

Opinion

on the

ITU-R World Radiocommunication Conference 2023

RSPG Secretariat, office L-51 05/DCS,
Commission européenne/Europese Commissie, 1049 Bruxelles/Brussel, BELGIQUE/BELGIË
Telephone: direct line (+32-2)29.21.261, switchboard 299.11.11;
E-mail: cnect-rspg@ec.europa.eu Web-site: https://rspg-spectrum.eu/
Web-site CIRCABC: https://circabc.europa.eu/w/browse/f5b44016-a8c5-4ef6-a0bf-bc8d357debcb

RSPG Opinion

on the

ITU-R World Radiocommunication Conference 2023

1. Introduction

1.1 Role of RSPG

The role of the Radio Spectrum Policy Group (RSPG) is to assist and advise the European Commission on radio spectrum policy issues. This includes advice on the coordination of policy approaches, on the preparation of multiannual radio spectrum policy programmes and, where appropriate, on harmonised conditions with regard to the availability and efficient use of radio spectrum necessary for the establishment and functioning of the internal market. In particular, the RSPG "[…] *shall assist the Commission in its preparatory work on proposals to the Council for the adoption of decisions in accordance with Article 218(9) of the Treaty on the Functioning of the European Union establishing the positions to be adopted on the Union's behalf in international organisations competent in radio spectrum matters.*"[1]

The RSPG notes that under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local levels, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level. 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. Draft European legislative acts shall take account of the need for any burden, whether financial or administrative, falling upon the Union, national governments, regional or local authorities, economic operators and citizens, to be minimised and commensurate with the objective to be achieved.

1.2 Scope of this Opinion

This Opinion on ITU-R World Radiocommunication Conference 2023 (WRC-23) addresses the following matter(s) regarding the preparation of the next World Radiocommunication Conference in 2023 in accordance with the legal European framework:

* an analysis of the WRC-23 Agenda taking into account policy objectives of the Union and existing EU harmonisation decisions;

* the relevance of the EU radio spectrum policy issue in the context of sector-specific (e.g. electronic communications, transport, climate, research and development) and/or horizontal (e.g. internal market, competition, trade) Community policies;

* if necessary, the extent to which the policy approaches of the Member States to the issue are consistent;

[1] Art. 2 (4) of Commission Decision 2019/196/EC on setting up the Radio Spectrum Policy Group and repealing Decision 2002/622/EC.

* identification of Agenda Items including in their current preparation with regards to whether or not a decision by WRC-23 may affect common EU rules;

* a recommendation of an appropriate course of action for

  * *Case a)*, Agenda Items which require an EU position to be proposed by the European Commission for adoption by the Council because a WRC decision may affect common rules.

  * *Case b)*, Agenda Items for which an EU position to be proposed by the European Commission for adoption by the Council is desirable in the view of RSPG (e.g. common rules are expected in the future or essential EU policy objectives).

* the extent to, and manner in which the public has been consulted with regard to the issue under consideration. A list of the parties responding to the public consultation and of the documents considered is included.

1.3 World Radiocommunication Conference (WRC) 2023

The next WRC is planned to be held in 2023 and will be the culmination of several years of preparatory work within the International Telecommunication Union (ITU). WRC-23 will address necessary revisions of the Radio Regulations (RR)[2], an international treaty between the 193 Member States of the ITU on the use of the radio spectrum and coordination rules to provide access to it.

The RR are applicable to the relationship between ITU Member States. A specific provision of the RR[3] provides administrations with the latitude to make assignments of any frequency to any type of radio usage, providing that the station using such frequency does not cause harmful interference to and does not claim protection from harmful interference caused by other stations operating in accordance with the RR in another ITU Member State.

As such, no provision of the RR can affect the rights of the European Union and its Member States to implement any desired harmonised technical conditions and to make available spectrum for stations of any type, although RR provisions set technical conditions and regulatory procedures to avoid harmful interference with other countries (e.g. cross-border rights), in absence of other provisions agreed between countries (e.g. harmonised conditions within the EU or a bilateral agreement).

WRC-23 work will follow an Agenda proposed by the preceding WRC held in 2019 (WRC-19), which was finally adopted by ITU Council as Resolution 1399 (see Annex). This Agenda addresses several questions on the allocation of spectrum to radiocommunication services as defined in the RR. Allocations are different from actual implementation and use of spectrum by systems and applications. It is up to each ITU Member State or group of ITU Member States (such as the Member States of the European Union) to decide on the actual use of frequencies in their territories, taking into account the sharing conditions and coordination requirements defined in the RR in order to protect the use of frequencies in other countries.

The preparatory proposals are carried out in accordance with guidelines by the ITU[4] and contain specific terminology in relation to the treaty of RR. For example, no change – or as conference proposal order

[2] http://www.itu.int/pub/R-REG-RR-2020/
[3] See No. 4.4 of Article 4 of the Radio Regulations
[4] See for WRC-19: https://www.itu.int/dms_pub/itu-r/oth/0c/04/R0C040000380001PDFE.pdf

"NOC" – for one Agenda Item means that a specific provision or up to the whole RR, whatever is applicable, should be retained without modifications. Besides these treaty related proposals, other actions at ITU level that do not belong to the RR may often allow a conference to decide that no change is the most viable decision. Such actions relate often to ITU-R Resolutions or Recommendations that are non-mandatory in their legal nature but form an integral part of the global technical harmonisation of spectrum management.

The preparation of proposals for the conference is done for the European geographic area by the Conference of European Postal and Telecommunication administrations (CEPT), a specialised regional organisation without legal personality comprised of 46 members including the 27 EU Member States. CEPT is also one of the six main regional organisations regularly preparing for WRCs and recognised by the ITU in accordance with Resolution 72 (Rev. WRC-07). The preparation is carried out by a working group named Conference Preparatory Group - CPG. This group has the responsibility to develop and agree European Common Proposals (ECPs) for the WRCs, to prepare and approve background material in CEPT-Briefs for the members of CEPT national delegations and to coordinate CEPT actions during the course of the conference.

1.4 The need for an RSPG Opinion

The RR are key for services of an international nature, such as mobile, aeronautical, maritime or space services and are essential in achieving worldwide harmonisation of spectrum use. Where worldwide harmonisation cannot be achieved, harmonisation within a Region as defined by the RR[5] may be possible. Such harmonisation potentially translates into economies of scale and an opportunity for the circulation of equipment and the cross-border provision of services (e.g. roaming), thus bringing benefits to the EU economy and citizens.

The importance of the process to modify the RR is reflected in the RSPG Opinion on the preparation of ITU World Radiocommunication Conferences[6] which recommends:

"*to develop and adopt an RSPG opinion for each WRC […] for the corresponding conference, to be adopted in time for the CPM (i.e. 9 months before WRC);*"

Therefore, it is important that the EU and its Member States identify as early as practicable relevant EU policies in relation to WRC-23 Agenda Items (see section 2 of this Opinion). Since the RR relate to the right of individual administrations to provide access to spectrum and not to harmonised technical conditions within the EU, the modifications of the RR cannot affect the EU common rules on spectrum. On the other hand, EU Member States are obliged to support EU policies deriving from EU law at international fora. As such, the RSPG have to identify relevant EU policies and EU law to provide advice on the EU position towards WRC-23. Finally, the RSPG have to consider elements on which the Member States would like to set common objective(s) for WRC-23.

[5] See No. 5.2 of Article 5 of the Radio Regulations
[6] See RSPG09-294
http://rspg.groups.eu.int/_documents/documents/opinions/rspg09_294_preparation_itu_wrc.pdf

1.5 Towards WRC-23

It should be noted that the advice from RSPG has to balance satisfying EU policies with those interests not subject to an EU policy across the WRC-Agenda. In addition, there might be cases where negotiations at WRC require balancing among the EU policies.

Therefore, the aim of the preparatory activities of RSPG is to:

- assist the European Commission in developing a proposal for a Council Decision on the EU position(s) for WRC-23;
- provide guiding material for the development of ECPs within CEPT;
- identify actions for the European Commission, as necessary, in order to provide political support to promote European Union position(s)in regular meetings between EC and non-EU countries;

As for previous RSPG opinions addressing WRCs and following the previous successful practice to address EU policy interest most efficiently, the RSPG opinion on WRC-23 will be developed in two stages:

- Stage 1: The Interim Opinion identifying the main Agenda Items of WRC-23 where there is an EU policy in place as well as relevant spectrum harmonisation decisions[7];
- Stage 2: Based on the results of stage 1, the development of a final Opinion containing information on the main Agenda Items based on emerging results from studies conducted in the overall framework of WRC-23 preparation and advice on common positions for those Agenda Items.

2. Identification of relevant EU Policies for WRC-23

The identification of the EU policies relevant to WRC-23 Agenda Items is a complex task. Agenda Items are formulated in terms of allocations to radiocommunication services as defined in the RR (e.g. mobile, fixed, fixed-satellite, broadcasting services, etc.) and conflicting interests may exist between users of these services. Changes to the international regulatory framework, by addressing those through an Agenda Item, have generally an impact on several radiocommunication services and may require a thorough analysis of current EU policies. Some Agenda Items are broad in nature and it may not be possible to determine all relevant policies impacted (e.g. on those Agenda Items which are not limited to specific frequency bands). Moreover, Member States will have to balance the need for a new allocation for some radiocommunication services against the need for continuing operation and protection of other services in the same frequency range. In order to provide a strategic input to the preparation on WRC-23 through this Opinion process, the RSPG has made every effort to balance these interests.

[7] "Spectrum harmonisation decisions" encompass Implementing Decision on technical harmonisation as well as other decisions.

The EU policy areas relevant to WRC-23 Agenda Items are Electronic Communication and Connectivity, Media, Transport, Space, Research. In addition, aspects of the Common Security and Defence Policy are considered as having relevance[8].

3. Response to public consultation

A public consultation on the Draft for this Opinion was held from 9 June to 12 August 2022. 104 responses were received.

The RSPG analysed all comments and suggestions to the draft Opinion and included relevant modifications where appropriate.

The following summary is given:

- The existing process with the public consultation is open, transparent and should be continued. The European stakeholders appreciated the possibility of providing their view(s) and suggestions. The RSPG is grateful to all comments received.
- 53 comments addressed Agenda Item 1.2, in particular the requested views on the future use of the band 6 425 -7 125 MHz. Comments on this Agenda Item were often associated with additional technical, regulatory and economic considerations on the suggested approaches.
- 75 comments addressed Agenda Item 1.5 and provided well based considerations for no change or the inclusion of a co-primary allocation to the mobile service.
- Comments of Agenda Items 1.1, 1.3, 1.4, 1.6, 1.7, 1.11, 1.12, 1.14, 1.15, 1.16, 7 (issue L) have been gratefully noted.
- Several comments were made on the topics under Agenda Item 9.1, generally supporting the recommended approach of the RSPG. The relevant text on topic b) and d) have been amended.
- 7 comments were made on RR Art. 21.5.
- 16 comments were made on Agenda Item 10 (new Agenda of WRC-27).
    - Many comments deal with spectrum issues for the next generation of public mobile (aka "6G"). The RSPG concluded that the matter is of great importance for the Member States, but the development of the technology and use cases is not mature enough at this point in time. Hence, no specific recommendation can be included in this Opinion.
    - Some comments addressed the role of spectrum in relation to climate change and the Union's "Green Deal". It needs to be highlighted that the RSPG is currently looking at the role of spectrum management to reduce the impact on climate in a specific work item.
    - Some comments addressed the development of broadband connectivity by satellite, which were noted.

[8] Action Plan on synergies between civil, defence and space industries – https://ec.europa.eu/info/sites/info/files/com-2021-70_en_act_part1_v8_en.pdf

4. Identification of relevant EU policies and EU legislation

The RSPG is of the opinion that the following specific WRC-23 Agenda Items are of relevance for some EU policies. This identification is based on the objectives of the WRC-23 Agenda Items and includes references, if any, to harmonisation decisions under the Radio Spectrum Decision[9].

For the following Agenda Items, which have been included in the interim Opinion, the further development of the preparation towards WRC-23 does not justify their inclusion in this opinion: 1.7, 1.12, 1.18.

4.1 WRC-23 Agenda Item 1.2 (IMT mid-band identifications)

This Agenda Item considers, 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 and 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)

The RR provides options for radiocommunication services and applications and even with or without an IMT identification, the EU remains flexible to exercise any relevant options in future EU harmonisation. However, an IMT identification provides a signal for an IMT ecosystem in a frequency band.

In Europe the band 6 425-7 125 MHz may respond to additional spectrum demand in mid-band for 5G/6G since it has similar propagation conditions to the band 3 400 - 3 800 MHz, noting in particular that the IMT family concept encompasses various mobile technologies (e.g. 4G, 5G and 6G[10]).

It appears from sharing studies that there is possible opportunity for sharing between IMT (including macro base stations) and fixed-satellite service (FSS) allocated to this band. The coexistence with fixed service (FS) will need to be addressed at the national level.

4.1.1 Link with EU policies:

European Electronic Communication and Connectivity policy is aiming at ubiquitous very high broadband connectivity for all European citizens and fostering innovative applications in the single market.

[9] See Decision No 676/2002/EC
http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002D0676&from=EN

[10] Note: 4G is broadly equivalent to IMT-advanced, 5G to IMT-2020 and 6G to IMT-2030.

5G will be one of the most critical building blocks of the European digital economy and society in the next decade. Europe has taken significant steps to lead global developments towards this strategic technology. Europe´s 5G strategy is outlined in the RSPG Opinions on 5G[11], the EC Communication on the connectivity for a European Gigabit society[12], the EC Action Plan on 5G[13] and EC Strategy "A Europe fit for the digital age"[14], which encompasses the EC Digital Decade Communication[15]. Regarding the development of 6G, the RSPG will further investigate and identify early indications of additional spectrum and harmonisation needs and/or potential implications on spectrum regulation.

In terms of spectrum, the "mid-band" range (6 425 - 7 125 MHz) enables a good compromise between capacity and coverage and RSPG recognises that there may be additional spectrum requirements in the "mid-band".

The RSPG is of the view, that a future European policy strategy and harmonisation decision on 6 425-7 125 MHz should be based on a consideration of a number of questions regarding the best spectrum use for Europe, e.g.

- the spectrum demand for IMT (including IMT-2030) and WAS/RLAN in the medium term perspective;
- possible features to enable sharing options between radiocommunication services and applications in the band, including between IMT and WAS/RLAN;
- the use of the mid band spectrum between 7 125 MHz - 20 GHz, which may result in a lack of alternative mid band candidate for IMT.

The RSPG notes that studies examining under which conditions either IMT and/or WAS/RLAN can coexist with existing services in the band and with each other are not yet finalised. CEPT may be requested to undertake further studies regarding WAS/RLAN and IMT coexistence.

The frequency band 6 425-7 075 MHz is used for fixed-satellite service (FSS) in the uplink (6 425-7 075 MHz) and in the downlink (6 700-7 075 MHz) direction, noting that the protection of satellite uplink(s) is intrinsically of international nature. Although most satellites operating in the satellite "C-band" over Europe are using the core uplink FSS band 5 925-6 425 MHz paired with the downlink band 3 700-4 200 MHz, this does not relieve the RR obligation for IMT to protect satellite receivers in these bands, noting that wide coverage is an inherent characteristic and advantage of satellite C-band, and that the C-band is used for satellite connectivity outside of Europe. As for the 26 GHz band, protection of receiving earth stations (FSS downlink) from IMT may be ensured at national level and through bilateral cross-border coordination but there will be a need to ensure long term access to this band for Non-GSO[16] feeder links in support of the objectives of EU space policy.

[11] https://rspg-spectrum.eu/wp-content/uploads/2013/05/RPSG16-032-Opinion_5G.pdf, https://circabc.europa.eu/sd/a/fe1a3338-b751-43e3-9ed8-a5632f051d1f/RSPG18-005final-2nd_opinion_on_5G.pdf and https://rspg-spectrum.eu/wp-content/uploads/2013/05/RSPG19-007final-3rd_opinion_on_5G.pdf
[12] COM(2016) 587 - https://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/1-2016-587-EN-F1-1.PDF
[13] COM(2016) 588 - https://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/1-2016-588-EN-F1-1.PDF
[14] https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en
[15] COM(2021) 118 - https://ec.europa.eu/info/sites/info/files/communication-digital-compass-2030_en.pdf
[16] Non-geostationary orbit

The band 6 425-7 250 MHz is planned to be used globally by Copernicus Imaging Microwave Radiometer (CIMR), one of the six high-priority candidate missions of the Copernicus programme[17] that would increase its ability to serve as a tool for achieving the EU Green Deal (Climate change) objectives. The use of 6 425-7 250 MHz, relevant to EU Space Policy, is recognized under RR 5.458 without having an allocation status, with the information that "*in the band 6 425-7 075 MHz passive microwave sensors measurements are carried out over the oceans*". It is noted that studies are on-going reviewing the allocation situation for CIMR.

The 6 650-6 675.2 MHz frequency band is used for observations of the methanol spectral line and is of utmost importance for the European VLBI Network. RR 5.149 urges administrations to take all possible measures to protect the radio astronomy service from harmful interference in a number of bands including this one[18].

It is further noted that the band 6 425-7 125 MHz is heavily used by long distance and high capacity fixed links in some Member states such as for backhauling, although some decrease might be expected with fibre optics development. The coexistence of outdoor macro-cell IMT base stations with fixed links requires long separation distances. In some Member states, several fixed links belong to critical infrastructure. In case of a european harmonisation measure for WBB ECS, it is noted that this would imply the development of national strategies (i.e. re-farming, sharing) with time required to define and implement them. This could impact the feasibility of implementation of possible future mobile networks up to 2030, or later according to flexibity to be introduced by the EU framework.

Furthermore, there is a need for continued use of WAS/RLAN in the 5 945-6 425 MHz adjacent frequency band in accordance with harmonised technical conditions defined in a Commission Implementing Decision[19].

The frequency band 10-10.5 GHz under consideration for Region 2 is used by military radars and therefore relevant to the Common Security and Defence Policy (CSDP) and is adjacent to the band 10.6-10.7 GHz, which is also planned to be used globally by CIMR. In addition, the frequency band 10.0-10.4 GHz is or will be used for the operation of European Synthetic Aperture Radar (SAR) satellites for imaging across the globe. Therefore, these satellite missions need global protection from any IMT system to deliver high-quality data for monitoring the status of the Earth. Similarly, military radars onboard ships and aircraft also require protection.

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

[17] Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU http://data.europa.eu/eli/reg/2021/696/oj

[18] The European VLBI Network (EVN) is operated by the JIV-ERIC, an entity with the legal form of a European Research Infrastructure Consortium, pursuant to Council Regulation (EC) No. 723/2009 of June 25, 2009.

[19] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021D1067&qid=1625031915478

4.1.2 Relevant spectrum harmonisation decisions:

None.

4.1.3 RSPG recommendation:

RSPG recommends that the Commission should clarify explicitly the intention for EU to consider, by 2024 or later, the best usage of the frequency band 6 425-7 125 MHz for wireless broadband in the future: either IMT, or WAS/RLAN or a shared framework between IMT and WAS/RLAN, possibly depending on the portion of this frequency band, noting that an IMT identification does not exclude other use of the band, for example a shared future use between IMT and WAS/RLAN or WAS/RLAN alone.

RSPG recommends that the EU position should be to accept an IMT identification at WRC-23, while not advocating for it or proactively supporting it, in all or portion of the band 6 425-7 125 MHz and only if the following conditions are met:

- that the protection of incumbent services and applications in the band 6 425-7 125 MHz is ensured through relevant RR provisions
- that the negotiations under Agenda Item 10 relating to IMT candidate bands between 7 and 30 GHz are successful to preserve the EU interest (see section 4.9).

RSPG also considers that an IMT identification may, depending on the WRC-23 negotiation and under the same conditions as outlined above, be limited to a portion of the band 6 425-7 125 MHz.

It is noted that the RSPG intends to include the issue of the future use (which could entail IMT, WAS/RLAN or a shared framework between IMT and WAS/RLAN) of the band 6 425-7 125 MHz into the RSPG Work Programme, taking into account -among others- the outcome of CEPT studies for this band.

Given the global interest of Member states in the frequency bands 3.3-3.4 GHz and 10 GHz, the RSPG recommends that the EU Member States should oppose to any IMT identification in the bands 3.3-3.4 GHz and 10-10.5 GHz as a common policy approach.

These recommendations are falling under *case b)*.

4.2 WRC-23 Agenda Item 1.3 (MS 3 600-3 800 MHz)

This Agenda Item considers 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 Europe[20]. 5G implementation is currently on-going in Member States and therefore the foreseen EU-wide usage is not dependent on the outcome of this Agenda Item. However, border coordination between EU and non-EU countries also needs to be taken into account and considered. The protection and equal access of the incumbent radio services usage in Region 1 non-EU countries, which may diverge from the use in the European Union[21], will need to be considered in sharing and compatibility studies.

4.2.1 Link with EU policies:

The frequency band (3 600-3 800 MHz) is already allocated to the mobile service (except aeronautical mobile) on a primary basis in Region 2 and 3 and is subject to compatibility studies and a possible upgrade of the secondary allocation of the 3 600-3 800 MHz band to the mobile service to a primary allocation within Region 1.

In line with EU Electronic Communication and Connectivity policy in relation to 5G[22], the band 3 600-3 800 MHz has been already identified as one of the primary pioneer bands for 5G use to reach the objective of uninterrupted 5G coverage in urban areas and on major terrestrial transport paths.

An upgrade will facilitate coordination negotiations between EU and non-EU countries at the EU borders, where non-EU neighbouring countries have a different use of the frequency band.

If WRC-23 decides on an upgrade of the ITU secondary allocation, the resulting provisions in the RR must allow EU Member States to continue their current harmonised use in this frequency band in accordance to the Commission Implementing Decision (EU) 2019/235.

4.2.2 Relevant spectrum harmonisation decisions:

- Commission Decision 2008/411/EC on the harmonisation of the 3 400-3 800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community as amended by Commission Implementing Decisions 2014/276/EU and (EU) 2019/235[23].

4.2.3 RSPG recommendation:

The RSPG recommends that the European Commission proposes an EU position to the Council to update the allocation of the 3 600-3 800 MHz frequency band to a primary mobile, except aeronautical mobile service, allocation, as this will facilitate coordination negotiations between EU and non-EU countries at the EU borders, where non-EU neighbouring countries have a different use of the frequency band.

---

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

[21] In Europe only earth stations in the FSS (space-to-Earth) are protected through appropriate coordination at a national level on a case-by-case level.

[22] See section 4.1.1 with footnotes 8,9,10 and 11.

[23] Consolidated Version: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008D0411-20190208

The position should take proper account of the following conditions:

- as the 3 400-3 600 MHz and 3 600-3 800 MHz bands have similar characteristics, the upgrade should follow similar technical and regulatory conditions already adopted for the 3 400-3 600 MHz band;
- existing primary services in the 3 600-3 800 MHz band (FSS and FS) should be protected and allowed to continue operations, without undue constraints on their future development;
- IMT identification in this band should be considered outside the scope of this Agenda Item.

This recommendation is falling under *case a)*.

4.3 WRC-23 Agenda Item 1.5 (UHF Review)

This Agenda Item deals 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 will -in particular- consider 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 services[24].

It is noted that many different views were expressed in the ITU-R preparation and no conclusion was reached regarding the review called by under WRC-23 Agenda Item 1.5.

On the basis of the review, the Agenda Item further allows regulatory actions in the frequency band 470-694 MHz (or parts thereof) in Region 1. Notwithstanding the possibility of not adopting any regulatory action, the regulatory actions that potentially could be undertaken for 470-694 MHz or parts thereof under the Agenda Item could be changes to the service allocation (e.g. an additional allocation to the mobile service or one of the other existing services in the band 470-960 MHz). In addition, regulatory measures could also entail the introduction of for example IMT[25]-identification, downlink-only requirements, geographical restrictions, or delayed entry into force. It is common understanding that the regulatory actions are complementary to the existing allocations.

When considering regulatory options regarding the future usage of the frequency band 470-694 MHz, aspects such as the various spectrum needs, including free-to-air audio-visual multimedia, technological developments, changes in consumer behaviour and the various political, social, cultural and economic general interest objectives, need to be taken into account.

[24] Allocations made 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)

[25] International Mobile Telecommunications (IMT) systems, utilizing some parts of the frequency band 694/698-960 MHz, and are intended to provide telecommunication services on a worldwide scale, regardless of location, network or terminal used.

4.3.1 Link with EU policies:

In line with European Electronic Communication and Connectivity policy referred to under 4.1.1 the frequency bands 700 and 800 MHz were repurposed and technical conditions to use the frequency bands 700, 800 and 900 MHz were harmonised for provision of electronic communication services on terrestrial systems. Moreover, the 700 MHz band was identified as one of the 5G pioneer bands.

As for the frequency band 470-694 MHz, RSPG, in its 2015 Opinion on a long-term strategy on the future use of the UHF band[26], recommended an approach for considering the level of flexibility and the possible evolution of the band, taking into account the importance of the Digital Terrestrial Television (DTT) platform:

> *"8. RSPG recognises that the band 470-694 MHz is mainly used for downstream audiovisual content distribution and recommends that it remains as such for the long term, even beyond 2030;*
>
> *9. RSPG recognises the importance of the DTT platform and the need to provide certainty for investments in broadcasting infrastructure. Therefore RSPG recommends that the frequency band 470-694 MHz shall remain available for DTT in the foreseeable future, i.e. 2030.*
>
> *10. Notwithstanding, the RSPG recommends that Member States should have the flexibility to use the 470-694 MHz band for Wireless Broad Band (WBB) downlink, provided that such use is compatible with the broadcasting needs in the relevant Member State and does not create a constraint on the operations of DTT in neighbouring countries. This is without prejudice to coordination agreements with the neighbouring countries.*
>
> *11. RSPG recommends that, when considering any options for the future usage of the frequency band 470-694 MHz, aspects such as the requirements, technological developments, consumer behaviour, the importance of delivering free-to-air television and the various political, social, cultural and economic general interest objectives, should be taken into account."*

Furthermore, the protection of the radio astronomy service is of importance for European science policy promoting research and technological development[27].

Moreover, RSPG noted a need for long-term regulatory predictability for Broadcasting and PMSE according to recital 11 of the EU Decision[28] and also for further consideration of the implementation of flexibility under conditions set up in Article 4 of the EU Decision.

---

[26] RSPG15-595
https://rspg-spectrum.eu/wp-content/uploads/2013/05/RSPG15-595_final-RSPG_opinion_UHF.pdf

[27] see TFEU Art. 179-190

[28] Recital 11) of the 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, says: "[…]*The DTT and PMSE sectors therefore need long-term regulatory predictability with regard to the availability of sufficient spectrum, so that they can safeguard the sustainable provision and development of their services, in particular free-to-view television, while ensuring an appropriate environment for investments, so that Union and national audiovisual policy objectives such as social cohesion, media pluralism and cultural diversity are met* […]"

4.3.2 Relevant spectrum harmonisation decisions:

- Decision (EU) 2017/899[29] of the European Parliament and of the Council of 17 May 2017 on the use of 470-790 MHz frequency band in the Union. This Decision confirmed the availability of the 470-694 MHz frequency band at least until 2030 for the terrestrial provision of broadcasting services, including free television and PMSE, with protection and priority given to broadcasting needs. In addition, Article 4 allows other uses in the territory of the relevant Member State as long as this is compatible with the national broadcasting needs and does not cause harmful interference to, or claim protection from, the terrestrial provision of broadcasting services in a neighbouring Member State. In this sense, an allocation to the mobile service could help the application of the provision established in Article 4. Under this decision, the Commission will report to the Council and the European Parliament on developments in the use of this band considering the social, economic, cultural and international aspects as well as further technological developments. Still; it is recognised that media and culture policy is under national responsibility, with the European Union having a supporting function.
- Commission Implementing Decision (EU) 2016/687[30] on the harmonisation of the 694-790 MHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services and for flexible national use in the Union.
- Commission Decision 2010/267/EU[31] on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union.
- Commission Decision 2009/766/EC[32] on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community as amended by Commission Implementing Decisions 2011/251/EU[33] and 2018/637/EU[34].
- Commission Implementing Decision (EU) 2018/1538[35] on the harmonisation of radio spectrum for use by short-range devices within the 874-876 and 915-921 MHz frequency bands.
- Commission Decision 2010/166/EU[36] on harmonised conditions of use of radio spectrum for mobile communication services on board vessels (MCV services) in the European Union as amended by Commission Implementing Decision (EU) 2017/191.
- Commission Implementing Decision 2014/641/EU[37] on harmonised technical conditions of radio spectrum use by wireless audio programme making and special events equipment in the Union.

[29] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017D0899&from=en
[30] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016D0687
[31] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32010D0267
[32] Consolidated version: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009D0766
[33] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32011D0251
[34] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1524732569519&uri=CELEX:32018D0637
[35] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1539694292299&uri=CELEX:32018D1538
[36] Consolidated version: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02010D0166-20170203
[37] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1409751402277&uri=OJ:JOL_2014_263_R_0007

4.3.3 RSPG recommendation:

The RSPG recommends that the European Commission proposes an EU position to the Council to ensure that the decision of WRC-23 on this Agenda Item is compliant with the Decision (EU) 2017/899 providing priority to broadcasting and PMSE usage until at least end 2030.

RSPG has debated on the different possible ways to achieve this EU objective, finding that many Member States do not see the need to adopt regulatory actions at this moment (No Change at WRC-23, with a possible Agenda Item for WRC-27 or WRC-31) and that several other Member States find it necessary to adopt regulatory actions (co-primary allocation to mobile, except aeronautical mobile, service which could become effective at a later stage (e.g. 31.12.2030)).

Further to this debate the RSPG identified a potential compromise solution to be recommended as an EU position. In consequence, the RSPG is of the view that the above outline recommendation can be ensured by an EU position supporting a secondary allocation to the mobile, except aeronautical mobile, service with a WRC-31 Agenda Item to consider a possible upgrade of the secondary mobile allocation.

This recommendation is falling under *case a)*.

4.4 WRC-23 Agenda Item 1.11 (GMDSS)

This Agenda Item is dealing 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).

Regarding issue A, regulatory actions to support GMDSS modernisation, at WRC-19 solely some preliminary regulatory measures have been taken for the Navigational data (NAVDAT) in MF and HF frequency bands. Awaiting confirmation by IMO, the NAVDAT could be part of the GMDSS. In ITU-R the need for an automatic connection system in the maritime MF and HF band, similar to DSC is identified. Development is on-going; WRC-23 could consider identifying possible calling frequencies.

Regarding issue B, NAVDAT has been identified as a system to potentially support e-navigation. This will not change the regulatory status of e-navigation. No further regulatory action needs to be taken by WRC 23 under issue B. Therefore, issue B is not further discussed in this opinion.

For issue C, regulatory action due to the introduction of additional satellite systems into the GMDSS by IMO, BEIDOU, as an additional GMDSS satellite system operating in the mobile satellite service in the 1.6 GHz (1 610-1 626.5 MHz (Earth-to-space)) and 2.5 GHz frequency band (2 483.5-2 500 MHz (space-to-Earth)), will have to ensure protection of the in-band and adjacent-band incumbent services, most notably the radio astronomy service (RAS) in the band 1 610.6-1 613.8 MHz. Such regulatory actions may potentially include revisions of RR Art. 5 and of Appendix 15 as well as introduction of relevant radio astronomy protection measures.

4.4.1 Link with EU policies:

European Transport and Trade policies are aiming at maximising safety and efficiency in the maritime sector, in particular improving logistics[38]. Positions for IMO meetings are set by the Council through Decisions under the Treaty on the Functioning of the European Union (TFEU) Art. 218 (9) and the resulting international maritime regulatory changes are incorporated into EU law. The issue of protecting the radio astronomy service is of importance for European science policy promoting research and technological development[39].

It needs to be noted that submitted proposals to the IMO Sub-Committee on Navigation, Communications and Search and Rescue, are aiming to extend this Agenda Item to the protection of GMDSS in the 1 518-1 559 MHz band from IMT in the 1 427-1 517 MHz band. This proposal is not consistent with the Agenda Item and the EU position within IMO was to oppose them since it would contradict the requirement to implement Commission Implementing Decision (EU) 2018/661[40].

4.4.2 Relevant spectrum harmonisation decisions:

None.

4.4.3 RSPG recommendation:

4.4.3.1 Issue A

The RSPG recommends that, as a common policy approach for issue A, subject to the decision by IMO and the successful outcome of necessary studies (i.e. compatibility with incumbent services is ensured) Member States should support the possible regulatory actions needed to implement the Global Maritime Distress and Safety System modernisation in the RR.

This recommendation is falling under *case b)*.

4.4.3.2 Issue C

The RSPG recommends that, as a common policy approach for issue C, Member States should not support regulatory actions to introduce an additional satellite system into the provision of GMDSS, unless additional studies demonstrate spectrum needs as well as the absence of any impact on the regulatory status of other services and assignments.

This recommendation is falling under *case b)*.

[38] see TFEU Art. 91 (1c)
[39] see TFEU Art. 179-190.
[40] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D0661&from=EN

4.5WRC-23 Agenda Item 1.14 (EESS (passive) 250 GHz)

This Agenda Item is to review the frequency allocations for Earth exploration-satellite (passive) service in the frequency range 231.5-252 GHz and to consider possible adjustment of the existing or possible new primary frequency allocations in order to cover relevant requirements of passive microwave sensor measurements in this frequency range.

4.5.1 Link with EU policies:

Parts of the frequency range to be considered under this Agenda Item, i.e. -239.2-242.2 GHz and 244.2-247.2 GHz- will be implemented in the Ice Cloud Imager (ICI) instrument of the second generation of the EUMETSAT Polar System (EPS-SG), expected to be launched in 2024, and which will contribute to the European Copernicus programme. Therefore, a solution is needed to ensure that the allocation will be adjusted to fit this use.

4.5.2 Relevant spectrum harmonisation decisions:

None.

4.5.3 RSPG recommendation:

The RSPG recommends that the European Commission proposes an EU position to the Council to provide the relevant frequency spectrum to correspond to the scientific observation requirements (to monitor the Earth's environment) in support of the European Copernicus programme.

Member States should support primary allocations to the EESS (passive) in the frequency bands 239.2-242.2 GHz and 244.2-247.2 GHz, without unduly constraining other primary services currently allocated in this frequency range and should support further adjustments to allocations of other primary services in the frequency range 231.5-252 GHz based on the results of compatibility and sharing studies.

Note: The currently considered adjustments of the current allocations to the Fixed and Mobile services, consist of (1) adding new allocations to Fixed and Mobile services in 235-238 GHz (3 GHz), contiguous to 2 existing bands and (2) suppressing the existing allocations in 239.2-241 GHz (1.8 GHz).

This recommendation is falling under *case a)*.

4.6 WRC-23 Agenda Item 1.15 (GSO ESIM Ku-band)

This Agenda Item deals with the development of globally harmonised technical conditions and regulatory provisions for the operation of earth stations on aircraft and vessels communicating with GSO[41] space stations in the fixed-satellite service (FSS) operating in the frequency band 12.75-

[41] Geostationary Orbit

13.25 GHz (Earth-to-space), taking into account the provisions of Appendix 30B (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.

For the operation of earth stations on aircraft, the conditions as outlined in ECC Decision (19)04[42] should be taken into account in order to protect the existing services allocated in this frequency band. Sharing studies will be conducted in ITU-R to ensure protection of the Earth exploration-satellite (active) service and space research service (active) in the adjacent band 13.25-13.75 GHz band, as it is to be used by the European Copernicus satellite system. In accordance with analysis conducted by ESA and EUMETSAT[43], the protection of EESS (active) instruments on-board the Copernicus satellites in the adjacent band 13.25-13.75 GHz from earth stations on aircraft and vessels in the band 12.75-13.25 GHz is not expected to be an issue.

4.6.1 Link with EU policies:

Space and satellite communications can also improve connectivity for Europe's digital society and economy. European electronic communication policy aims to deliver very high broadband connectivity to European citizens including while they are travelling as outlined in the EC Communications "A Europe fit for the digital age"[44] and "Europe Digital Decade"[45]. Earth stations in motion would contribute to that goal.

In accordance with European space policy[46], satellites can provide cost-effective solutions in particular to connect assets and people in remote and offshore areas, or as part of future 5G networks, where numerous applications and services using data collected from space will also require uninterrupted connectivity. This Agenda Item supports establishment of a harmonized regulatory environment for earth stations in motion.

Parts of the adjacent band 13.25-13.75 GHz are used by the Copernicus satellites Sentinel-3 (13.4-13.75 GHz), composed of three satellites taking measurements over land and sea, and Sentinel-6 (13.415-13.735 GHz) measuring the sea-surface height. In addition, the Copernicus Polar Ice and Snow Topography Altimeter (CRISTAL), one of the six high-priority missions of Copernicus programme targeted for a launch in 2027, will use this band.

There are no EU harmonisation measures foreseen regarding the particular use of frequencies by earth stations on aircraft and vessels.

---

[42] See ECC/DEC/(19)04: ECC Decision of 6 March 2020 on the harmonised use of spectrum, free circulation and use of earth stations on-board aircraft operating with GSO FSS networks and NGSO FSS systems in the frequency bands 12.75-13.25 GHz (Earth-to-space) and 10.7-12.75 GHz (space-to-Earth)

[43] Doc. PTB(21)060 ESA, EUMETSAT: WRC-23 AI 1.15 – Impact of ESIM in 12.75-13.25 GHz on EESS (active) in 13.25-13.75 GHz

[44] https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en

[45] https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en and https://eur-lex.europa.eu/resource.html?uri=cellar:12e835e2-81af-11eb-9ac9-01aa75ed71a1.0001.02/DOC_1&format=PDF

[46] EC Communication on a Space Strategy for Europe COM(2016)705

4.6.2 Relevant spectrum harmonisation decisions:

None.

4.6.3 RSPG recommendation:

As a common policy approach for the harmonized operation of earth stations on aircraft and vessels communicating with GSO space stations in the FSS to respond to an increased need for broadband in-flight and maritime connectivity where only satellite infrastructure exists, Member States should support a regulatory framework and technical requirements for operation of earth stations on aircraft and on vessels in the frequency band 12.75-13.25 GHz (Earth-to-space), while protecting the services currently allocated in this frequency band and bands adjacent to it and avoiding any impact on Appendix 30B procedures and existing rights.

This recommendation is falling under *case b)*.

4.7 WRC-23 Agenda Item 1.16 (Non-GSO ESIM Ka-band)

This Agenda Item is dealing 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-GSO[47] 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.

For the operation of non-GSO FSS earth stations in motion the measures as outlined in ECC Decision (15)04 (amended November 2020)[48] should be taken into account in order to protect the existing services allocated to these frequency bands. Sharing studies to ensure the protection of co-primary meteorological satellite service allocations in the frequency bands 18-18.3 GHz (ITU Region 2) and 18.1-18.4 GHz (ITU Regions 1 and 3) are for the time being not expected, as these allocations are not intended to be used by the European meteorology.

4.7.1 Link with EU policies:

European electronic communication policy aims to deliver very high broadband connectivity to European citizens including while they are travelling[49]. Earth stations in motion would contribute to that

[47] Non-Geostationary Orbit
[48] On the harmonised use, free circulation and exemption from individual licensing of Land, Maritime and Aeronautical Earth Stations On Mobile Platforms (ESOMPs) operating with NGSO FSS satellite systems in the frequency ranges 17.3-20.2 GHz, 27.5-29.1 GHz and 29.5-30.0 GHz
[49] see https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en

goal. European space policy supports the development and production of non-geostationary satellites operating in these frequency bands.

The EU is aiming to develop a competitive, independent and global European space industry. In addition to terrestrial broadband and 5G networks, the EC is considering the use of a constellation of satellites to provide secure governmental services and to enable the delivery to all Europeans, wherever they are on the Continent, with broadband connectivity and with a trustful level of security. This would make Europe more resilient.

Space and satellite communications can also improve connectivity for Europe's digital society and economy. Satellites can provide cost-effective solutions in particular to connect assets and people in remote and offshore areas, or as part of future 5G networks, where numerous applications and services using data collected from space will also require uninterrupted connectivity. These elements of a European space policy[50] support the establishment of a sustainable regulatory environment, which is necessary for the development and production of non-geostationary satellites operating in these frequency bands. This WRC Agenda Item supports the development of such an international regulatory framework.

However, the issue of protecting the European Copernicus satellite system is of importance. Copernicus is a European Earth observation system established by Regulation 377/2014 of the European Parliament and the Council of 3 April 2014[51] (replaced by the EU Space Programme Regulation[52]). The concerned application of Copernicus will provide observation of atmospheric water vapour and liquid water content (at 18.7 GHz highly sensitive to wind-driven variations in the sea surface), ensuring the continuation of the observations of the ocean circulation, climate change, and sea-level rise for the next decade, which have taken place for the past 30 years. As the system for observation covers the whole world, the aim of the Union policy is to ensure that other regions will also apply relevant conditions and provisions for the protection. In particular the operation of Advanced Microwave Radiometer on Sentinel-6 "Michael Freilich" of the Copernicus satellite system and the Microwave Imager on the METOP second generation satellites in the band 18.6-18.8 GHz as well as the usage for data downlink transmissions in the band 25.5-27 GHz, shall not suffer from increased adjacent band interference.

4.7.2 Relevant spectrum harmonisation decisions:

None.

4.7.3 RSPG recommendation:

The RSPG recommends that, as a common policy approach, Member States should support the development of an international regulatory framework to allow non-GSO ESIMs to use the 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) frequency bands, as this will contribute to providing broadband connectivity to

[50] EC Communication on a Space Strategy for Europe COM(2016)705
[51] Regulation (EU) 377/2014 https://eur-lex.europa.eu/legal-content/de/TXT/?uri=CELEX%3A32014R0377
[52] Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU http://data.europa.eu/eli/reg/2021/696/oj

European citizens, as well as to creating a stable environment for a global European space industry. The position should take due account of the following conditions:

- GSO systems and other services operating in the same and adjacent frequency bands should be protected;
- passive services in general, and EESS (passive) sensors in the 18.6-18.8 GHz frequency band, should be adequately protected;
- in particular, global protection of the European satellite system Copernicus should be ensured.

This recommendation is falling under *case b)*.

4.8 WRC-23 Agenda Item 9.1

This Agenda Item is 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 request 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 will report on these results of the studies to be considered by the next Conference, WRC-23.

Following discussions at the Radiocommunication Assembly 2019 and as result of the first session of the Conference Preparatory Meeting towards WRC-23 (CPM23-1), Annex 6 of CA/251 outlines contents of the draft CPM Report to WRC-23 and the structure for the Agenda Item sections in the Chapters. For topics under Agenda Item 9.1 a short summary of the results of ITU-R studies will be included in the CPM report.

4.8.1 WRC-23 Agenda Item 9.1 topic a (Protection of space weather sensors)

Topic a under Agenda Item 9.1 addresses 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 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. Detection of solar activity events is becoming increasingly important as they can adversely affect national economies, human welfare and national security. Space weather sensors currently operate mainly in the frequency bands allocated to the scientific services (RAS and EESS) without adequate interference protection and are not recognised in the RR for their use of the spectrum. Some of the sensors can be sensitive to harmful interference at low levels. Topic a thus intends to identify those active and passive operational space weather sensor systems and their operational frequencies, which need to be protected, and, to perform sharing studies with incumbent services, according to Resolution 657 (rev WRC-19). The general objective is to determine potential regulatory provisions for receive-only space weather sensors with initial step of appropriate recognition in the RR.

4.8.1.1 Link with EU policies:

The EU space policy identifies the growing significant interest and importance of space weather observations as element of Space Situational Awareness in Regulation EU 2021/696[53]. This Regulation calls for activities to ensure civil protection in "a wide range of sectors such as space, transport, GNSSs, electric power grids and communications". Space weather observations, predictions and early warnings allow to assess risks by space weather events and to undertake mitigating actions to prevent power grid failures, damage to satellites or exposures to harmful radiation etc. [54] Therefore, Regulation EU 2021/696 calls for the provision of European space weather services to provide these necessary predictions and warnings.

The growing significant interest and importance of space weather observations is identified in the EU space policy. Regulation EU 2021/696 calls for the provision of activities:

- to ensure civil protection in "a wide range of sectors such as space, transport, GNSSs, electric power grids and communications",
- to provide the necessary predictions and early warnings so as to allow the assessment of space weather events risks and
- to undertake mitigating actions to prevent power grid failures, damage to satellites or exposures to harmful radiation etc.

Additionally, countries and institutions across the EU are strongly involved in the operation of space weather sensor systems and significantly contribute to European as well as global collaborations and networks on space weather observations and predictions.

4.8.1.2 Relevant spectrum harmonization decisions:

None

4.8.1.3 RSPG recommendation:

The RSPG recommends that the Member States should support as a common policy approach:

- the recognition of space weather sensors at WRC 23 through an appropriate definition in the Radio Regulations (RR)
- identification of priority frequency bands used for providing data critical for space weather forecasting/warnings.

This recommendation is falling under *case b)*.

[53] See EU Space Programme footnotes 14 and 43/44/45 *Space Programme*
[54] https://publications.jrc.ec.europa.eu/repository/handle/JRC104231

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

Topic b under Agenda Item 9.1 is to perform a detailed review of the different systems and applications used in the amateur service and amateur satellite services 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 radionavigation-satellite (space-to-Earth) service receivers operating in the same band in accordance with Resolution 774 (WRC-19).

Resolution 774 for this topic "instructs the Director of the Radiocommunication Bureau to include the results of these studies in his Report to WRC-23 for the purpose of considering appropriate actions in response to *resolves to invite the ITU Radiocommunication Sector*".

4.8.2.1 Link with EU policies:

Galileo is the EU's own global satellite navigation system, which provides accurate positioning and timing information and aims to ensure Europe's independence from other satellite navigation systems and its strategic autonomy in satellite navigation. Galileo satellites transmit permanently in three blocks of spectrum, named E1, E5 and E6. The Galileo system, once fully operational, will offer high-performance services worldwide. Signals in the E6 block, 1 260-1 300 MHz, are used for:

- Galileo High Accuracy Service (HAS) which will provide cost-effective solutions with very good performance, enabling users all around the world to achieve 20 centimeter positioning accuracy that are essential for many applications, such as automated driving.
- Galileo Commercial Authentication Service (CAS), providing a controlled access and authentication function to users.
- Galileo Public Regulated Service (PRS), restricted to government-authorised users, for sensitive applications that require a high level of service continuity.

It is also noted that RNSS technology and chipset development are continually improving the resilience of the RNSS receivers to interfering signals. Consequently, amendments to the usage conditions of the band must be proportionate, realistic and appropriate, allowing the future development of concerned services, including the amateur service, in the band.

4.8.2.2 Relevant spectrum harmonisation decisions:

None.

4.8.2.3 RSPG recommendation:

The RSPG recommends that the EU should support the establishment of technical conditions applicable to the secondary amateur service that provide adequate protection of the radionavigation satellite service, including various Galileo services (HAS, CAS and PRS) receivers, in the frequency band 1 260-1 300 MHz in an ITU-R Recommendation that should be used by all ITU Member States for ensuring the protection of GNSS.

This recommendation is falling under *case a).*

4.8.3 WRC-23 Agenda Item 9.1. topic d (EESS (passive) 37 GHz)

Topic d under Agenda Item 9.1 deals 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.

4.8.3.1 Link with EU policies:

This band is used or planned to be used by the Microwave Radiometer (MWR) instrument operating on SENTINEL-3 and SENTINEL-3 NG, part of the European Copernicus program, and by the Copernicus Imaging Microwave Radiometer (CIMR), one of the six high-priority candidate missions to expand the current capabilities of the Copernicus space component. Protection of this band is therefore of utmost importance to ensure that these sensors can operate effectively for the sake of these missions' success.

4.8.3.2 Relevant spectrum harmonisation decisions:

None.

4.8.3.3 RSPG recommendation:

The RSPG recommends that the European Commission should include in its proposal to Council an EU position that supports the protection of EESS (passive) sensors operating in the frequency band 36-37 GHz from NGSO FSS systems operating in the band 37.5-38 GHz and the inclusion of relevant conditions (e.g. an unwanted emission limit) that would ensure such protection in the RR.

This recommendation is falling under *case a).*

4.8.4 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-19 instructed ITU-R to study urgently the application of the Article 21.5 to IMT AAS station and the update of Table 21-2 of Article 21. The Article 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 is expected to address this issue in response to the Report from the director of the BR.

4.8.4.1 Link with EU policies:

As addressing the conditions applicable to 5G/IMT stations in frequency bands such as 26 GHz, this issue is relevant to the Electronic Communication and Connectivity EU policy area. An expansion of the scope of application of article 21.5 to 5G/IMT bands beyond that of 26 GHz would address the conditions applicable to 5G/IMT stations in frequency bands such as 42 GHz or 66 GHz, and this issue could become relevant to the Electronic Communication and Connectivity EU policy area, too. In addition, the concerned provisions in Article 21 address the general protection of satellite, which is relevant for Space EU policy area.

The overall EU interest in this matter is to strike the balance in frequency bands used for satellite reception and shared with equal rights with 5G/IMT stations using active antenna systems. Any solution should ensure that it does not impact the protection of satellite reception but too constraining restriction may impair the development of 5G/IMT.

It is also noted that according to EC mandate[55] to CEPT on the 42 GHz under Decision No 676/2002/EC, future spectrum harmonisation decision covers the frequency band 42.5-43.5 GHz where FSS satellite receivers will also need to be protected.

4.8.4.2 Relevant spectrum harmonisation decisions:

According to Commission implementing decision 2019/784 (26 GHz)[56],

- satellites systems operating in 24.45-24.75 GHz and 25.25-27.5 GHz and used internationally for communications between non-geostationary and geostationary satellites in the Inter-Satellite Service (ISS), including the EDRS and
- satellite systems for earth-to-space communications in the Fixed Satellite Service operating within the 24,65-25,25 GHz frequency band

need appropriate interference protection from terrestrial wireless broadband electronic communications services[57]. Article 21.5 is the RR provision to enable protection of those satellite receivers from aggregate interference.

4.8.4.3 RSPG Recommendation:

The RSPG recommends that the European Commission should include in its proposal to Council an EU position that supports an update of Article 21 to include technical conditions for the 24.45-29.5 GHz band to be fulfilled by IMT base stations using Active Antenna Systems (AAS) in order to enable

[55] See Mandate to cept to develop least restrictive harmonised technical conditions suitable for next-generation (5g) terrestrial wireless systems for priority frequency bands above 24 GHz and CEPT report 82
[56] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02019D0784-20200430
[57] Article 3 c) and d)

protection of satellite receivers from cumulative interference from IMT base stations using active antennas.

This recommendation is falling under case a).

4.9 Other Agenda Items

For other specific WRC-23 Agenda Items the information was not sufficient enough to assess the impact on EU policy. Therefore, further Agenda Items have not been included, but will be further monitored.

Regarding Agenda Item 10, the RSPG notes that, as a condition to accept an IMT identification in the band 6 425-7 125 MHz under Agenda Item 1.2, no candidate frequency band between 7 and 30 GHz which would jeopardise usages relevant to the Common Security and Defence Policy (CSDP) or to the space policy, should be considered for studies for IMT identification at WRC-27.

It is further noted that some other proposed items for the subsequent WRC Agenda are of importance by several stakeholders. However, due to the continuous development of new Agenda Items it is still premature to identify affected EU policy and provide recommendations.

Annex: Agenda of the WRC-23 (Resolution 1399 (C-20))

RESOLUTION 1399

(adopted by correspondence)

Agenda of the World Radiocommunication Conference (WRC-23)

The ITU Council,

noting

that Resolution 811 of the World Radiocommunication Conference (Sharm el Sheikh, 2019):

a) resolved to recommend to the Council that a world radiocommunication conference be held in 2023 for a maximum period of four weeks;

b) recommended its agenda, and invited the Council to finalize the agenda and arrange for the convening of WRC-23 and to initiate as soon as possible the necessary consultation with Member States,

resolves

to convene a World Radiocommunication Conference (WRC-23) in 2023, preceded by the Radiocommunication Assembly, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-19 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

1.1 to consider, based on the results of the ITU-R studies, possible measures to address, in the frequency band 4 800-4 990 MHz, protection of stations of the aeronautical and maritime mobile services located in international airspace and waters from other stations located within national territories, and to review the pfd criteria in No. **5.441B** in accordance with Resolution **223 (Rev.WRC-19)**;

1.2 to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **245 (WRC-19)**;

1.3 to consider primary allocation of the band 3 600-3 800 MHz to mobile service within Region 1 and take appropriate regulatory actions, in accordance with Resolution **246 (WRC-19)**;

1.4 to consider, in accordance with Resolution **247 (WRC-19)**, the use of high-altitude platform stations as IMT base stations (HIBS) in the mobile service in certain frequency bands below 2.7 GHz already identified for IMT, on a global or regional level;

1.5 to review the spectrum use and spectrum needs of existing services in the frequency band 470-960 MHz in Region 1 and consider possible regulatory actions in the frequency band 470-694 MHz in Region 1 on the basis of the review in accordance with Resolution **235 (WRC-15)**;

1.6 to consider, in accordance with Resolution **772 (WRC-19)**, regulatory provisions to facilitate radiocommunications for sub-orbital vehicles;

1.7 to consider a new aeronautical mobile-satellite (R) service (AMS(R)S) allocation in accordance with Resolution **428 (WRC-19)** 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;

1.8 to consider, on the basis of ITU-R studies in accordance with Resolution **171 (WRC-19)**, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution **155 (Rev.WRC-19)** and No. **5.484B** to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems;

1.9 to review Appendix **27** of the Radio Regulations and consider appropriate regulatory actions and updates based on ITU-R studies, in order to accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route) service and ensure coexistence of current HF systems alongside modernized HF systems, in accordance with Resolution **429 (WRC-19)**;

1.10 to conduct studies on spectrum needs, coexistence with radiocommunication services and regulatory measures for possible new allocations for the aeronautical mobile service for the use of non-safety aeronautical mobile applications, in accordance with Resolution **430 (WRC-19)**;

1.11 to consider possible regulatory actions to support the modernization of the Global Maritime Distress and Safety System and the implementation of e-navigation, in accordance with Resolution **361 (Rev.WRC-19)**;

1.12 to conduct, and complete in time for WRC-23, studies for a possible new secondary allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders within the range of frequencies around 45 MHz, taking into account the protection of incumbent services, including in adjacent bands, in accordance with Resolution **656 (Rev.WRC-19)**;

1.13 to consider a possible upgrade of the allocation of the frequency band 14.8-15.35 GHz to the space research service, in accordance with Resolution **661 (WRC-19)**;

1.14 to review and consider possible adjustments of the existing or possible new primary frequency allocations to EESS (passive) in the frequency range 231.5-252 GHz, to ensure alignment with more up-to-date remote-sensing observation requirements, in accordance with Resolution **662 (WRC-19)**;

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

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

1.17 to determine and carry out, on the basis of the ITU-R studies in accordance with Resolution **773 (WRC-19)**, the appropriate regulatory actions for the provision of inter-satellite links in specific frequency bands, or portions thereof, by adding an inter-satellite service allocation where appropriate;

1.18 to consider studies relating to spectrum needs and potential new allocations to the mobile-satellite service for future development of narrowband mobile-satellite systems, in accordance with Resolution **248 (WRC-19)**;

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

2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with *further resolves* of Resolution **27 (Rev.WRC-19)**, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in *resolves* of that Resolution;

3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the conference;

4 in accordance with Resolution **95 (Rev.WRC-19)**, to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

5 to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;

6 to identify those items requiring urgent action by the radiocommunication study groups in preparation for the next world radiocommunication conference;

7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

8 to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution **26 (Rev.WRC-19)**;

9 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention;

9.1 on the activities of the Radiocommunication Sector since WRC-19:

– In accordance with Resolution **657 (Rev.WRC-19)**, review the results of studies relating to the technical and operational characteristics, spectrum requirements and appropriate radio service designations for space weather sensors with a view to describing appropriate recognition and protection in the Radio Regulations without placing additional constraints on incumbent services;

– Review of the amateur service and the amateur-satellite service allocations in the frequency band 1 240-1 300 MHz to determine if additional measures are required to ensure protection of the radionavigation-satellite (space-to-Earth) service operating in the same band in accordance with Resolution **774 (WRC-19)**;

– Study the use of International Mobile Telecommunication system for fixed wireless broadband in the frequency bands allocated to the fixed services on primary basis, in accordance with Resolution **175 (WRC-19)**;

9.2 on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and[1]

9.3 on action in response to Resolution **80 (Rev.WRC-07)**;

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution **804 (Rev.WRC-19)**.

_____

[1] This agenda sub-item is strictly limited to the Report of the Director on any difficulties or inconsistencies encountered in the application of the Radio Regulations and the comments from administrations. Administrations are invited to inform the Director of the Radiocommunication Bureau of any difficulties or inconsistencies encountered in the Radio Regulations.