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| A close up of a sign  Description automatically generated | **World Radiocommunication Conference (WRC-23) Dubai, 20 November - 15 December 2023** | |  |
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| **PLENARY MEETING** | | **Addendum 1 to Document 4-E** | |
| **16 August 2023** | |
| **Original: English** | |
| Director, Radiocommunication Bureau | | | |
| REPORT OF THE DIRECTOR ON THE ACTIVITIES OF THE RADIOCOMMUNICATION SECTOR | | | |
| PART 1: ACTIVITIES OF THE RADIOCOMMUNICATION SECTOR IN THE PERIOD BETWEEN WRC-19 AND WRC-23 | | | |
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# Introduction

This Report sets forth details on the activities undertaken by the Radiocommunication Sector since the last World Radiocommunication Conference. It takes into account information provided in Reports previously submitted to both the Radiocommunication Advisory Group and the Council, such as the operational plans for the concerned time-frame.

# 1 WRC-23 preparations

## 1.1 BR preparations for WRC‑23

The Bureau’s preparations for WRC‑23 are following the usual process. The Bureau prepared its Report to the conference pursuant to the provisions of CV180 and item 9 of the agenda. The contributions from Member States are processed in the standard manner and are posted in a timely way on the web. The necessary documents have been prepared for the attention of the Members States (e.g. CA/265, dealing with guidelines and tools for submission of proposals, delegate registration, publication and consultation of documents, etc.).

The activities of the Study Groups in preparation for WRC‑23 are described in Section 4.3.

In accordance with Decision 5 of the Plenipotentiary Conference (Rev. Bucharest, 2022), it was decided that WRC-23 will be conducted in a paperless environment. All documents will be available electronically on the WRC‑23 website. In addition, an ITU Sync Application will enable the expeditious download and synchronization of WRC‑23 documents from the ITU servers.

## 1.2 Regional preparations in response to Resolution 72 (Rev.WRC‑19)

The Bureau organized in Geneva three ITU Inter-regional Workshops on WRC‑23 preparation, the first one on 13 to 15 December 2021, the second one from 29 November to 1 December 2022 and the third one from 27 to 29 September 2023.

See details at <https://www.itu.int/en/ITU-R/conferences/wrc/2023/irwsp/Pages/default.aspx>.

Staff of the Bureau also participated regularly in WRC‑23 preparatory meetings of regional organizations, providing information and assistance as necessary.

## 1.3 ITU-R Study Groups work for WRC‑23

This activity is reported in Section 4.3 below.

# 2 Application of the Radio Regulations for Spaces services

## 2.1 Introduction

In the period since WRC‑19, there has been a continuing heavy workload for the Space Services Department in processing notices for non-planned services (Advance Publication, Coordination requests and Notification for entry into the Master Register), including the implementation of WRC‑19 decisions (in particular Resolution **32 (WRC-19),** Resolution **35 (WRC-19)**, Resolution **40 (Rev. WRC-19)**, Resolution **169 (WRC-19)**, Resolution **770 (Rev.WRC‑19)**, Resolution **771 (Rev.WRC‑19**). Similarly, in respect of services subject to Plans, the Radiocommunication Bureau has undertaken substantial work since WRC‑19.

During this period, the objective to meet the regulatory deadlines set up in the Radio Regulations for processing satellite network filings has generally been achieved in the treatment of all procedures: advance publication of information, coordination requests and notification and recording in the Master Register for non-planned satellite network services, use of guardbands, modifications or additional uses and notification and recording of frequency assignments to the broadcasting-satellite service and associated feeder links subject to a Plan (**AP30/30A**) and conversion of allotments, introduction of additional systems, modification and recording of frequency assignments to the fixed-satellite service subject to a Plan (**AP30B**).

To ensure that regulatory deadlines set up in the Radio Regulations for processing satellite network filings continue to be met and that processing backlog situations will not reoccur, staff resources and work have been continuously adapted to the requirements.

Full details of these situations are contained in the following paragraphs.

## 2.2 Processing of notices: non-planned services

Access to spectrum/orbit resources that are not subject to a Plan is governed by procedures laid down in Articles **9** and **11** of the Radio Regulations. Two main procedures are contained in these Articles:

− satellite systems not subject to coordination submit Advance Publication Information (API) and Notification information,

− satellite systems subject to coordination submit Coordination Request (CR) and Notification information.

These procedures constitute a cooperative system, where ITU Member States collaborate to allow satellite systems to operate in space free from radio interference. This cooperative system can broadly be characterized by three main steps:

1) An ITU Member State sends a description (contained either in an API or a CR) of the radio frequencies planned to be used in a satellite project. The Bureau then examines the conformity of this description with the Radio Regulations and publishes the description and the Bureau’s findings in Special Sections contained in BR IFIC so that all other ITU Member States can examine this project.

2) Those other Member States considering that this project may affect their existing systems, or those planned and already submitted to the Bureau, contact the initiating ITU Member State in order to bilaterally discuss technical solutions to ensure that both systems can coexist without interfering to each other. During these bilateral discussions, “the requesting and responding administrations shall make every possible mutual effort to overcome the difficulties, in a manner acceptable to the parties concerned” (see RR No. **9.53**). The Rules of Procedure on RR No. **9.6** provide further clarifications about the meaning and purpose of RR No. **9.53**:

a) “the intent of Nos. **9.6** (**9.7** to **9.21**), **9.27** and Appendix **5** is to identify to which administrations a request for coordination is to be addressed, and not to state an order of priorities for rights to a particular orbital position”;

b) “the coordination process is a two way process”; and

c) “in the application of Article **9**, no administration obtains any particular priority as a result of being the first to start either the advance publication phase (Section I of Article **9**) or the request for coordination procedure (Section II of Article **9**)”.

3) The legal rights are derived from the notification of frequency assignments and their recording in the MIFR based on the outcome of the abovementioned bilateral discussions (see RR No. **8.1**, “the international rights and obligations of administrations in respect of their own and other administrations’ frequency assignments (…) shall be derived from the recording of those assignments in the Master International Frequency Register (the Master Register) or from their conformity, where appropriate, with a plan. Such rights shall be conditioned by the provisions of these Regulations and those of any relevant frequency allotment or assignment plan.” and RR No. **8.3** “Any frequency assignment recorded in the Master Register with a favourable finding under RR No. **11.31** shall have the right to international recognition. For such an assignment, this right means that other administrations shall take it into account when making their own assignments, in order to avoid harmful interference. In addition, frequency assignments in frequency bands subject to coordination or to a plan shall have a status derived from the application of the procedures relating to the coordination or associated with the plan.”). In order to avoid spectrum warehousing, a time limit of 7 years is set to notify and bring into use frequency assignments to space services.

This cooperative system is often referred as “first-come-first-served” but it should be noted that this expression tends to oversimplify the actual system, which relies on a “first-come-first-served” approach only for the identification of the satellite networks with which a newcomer has to discuss/coordinate. When envisaged as a complete set, the procedures contained in Articles **9** and **11** of the Radio Regulations for the space systems strike a balance between the rights and obligations of incumbents and newcomers.

Article **11** also contains provisions to address cases where the discussions initiated following the application of Article **9** have not yet been concluded at the time of notification (see RR Nos. **11.32A** and **11.41**). Here again, they are based on a balance between the rights and obligations of both the incumbent administration and the new administration. For example, the operations of a satellite recorded under RR No. **11.41** are subject to regulatory conditions set forth in RR No. **11.42** (i.e. immediate elimination by the new administration of any harmful interference originating from its system) but they are balanced by the requirement for the incumbent administration to provide the particulars relating to the harmful interference (i.e. to gather evidence supporting its claim of an harmful interference event). It should be noted that, while this regulatory framework applies to both geostationary and non-geostationary satellite systems, spectrum monitoring techniques may be more complex in cases involving non-geostationary satellite systems.

This section provides information about the implementation of these procedures by the Bureau.

### 2.2.1 Advance publication information (API)

API treatments include mainly the publication as-received on the ITU website, examination whether the network is subject to coordination or not, checking that frequency usage are in accordance with the Table of Frequency Allocation and providing advices to administrations if they are not, validation for the completeness and correctness of the data, data preparation and publication of theSpecial Sections (API/A) in BR IFIC of information received on satellite networks under Article **9**, Subsection IA; and the API/A Special Sections SUP or MOD as a follow-up to the application of RR Nos. **11.44**, **11.44.1**, **9.2B.1**, **9.38.1** and **13.6**.

After publication of API/A Special Sections, it also includes the treatment of comments submitted under RR No. **9.3** which are subsequently published in Special Sections API/B.

This includes also the publication of notices subject to Resolution **32 (WRC-19)**.

#### 2.2.1.1 Treatment time in the processing of requests for API

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The above Figure shows the statistics on the treatment time in the processing of requests for API in the 2019-2023 period. These statistics are regularly updated and the latest version may be found at: <http://www.itu.int/en/ITU-R/space/Pages/Statistics.aspx>.

#### 2.2.1.2 Treatment of API/C

Under RR No. **9.1A**, the Bureau shall publish a general description of the satellite network or system for advance publication in a Special Section of the BR IFIC based on information sent under RR No. **9.30**. The Bureau currently publishes these information for the satellite network or system in an API/C special section in a separate process from the treatment of the request for coordination.

### 2.2.2 Coordination requests (CR)

CR treatments include the processing of coordination request information submitted to the Bureau under Article **9** and relevant resolutions and appendices of the Radio Regulations, i.e. publication as-received on the ITU website, examination to be sure the network is subject to coordination, data preparation, validation, communication with the administration where clarification is required, examination (establishment of findings concerning compliance with Radio Regulations, applicable forms of coordination and coordination requirements) and publication of CR/C special sections, the update of databases made available to administrations on the ITU website and correspondence/assistance to administrations. After publication of CR/C Special Sections, it also includes the treatment of requests under RR No. **9.41** which are subsequently published in Special Sections CR/E and, in accordance with RR No. **9.53A**, processing of comments under RR No. **9.52** concerning coordination requests under RR Nos. **9.11** to **9.14** and **9.21** (Special Section CR/D).

#### 2.2.2.1 Treatment time in the processing of requests for coordination

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The above Figure shows the statistics on the treatment time in the processing of coordination requests in the 2019-2023 period. These statistics are regularly updated, and the latest version may be found at: <http://www.itu.int/en/ITU-R/space/Pages/Statistics.aspx>.

#### 2.2.2.2 Resolution 553 (Rev.WRC-15)

Pursuant to Resolution **553 (Rev.WRC-15)**, as of 18 February 2012, the special procedure outlined in the Attachment to the Resolution for processing of coordination request for BSS frequency assignments in Regions 1 and 3 in the 21.4-22 GHz band has been applied in respect of submissions of administrations meeting the requirements specified in the Attachment.

No case of request for applying the special procedure contained in Resolution **553 (Rev.WRC-15)** has been received after WRC-19.

### 2.2.3 Notification for recording in the Master Register

Tasks related to processing of notification information submitted to the Bureau under Article 11 and relevant resolutions and appendices of the Radio Regulations include the publication as-received on the ITU website, verification that all assignments are covered by an API or CR depending on whether the assignments are subject to coordination or not, validation for the completeness and correctness of the data, publication of the information in Part-IS of BR IFIC, examination (data comparison, analysis, establishment of Findings), recording in the MIFR and publication in Part-IIS or -IIIS of BR IFIC, including the update of databases made available to administrations on the ITU website and correspondence/assistance to administrations. Also part of this activity is the implementation of regulatory deadlines and further actions in order that the Bureau and administrations do not take into account those assignments for which notification under Article **11** has not been received or were not brought into use within the regulatory period as stipulated in Resolution **49** and in the provisions of RR Nos. **11.44/11.44.1** and corresponding Rules of Procedure.

#### 2.2.3.1 Treatment time in the processing of space stations notifications

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The Figure above shows the statistics on the treatment time in the processing of notification requests of satellite networks in the 2019-2023 period. These statistics are regularly updated and the latest version may be found at: <http://www.itu.int/en/ITU-R/space/Pages/Statistics.aspx>.

##### 2.2.3.1.1 Implementation of RR Nos. 11.41A and 11.41B

RR Nos. **11.41A** and **11.41B** specify the conditions for reviewing the findings of an assignment recorded under RR No. **11.41** due to a change of coordination status. As reported in Circular Letter CR397 of 8 April 2016, the Bureau has fully implemented RR No. **11.41A** for all first notification notices received as of 1 January 2015. The list of frequency assignments to satellite networks which were the basis of unfavorable finding under RR No. **11.32A** to a recorded assignment under RR No. **11.41**, is kept with the notice of the recorded assignment and will be updated whenever these frequency assignments are suppressed.

#### 2.2.3.2 Treatment time in the processing of earth stations notifications

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The Figure above shows the statistics on the treatment time in the processing of notification requests of earth stations in the 2019-2023 period. These statistics are regularly updated, and the latest version may be found at: <http://www.itu.int/en/ITU-R/space/Pages/Statistics.aspx>.

#### 2.2.3.3 Resolution 4 (Rev.WRC‑03)

In accordance with Resolution **4 (Rev.WRC-03)**, the period of validity of a frequency assignment can be extended and the revised period of validity is published in a Special Section RES**4** of the Bureau’s International Frequency Information Circular (BR IFIC).

After the expiry of the period of validity of the frequency assignments, in accordance with *resolves* 1.1 of Resolution **4**, the Bureau shall invite the notifying administration to cancel the corresponding frequency assignments if the Bureau has not been informed of the wish of the administrations to extend the original period of operation under *resolves* 1.2 of the same resolution. If no reply is received within three months, the Bureau shall insert a symbol in the Remarks Column of the Master Register to indicate that the assignments are not in conformity with this Resolution.

Table 2.2.3.3-1

Statistics on Resolution 4

| Number of RES 4 publications by year | |
| --- | --- |
| 2010 | 33 |
| 2011 | 51 |
| 2012 | 66 |
| 2013 | 67 |
| 2014 | 57 |
| 2015 | 37 |
| 2016 | 34 |
| 2017 | 37 |
| 2018 | 43 |
| 2019 | 56 |
| 2020 | 75 |
| 2021 | 42 |
| 2022 | 80 |
| 2023 (end of May) | 45 |
| Total number of networks recorded as not in conformity with RES 4 | |
| As for 1st August 2019 | 8 |
| Period of validity recorded in the Master Register | |
| Minimum | 1 year |
| Maximum | 99 years |
| Average | 47 years |
| Extension requested by the administrations | |
| Minimum | 1 year |
| Maximum | 79 years |

In line with Circular Letter CR/301, dated 1 May 2009, on the removal of unused satellite network frequency assignments from the MIFR, the Bureau has been sending since the 23 June 2011 a telefax to all administrations that did not reply after the expiry of the period of validity, asking them to provide, in accordance with the provisions of RR No. **13.6**, evidence of continuous operation of the frequency assignments of the satellite network, or to remove these assignments from the MIFR in case some of them were discontinued. In the absence of information by the notifying administration on the evidence of the continuing use of frequency assignments beyond the recorded period of validity, the Bureau initiate the cancellation of the relevant MIFR entries in accordance with the provisions of RR No. **13.6** and the associated Rule of procedure.

### 2.2.4 Other Resolutions associated with the processing of notices for non-planned services

#### 2.2.4.1 Resolution 35 (WRC-19)

Resolution **35 (WRC-19)**, “a milestone-based approach for the implementation of frequency assignments to space stations in a non-geostationary-satellite system in specific frequency bands and services” requests administrations to submit the deployment information in accordance with Annex 1, at four stages and for non-geostationary-satellite systems in frequency bands and services listed in the table of the *resolves* 1 of this Resolution.

The Bureau has developed within the e-submission system an online tool for the notifying Administration to capture or upload the required deployment information.

As required under *resolves* 5*a)* and 10*a)* of Resolution **35 (WRC-19)**, upon receipt of the deployment information, the Bureau makes this information available “As received” on the e‑submission system. The information made available thereto includes the XML, MDB format of the submission, a report in PDF format, as well as any letter that accompanied the submission.

The RES**35** Special sections and the database containing the RES**35** information are published on the BR IFIC (Space services) and on the website of the Bureau <https://www.itu.int/en/ITU-R/space/Pages/res35main.aspx>.

By 1 May 2023, the Bureau has received 27 submissions and published 17 Special sections. 4 satellite systems have finished their deployment.

The Bureau has published two Resolution **35** Special sections for which the number of space stations declared as deployed under *resolves* 7*a)* or 8*a)* was less than 10% of the total number of satellites indicated in the latest notification information. Hence, the notifying administration submitted under *resolves* 11*a)* the modifications to the characteristics of the notified recorded frequency assignments such as the modified total number of satellites is not greater than 10 times the number of space stations declared as deployed under *resolves* 7*a)* or 8*a)*.

The status of the Resolution **35** submissions is regularly reported to the Radio Regulations Board.

#### 2.2.4.2 Resolution 85 (WRC‑03)

Resolution **85 (WRC-03)** requires the Radiocommunication Bureau to review, once the equivalent power flux-density (epfd[[1]](#footnote-2)) validation software is available, its findings made in accordance with RR Nos. **9.35** and **11.31** for frequency assignments to non-GSO FSS satellite systems against the single-entry epfd limits in Tables **22-1A**, **22-1B**, **22-1C**, **22-1D**, **22-1E**, **22-2** and **22-3** in Article **22** of the Radio Regulations, and to determine the coordination requirements under RR Nos. **9.7A** and **9.7B**.

In Circular Letter CR/414 (6 December 2016), the Bureau informed administrations of the availability of the final version of the software for implementing Recommendation ITU-R S.1503-2 on the ITU website [www.itu.int/ITU-R/go/space-epfd/en](http://www.itu.int/ITU-R/go/space-epfd/en) and on the DVD version of BR IFIC (Space services). The purpose of the circular letter was also to provide administrations and other users with information and guidance on the epfd validation software and implementation of the *instructs the Director of the Radiocommunication Bureau* section of Resolution **85 (WRC-03)**.

As a follow-up since April 2017, the Bureau in accordance with *instructs the Director of the Radiocommunication Bureau* 2 and 3 of Resolution **85 (WRC-03)**, the Bureau initiated a review of its findings pursuant to the relevant provisions of the Radio Regulations and the Radio Regulations Board’s Rule of Procedure.

##### 2.2.4.2.1 Examination under RR No. 9.7B

Following the availability of the Bureau’s epfd examination software, and the publication of Circular Letter [CR/405](https://www.itu.int/md/R00-CR-CIR-0405/en) on 3 June 2016, the Bureau started reviewing coordination requirements under RR No. **9.7B** for non-GSO satellite systems.

On the basis of RR No. **9.41**, the Bureau was receiving comments from notifying administrations of very large earth stations (VLES), which were excluded as a result of the Bureau’s review of coordination requirements under RR No. **9.7B** for specific non-GSO FSS using the tool based on Recommendation ITU-R S.1503. As this Recommendation is calculating interference into GSO links operating with 0-degree inclination GSO space stations, these comments were indicating that there is still a potential for interference to GSO links operating with a GSO space station having an inclination of 5 or 8 degrees and thus these excluded stations should remain identified under RR No. **9.7B.**

It should be noted that the static method in Recommendation ITU-R S.1714 considers the inclination angle of the GSO space station as an input parameter. Therefore, it was assumed that its application should cover cases of links associated with a GSO space station having a non-zero inclination angle.

However, it was brought to the attention of the Bureau that this Recommendation made an incorrect assumption for all non-GSO systems using masks presented in the alpha vs. delta longitude format.

The Bureau reported this difficulty to Working Party 4A in February 2021 suggesting improvements to the methodology.

To resolve this potential inconsistency, Study Group 4, at its November 2021 meeting, agreed to submit a revision to this Recommendation for simultaneous adoption and approval by correspondence (PSAA). Following the successful application of the PSAA procedure, this revision was approved on 26 January 2022 (see [Administrative Circular CACE/1014](https://www.itu.int/md/R00-CACE-CIR-1014/en)).

Since its approval, the Bureau has started to carry out the review of the coordination requirements under No. **9.7B** using the methodology contained in Recommendation ITU-R S.1714-1. This course of action was reported to 89th Meeting of RRB (14-18th March 2022).

A new software tool called EPFD Static has been developed to provide an analysis using this Recommendation. This tool is offered separately from GIBC software package and can be downloaded here <https://www.itu.int/epfdsupport/resources/>.

##### 2.2.4.2.2 Implementation of WRC-15 decision and new revisions of Recommendation ITU‑R S.1503

The 2015 World Radiocommunication Conference (WRC-15) reviewed the progress reported by the Director of BR regarding the development of the epfd validation software, and at its eighth plenary meeting approved the second report of Committee 5 to the Plenary Meeting (see Documents [CMR15/416](https://www.itu.int/md/R15-WRC15-C-0416/en) and [CMR15/505](https://www.itu.int/md/R15-WRC15-C-0505/en)) indicating that:

*“In cases where the software cannot adequately model certain non-geostationary satellite FSS systems, Resolution****85******(WRC-03)*** *will continue to be applied until an update to Recommendation ITU-R S.1503 improving the modelling of those non-GSO systems has been agreed within ITU‑R and has been implemented in the epfd validation software. This would not preclude the Bureau to undertake verification of the non-GSO FSS systems that can be modelled with the existing version of the software.”*

In accordance with the above decision, the Bureau, upon receipt of an indication that the software cannot adequately model a particular non-geostationary satellite FSS system, refers the case to ITU‑R Study Group 4/Working Party 4A for consideration as to whether further improvements to the Recommendation ITU-R S.1503-2 methodology are required in order to model the system adequately. To support this review by the Bureau and Study Group 4/Working Party 4A, further detailed technical description shall be provided, including *inter alia*:

1) the results of calculations using existing EPFD validation software;

2) the results of EPFD calculations using simulation software with adequate modelling of the non-geostationary system;

3) identification of particular areas of Recommendation ITU-R S.1503-2 that need to be reviewed and improved.

Study Group 4 reviewed several cases, mainly related to the fact that Recommendation ITU-R S.1503-2 may not precisely model systems with steerable beams and considered a new revision of this Recommendation, which resulted in the adoption of ITU-R Recommendation S.1503-3.

The Bureau noted that Working Party 4A initiated the development of new revision of Recommendation ITU-R S.1503. With the understanding that normally such revision takes 2 years to complete, and quite significant number of cases pending review with the data submitted in accordance with Recommendation ITU-R S.1503-2, the Bureau considered premature implementation of S.1503-4.

As of mid-2023 revision 4 to Recommendation ITU-R S.1503 is still under study by Working Party 4A.

Once new revision is adopted the Bureau will be in position to consider implementing new revision 4 to Recommendation ITU-R S.1503.

WRC-23 will also consider additional changes to RR Appendix **4** addressing new data elements required for this new version of Recommendation ITU-R S.1503.

It should be noted that superseded version of Recommendation ITU-R S.1503-2 is continued to be used by administrations in submitting the data for their non-GSO FSS systems. Therefore, the Bureau will be continuing reviewing previously established qualified favorable findings using existing software developed in accordance with version 2 of this Recommendation for all the cases using the data prepared in accordance with this Recommendation.

##### 2.2.4.2.3 Summary for the findings review process

Reviews of findings for satellite networks under Resolution **85 (WRC-03)** started to be published in BR IFIC 2862 of 23.01.2018.

As of mid-2023, reviews of findings were carried out with respect to 122 non-GSO networks/systems with the following results:

− 99 obtained complete favorable findings;

− three obtained unfavorable findings;

− 16 obtained favorable findings except for several frequency assignments that received unfavorable findings;

− four obtained favorable findings for some groups of frequency assignments and qualified favorable findings for some other groups and/or orbital configurations due to the continuous application of Resolution **85 (WRC-03)** on request by the notifying administration, as decided by WRC-15 (see Circular Letter [CR/414](https://www.itu.int/md/R00-CR-CIR-0414/en)).

Progress of the process to review these findings is regularly reported to the Radio Regulations Board.

#### 2.2.4.3 Resolution 155 (WRC‑15)

Resolution **155 (WRC-15)** deals with regulatory provisions related to earth stations on board unmanned aircraft (UA) which operate with geostationary satellite networks in the fixed-satellite service in certain frequency bands not subject to a Plan of Appendices **30**, **30A** and **30B** for the control and non-payload communications (CNPC) of unmanned aircraft systems in non-segregated airspaces. In accordance with *instructs the Director of the Radiocommunication Bureau* 3, a new class of station code of UG was created for earth stations providing UAS CNPC links and included in the Preface.

As reported to WRC-19, in order to assist the relevant ITU-R studies and in line with *resolves to encourage administrations* 1, the Bureau established a web-based platform for the posting, for information only, of the part of notices “as received” under RR Articles **9** or **11** for FSS networks for UAS CNPC links or an earth station on board UA communicating with a GSO FSS space station at: <https://www.itu.int/en/ITU-R/space/snl/Pages/UAS.aspx>. As at 1 June 2023, there are 65 satellite networks received from 8 administrations which contained UG class of stations, and for which the Bureau has extracted the information concerning these stations on the above webpage.

#### 2.2.4.4 Implementation of Resolution 169 (WRC‑19)

Resolution **169 (WRC-19)** deals with the use of frequency bands 17.7-19.7 GHz and 27.5‑29.5 GHz by earth stations in motion communicating with geostationary space stations in the fixed-satellite service.

The Bureau issued the Circular Letter CR/461 on 17 June 2020 to provide information and guidance to administrations on the submission and examination of ESIM associated with geostationary FSS space stations in the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) as from 1 July 2020. This included the introduction of 3 new classes of stations in Table 3 of the Preface to the BR IFIC (Space Services): UU (land ESIM), UO (Aeronautical ESIM) and US (Maritime ESIM).

The Bureau actively participated in the WP 4A meetings and made a contribution to the WP 4A meeting in September 2022 (see Document [4A/850](https://www.itu.int/md/R19-WP4A-C-0850/en)) to assist the membership with the work on the methodology for assessing the conformity of A-ESIMs with pfd limits in Part II of Annex 3 the Resolution.

The Bureau made necessary changes to its software and database to accommodate the modifications to this Resolution by WRC-19, which were available for download at <http://www.itu.int/ITU-R/go/space-software/en> and also on BR IFIC (Space Services) 2923/23.06.2020 and subsequent publications.

The Bureau also reminded administrations that characteristics of ESIMs in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz were considered receivable by the Bureau only if they were submitted in a submission of a modification to a previously submitted notification notice containing the characteristics of typical earth stations associated with the satellite network with which these ESIM communicate.

Upon receipt of the notification information containing ESIMs, the Bureau examined these assignments to ensure that the ESIM characteristics were within the envelope characteristics of typical earth stations associated with the satellite network with which these ESIMs communicate. In the event that ESIMs and typical earth stations are submitted together in the same notice, the frequency assignments of ESIMs would be separated and the typical earth stations would be treated first. In line with resolves 1.1.4 and 1.1.1 of Resolution **169 (WRC-19)**, the frequency assignments of ESIMs would be subsequently treated as a modification with the original date of receipt plus one day.

In accordance with *resolves* 1.1.5 and 1.2.5, the Bureau only examines the ESIM assignments with respect to their conformity with resolve 1.1.1 and Part II of Annex 3 of Resolution **169 (WRC-19)**. Since the Bureau is unable to examine the conformity contained in Part II of Annex 3 due to the lack of methodology, the Bureau formulated qualified favourable findings based on the A.22.a commitment of the administration. Once the studies to determine the methodology to implement Part II of Annex 3 are finalized and the software is available, the Bureau will review its findings in relation to No. **11.31**.

With regard to the e.i.r.p. density limits in Annex 1 and Part I of Annex 3 of Resolution **169 (WRC‑19)**, it is considered that conformity with these e.i.r.p. density limits is assured by a commitment of the administration submitted under A.20.a of Appendix 4.

Pursuant to resolves 1.1.4, 1.1.5, 1.2.5 of Resolution **169 (WRC-19)**, the Bureau prepared new cover pages/templates for Parts I/II/III-S publications that make specific reference to Resolution **169** to facilitate the receipt and examination of the ESIMs received under this Resolution (see Section II of the Preface to the BR IFIC (Space Services)).

As of 5 May 2023, the Bureau has received 10 notification notices containing ESIMs related to Resolution **169 (WRC-19)** from 5 Administrations (AUS, NOR, G, J and TUR) and published them using the new cover pages/templates.

| ntc\_id | adm | ntwk\_org | sat\_name | ntc\_type | ntf\_rsn | long\_nom | st\_cur |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 321500197 | AUS |  | AUS-NBN-3 | G | N | 140 | 20 |
| 321500198 | AUS |  | AUS-NBN-4 | G | N | 145 | 20 |
| 321500251 | NOR |  | SE-KA-56.5E | G | N | 56.5 | 20 |
| 322500018 | G |  | INMARSAT-KA 55W | G | N | -55 | 20 |
| 322500019 | G |  | INMARSAT-KA 180E | G | N | 180 | 20 |
| 322500020 | G |  | INMARSAT-KA 63E | G | N | 63 | 20 |
| 322500090 | J |  | N-SAT-Y12-144E | G | N | 144 | 20 |
| 322500091 | J |  | N-SAT-Y12-150E | G | N | 150 | 20 |
| 322500092 | J |  | SUPERBIRD-B2-R | G | N | 162 | 20 |
| 323500057 | TUR |  | TURKSAT-42E-B | G | N | 42 | 20 |

These notices contain groups of frequency assignments with the 3 classes of station UU, UO and US. For receiving beams, Bureau had to split the frequency assignment groups into two groups (one group with the class of station UO and another group with classes of station UU and US) in order to formulate the appropriate findings according to the types of ESIM. The groups of frequency assignment with class of station UO are given qualified favourable finding under No. **11.31** in accordance with resolves **7** and **8** of Resolution **169 (WRC-19)**.

All groups of frequency assignments received favourable findings in 8 of the 10 notification notices. For 2 notification notices (from AUS), some groups of frequency assignments received unfavourable findings in accordance with *resolves* 1.1.1 of Resolution **169 (WRC-19)** since the ESIM characteristics are not within the envelope characteristics of typical earth stations associated.

#### 2.2.4.5 Resolution 552 (Rev.WRC-15)

WRC-15 revised Resolution **552** **(Rev.WRC-15)** on *“Long-term access to and development in the band 21.4-22 GHz in Regions 1 and 3”*, which requests administrations to provide certain specific information for geostationary-satellite networks in the BSS in the 21.4-22 GHz band and the Bureau to report to future competent World Radiocommunication Conferences the results of the implementation of this Resolution.

The number of submissions received by the Bureau under this Resolution between 2019-2023 are shown in the table below:

|  |  |
| --- | --- |
| Year | Number of submissions |
| 2019 | 6 |
| 2020 | 2 |
| 2021 | 6 |
| 2022 | 4 |
| 2023 | 1 |

#### 2.2.4.6 Resolution 609 (Rev.WRC‑07)

Resolution **609** **(Rev.WRC‑07)** instructs the Radiocommunication Bureau to participate to the consultation meetings referred to under *resolves* 6 of this resolution, to determine whether the pfd level in *recommends* 1 of Recommendation **608** **(Rev.WRC‑07)** is exceeded by any space station that is subject to this resolution, to report the findings of this determination to the participants of these consultation meetings, and to observe carefully results of the epfd calculation mentioned in *resolves* 1.

In order to assist administrations and ensure compliance with the mentioned tasks, the Bureau is actively maintaining an up-to-date list of satellite network filings submitted under Articles **9** and **11** that contain RNSS frequency assignments in the 1 164-1 215 MHz band. As of 8 April 2023, this list contains 182 satellite network filings (including CR/C and Part-I/II-S), published in BR IFIC, representing a total of 176 satellite networks or systems from 30 administrations (including intergovernmental organizations).Among these filings, there are 128 GSO and 48 non-GSO satellite networks. The Bureau also maintained a Resolution **609** (Rev.WRC‑07) webpage and sharepoint site, at <https://www.itu.int/en/ITU-R/space/Pages/res609.aspx>, for submission and exchange of information between the participants of the consultation meetings as well as for any administration interested in these meetings.

Nineteen (19) Resolution **609 (Rev.WRC‑07)** Consultation Meetings have been held so far (Geneva-2003, Ottawa-2004, Munich-2005, Bangalore-2006, Xi’an-2007, Correspondence Meeting-2009, Toulouse-2010, Geneva-2011, Tokyo-2012, Los Angeles-2013, Shenzhen-2014, Correspondence Meeting-2015, Auckland-2016, Correspondence Meeting-2017, Abuja-2018, Cyberjaya-2019, Virtual meeting-2020, Virtual meeting-2021, Virtual meeting-2022) for which the Bureau has completed the required actions and published the results in its BR IFIC (the tentative date for the 20th Resolution **609** **(Rev.WRC‑07)** Consultation Meeting is set for 8 September 2023).

Based on the conclusions of the most recent 19th Resolution **609 (Rev.WRC‑07)** Consultation Meeting in 2022, the maximum aggregate epfd of the RNSS networks and systems is determined to be no greater than **-121.52** dB(W/(m2∙MHz)), i.e. 0.02 dB below the Resolution **609** **(Rev.WRC‑07)** limit of **-121.5** dB(W/(m2∙MHz)). This result is based on the use of worst-case assumptions in terms of interference from RNSS into ARNS.

The 19th Resolution **609 (Rev.WRC‑07)** Consultation Meetings encouraged the Bureau to continue contacting those administrations with RNSS filings in the 1 164-1 215 MHz band that have not until now participated fully or on a continuing basis to the Resolution **609** **(Rev.WRC‑07)** consultation process in an effort for these administrations to attend when appropriate to the consultation meeting, highlighting the mandatory nature of the Resolution **609 (Rev. WRC-07)** Consultation Meeting for those systems/administrations with concrete plans to operate RNSS systems in the 1 164-1 215 MHz band.

#### 2.2.4.7 Resolution 770 (WRC‑19)

Under its agenda item 1.6, WRC-19 adopted provision RR No. **22.5L** establishing single-entry limits for non-geostationary-satellite system in the fixed-satellite service in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) and Resolution **770** **(WRC-19)** “*Application of Article* ***22*** *of the Radio Regulations to the protection of geostationary fixed-satellite service and broadcasting-satellite service networks from non-geostationary fixed-satellite service systems in the frequency bands 37.5-39.5 GHz, 39.5-42.5 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz”*.

This Resolution contains technical characteristics of generic geostationary satellite reference links (see Annex 1 of the Resolution) and a methodology (see Annex 2 of the Resolution) to determine compliance with RR No. **22.5L**.

As of mid-2023 the Bureau has received 68 requests for coordination of non-GSO FSS systems subject to RR Nos. **9.12** and **22.5L** and 18 requests for coordination of non-GSO MSS subject to RR No. **9.12** only.

In case the Bureau would be unable to examine non-GSO FSS systems subject to the single-entry provision given in RR No. **22.5L** due to a lack of available software (as it is currently the case), *resolves 3* of the Resolution **770** **(WRC-19)** indicates that “the notifying administration shall provide all necessary information sufficient to demonstrate compliance with RR No. **22.5L** and send to the Bureau a commitment that the non-GSO FSS system complies with the limits given in No. **22.5L**” and *resolves* 4 prescribes “that frequency assignments to non-GSO FSS systems that cannot be assessed under *resolves 1* shall receive a qualified favourable finding under No. **9.35** with respect to No. **22.5L** if *resolves 3* is satisfied, otherwise the assignments shall receive an unfavourable finding”.

The Bureau sought guidance from the Radio Regulations Board at its 84th Meeting (6-15 July 2020) what type of information is sufficient to demonstrate compliance with RR No. **22.5L** in order to fulfil *resolves 3* of Resolution **770 (WRC-19)**. The Bureau also included information on potential inconsistencies in this Resolution.

At its 84th meeting, the Radio Regulations Board noted that:

− the software required to examine non-GSO FSS systems subject to the single-entry provision given in RR No. **22.5L** was not available;

− there might be a possible inconsistency in the definition of the parameter NT used in the methodologies contained in Annex 2 to this resolution.

Given these circumstances, the Board instructed the Bureau to provide qualified favourable findings to notices of non-GSO FSS satellite systems in the 40-50 GHz range subject to Resolution **770 (WRC-19)** until such time as the above-mentioned issues were resolved, on condition that the notifying administrations provide:

− all the required input parameters;

− a commitment that the notified non-GSO FSS satellite systems comply with RR No. **22.5L**.

Following this decision, the Bureau was requiring for all submissions subject to RR No. **22.5L** to provide all the data required for examination under RR No. **22.5L** (such as Appendix **4** A.14, A.4.b.7 etc.).

The data submitted in accordance with this decision is published in BR IFIC and on epfd-data web page (<https://www.itu.int/en/ITU-R/space/Pages/epfdData.aspx>).

The Bureau also reported identified inconsistencies in Resolution **770 (WRC-19)** to Working Party 4A (Doc. [4A/33](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0033)).

Modifications to this Resolution will be considered by WRC-23 under agenda item 7. In case such inconsistencies in Resolution **770 (WRC-19)** will be resolved by the Conference, the Bureau will be in position to start implementing the required software tools for examination under Resolution **770 (WRC-19)**.

The Bureau notes a common concern from the notifying administrations with respect to the previously submitted data required for examination under RR No. **22.5L** being used for review of qualified favorable findings once required software will be implemented.

In this regard, the Bureau is considering implementing an approach similar to the one explained in Circular Letter CR/414 (6 December 2016). In accordance with this approach the Bureau will contact individually each administration having submitted non-geostationary satellite systems in the fixed-satellite service subject to RR No. **22.5L** and request the administration to update, if needed, within three months information required under examination on RR No. **22.5L**.

#### 2.2.4.8 Resolution 771 (WRC‑19)

Resolution **771 (WRC-19)** *“Use of the frequency bands 37.5-42.5 GHz (space-to-Earth) and 47.2-48.9 GHz, 48.9-50.2 GHz and 50.4-51.4 GHz (Earth-to-space) by non-geostationary-satellite systems in the fixed-satellite service and 39.5-40.5 GHz (space-to-Earth) by non-geostationary-satellite systems in the mobile-satellite service”* establishes transitional arrangements for non-GSO FSS and MSS systems for which the complete notification information has been received by the Bureau before 23 November 2019.

When adopting provisions RR Nos. **22.5L** and **22.5M**, WRC-19 did not adopt any specific provision indicating that these two provisions do not apply to non-geostationary satellite systems notified before the end of WRC-19[[2]](#footnote-3). As such, RR No. **11.50** requires the Bureau to review the findings of such systems to check their compliance with RR No. **22.5L**. This is also in line with the *instructs the Director of the Radiocommunication Bureau* of Resolution **770 (WRC-19)**:

“*to review, once the validation software as described in resolves 3 is available, BR's findings made in accordance with Nos.* ***9.35*** *and* ***11.31***”

Noting that *resolves* 1 of Resolution **771 (WRC-19)** indicates that “that frequency assignments to non-GSO networks or systems for which the complete notification information has been received by the Radiocommunication Bureau before 23 November 2019 shall be brought into use before 23 November 2022 or the end of the regulatory period set forth in No. **11.44**, whichever date comes earlier”, the Bureau will conduct the abovementioned review under RR No. **11.50** as follows:

− When a notifying administration informs the Bureau of the bringing into use of such frequency assignments, the Bureau will request the notifying administration to submit the Appendix **4** data that are relevant for the examination of RR No. **22.5L** (similarly to what the Bureau requests for coordination requests submitted after WRC-19).

− If the notifying administration submits this information, the Bureau will establish a qualified favourable finding since the examination software for RR No. **22.5L** is not yet available.

− If the notifying administration does not submit the requested information, the Bureau will establish an unfavourable finding.

When the examination software becomes available, a review of the qualified favourable findings will be undertaken.

On 23 November 2019, there were 27 satellite systems having frequency assignments subject to subject to *resolves* 1 of Resolution **771 (WRC-19).**

As of mid-2023, the Bureau has received information from notifying administrations that 3 satellite systems have been brought into use and is currently in the process of verifying this information. The notifying administration of another system requested the RRB to extend the regulatory limit of bringing into use.

The remaining satellite systems will be suppressed by the Bureau in accordance with *resolves* 2 of the Resolution **771 (WRC-19).**

## 2.3 Processing of notices: planned services

### 2.3.1 Appendices 30 and 30A

Tasks under both Appendices comprise the examination and publication of submissions under Articles **2A**, **4** and **5** of Appendices **30** and **30A** (BSS and associated feeder-link Plans), taking also due account of Resolutions **49 (Rev.WRC‑19)**, **548 (WRC‑12)**, **558 (WRC-19)** and **559 (WRC‑19)**.

Under Article **4**, the Bureau processes requests for modifications to the Region 2 Plan, and proposed new or modified assignments in the Regions 1 and 3 Lists, submitted by administrations. The characteristics and list of administrations whose frequency assignments are considered to be affected are published in Part A of a Special Section in BR IFIC.

New or modified assignments entered in the Regions 1 and 3 List or Region 2 Plan as a result of the successful application of the provisions of Article **4** are then published in Part B of a Special Section. The above processing entails acknowledgement of received information, validation, examination and publication of relevant Special Sections, including application of Resolution **49**, Council Decision 482 invoicing, correspondence/assistance to administrations, processing of comments (publication of a list of administrations whose agreements are required in Part D of a Special Section) and the update of databases made available to administrations on the ITU website and in BR IFIC.

The Bureau processes notifications submitted under Article **5** of these appendices for recording in the Master International Frequency Register, i.e. data acknowledgement, validation, publication of the information in Part I-S of BR IFIC, technical examination (establishment of Findings) and publication in Part II-S or III-S of BR IFIC, recording in the MIFR, including the update of databases made available to all administrations on the ITU website and in BR IFIC.

The Bureau also processes requests for coordination of assignments for space operation functions in the guardbands submitted under Article **2A** of these appendices, i.e. data capture, validation, examination and publication of a Special Section in BR IFIC.

#### 2.3.1.1 Treatment time in the processing of requests for AP30-30A (Article 4 Part A)

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Description automatically generated

The Figure above shows the statistics on the treatment time in the processing of requests for the application of Article 4 of Appendices **30/30A** in the 2019-2023 period. These statistics are regularly updated and the latest version may be found at: <http://www.itu.int/en/ITU-R/space/Pages/Statistics.aspx>.

#### 2.3.1.2 Implementation of Resolution 559 (WRC-19)

WRC-19 adopted Resolution **559** to provide Regions 1 and 3 administrations that are eligible for the special procedure described in that Resolution with the possibility to submit new frequency assignments as a replacement of their national frequency assignments in the Appendices **30** and **30A** Plans, taking advantage of the removal of some limitations in Annex 7 to Appendix **30 (WRC‑15)**.

In accordance with the instructs the Director of the Radiocommunication Bureau 1 of Resolution **559 (WRC-19)** and “Instructions to the Radiocommunication Bureau in application of revised Annex 7 to RR Appendix **30** and associated Resolutions”, the Bureau identified 55 eligible Administrations based on the Appendices **30** and **30A** master database (SPS\_ALL\_IFIC2909.mdb) published in the BR IFIC (space services) 2909 of 26 November 2019. Through Circular Letter CR/455 dated 21 February 2020, the Bureau informed all these Administrations of their eligibility and included a guidance to administrations for the application of Resolution **559 (WRC-19)**. In addition, a dedicated webpage was created on the Bureau’s website to make available the relevant presentations from previous workshops (specifically the step-by-step Resolution 559 application, how to use BR software and how to create a submission), as well as the list of submissions received under Resolution **559 (WRC-19)**.

In accordance with *the instructs the Director of the Radiocommunication Bureau 2* of Resolution **559 (WRC-19)**, the Southern African Development Community (SADC) and the African Telecommunications Union (ATU) invited the Bureau to participate in their special workshops from 13th to 17th January 2020 in Luanda, Angola and from 17 to 21 February 2020 in Nairobi – Kenya, respectively. BR staff actively participated in these two workshops and assisted 31 ATU Member States in identifying appropriate new orbital positions/frequency channels and in preparing their requests in compliance with requirements of the special procedure.

Following the provision of assistance to the above-mentioned two special workshops, the Bureau reported to the 83rd meeting of the Radio Regulations Board (RRB) (25 March 2020) the progress of the implementation of Resolution **559 (WRC-19)**, drawing the attention of the members of the Board to the possibility of eligible administrations to withdraw and re-submit a notice as long as the resubmission was received before 21 May 2020; the possible impact of submissions under § 4.1.3 of Appendices **30** and **30A** received before 23 November 2019 (i.e. the date of entry into force of this Resolution) and the corresponding submissions under § 4.1.12 not received before the end of WRC-19.

One month before the expiry of the deadline (21 May 2020) for submissions under Resolution **559 (WRC-19)**, the Bureau sent a reminder to 28 administrations that had not yet submitted their requests. In addition to the 31 ATU Member States for which the Bureau suggested orbital positions/frequency channels during the above-mentioned special workshop for ATU, 15 other Administrations formally requested the assistance of the Bureau to find appropriate orbital slots/frequency channels and to prepare their requests.

By 21 May 2020, 42 Administrations out of the 55 eligible Administrations had finally submitted their requests together with downlink and feeder-link notices to the Bureau. Among those submissions, 3 Administrations, namely Madagascar, Seychelles and Mauritius presented a special case: they wished to apply Resolution **559 (WRC-19)**, but technical computations show that there was no suitable solution for them in the parts of the geostationary-satellite orbit (GSO) subject to Resolution **559 (WRC-19)**. In acknowledging their submissions, the Bureau informed these 3 Administrations that the Bureau was not in a position to consider their submissions as in accordance with Resolution **559 (WRC-19)** because the orbital positions were outside the orbital arcs for which the Annex 7 to Appendix **30 (Rev.WRC-15)** limitations were suppressed by WRC-19. Instead, the Bureau considered these submissions as normal applications of the Article 4 procedure of Appendices **30** and **30A** with the aim of replacing their current degraded BSS Plan assignments.

At the 84th meeting of the Board (6-15 July 2020), the Bureau submitted a report on submissions received in accordance with Resolution **559 (WRC-19)** and on the analysis of the potential impact from Part A BSS submissions received by the Bureau before 22 May 2020 in Regions 1 and 3 on the reference situation of those Resolution **559** submissions. The Bureau also submitted a report on the compatibility amongst Resolution **559** submissions and Article 4 submissions from the Administrations of Mauritius, Seychelles and Madagascar. The Bureau also informed the Board that 13 eligible Administrations did not request the application of Resolution **559 (WRC-19)** before the expiry of the deadline (21 May 2020), namely, *Armenia, Austria[[3]](#footnote-4), Belgium, Sri Lanka, Comoros, Vatican City State, Denmark[[4]](#footnote-5), Equatorial Guinea, Liechtenstein, Maldives, Nepal, Turkmenistan, Yemen*. In anticipation of possible late requests, the Bureau also assessed what orbital positions, channels and polarisations could be used by these 13 eligible Administrations. The Administrations of Comoros, Equatorial Guinea and Vatican City State submitted the requests after the deadline of 21 May 2020 (between 22 May 2020 and 6 July 2020). However, these late submissions were considered as received by the Bureau on 21 May 2020 based on the decision of the Board at its 84th meeting. With regard to the submissions from the Administrations Mauritius, Seychelles and Madagascar, the Board instructed the Bureau to take into account and process the submissions received from these three Administrations as submissions received under the Article 4 procedure of Appendices **30** and **30A**, while also implementing the same measures adopted by the Board for the treatment of Resolution **559** submissions.

Based on the assistance provided by the Bureau together with the relevant decisions of the Board, 45 out of the 55 eligible Administrations successfully submitted their requests (each request consisted of one notice for downlink and another notice for feeder-link) in application of the special procedure. Hereafter, submissions under Resolution **559 (WRC-19)** and under Article 4 of Appendices **30** and **30A** from the Administrations of Madagascar, Mauritius and Seychelles are referred to as “Res.**559** submissions”.

The Bureau validated all these Res.**559** submissions, examined and published them in 90 Part A Special Sections in BR IFIC 2932 of 27 October 2020. The 4-month commenting period on those Part A Special Sections ended on 27 February 2021. Below is the summary of statistics on the coordination requirements of the 45 Res.**559** submissions based on these 90 Special Sections publication.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Coordination with administrations with | No. of affected Plan Beams/Satellite networks | No. of affected Administrations |
| 1 | assignments in the Regions 1 and 3 Plan | 44 | 31 |
| 2 | assignments in the original Region 2 Plan or of Pending Article 4 in Region 2 | 5 (Plan) + 5 (Pending) | 6 |
| 3 | assignments in the List or of Pending Article 4 (Additional uses) in Regions 1 and 3 | 39 (List) + 46 (Pending) | 21 |
| 4 | assignments in the terrestrial services | – | 9 |
| 5 | assignments of Article 2A | 4 | 4 |
| 6 | assignments in non-planned services | 413 (359 in CR/C and 54 in Notification) | 35 |

In summary, there were 100 Administrations identified as potentially affected involving 1459 coordination cases.

In order to assist their members in preparing for the frequency coordination with the relevant administrations, SADC and ATU organized online special workshops from 27 to 29 January 2021 and 9 to 12 March 2021, respectively. The workshop organized by ATU was extended to all the 45 Res.**559** Administrations. The BR staff actively participated in these special workshops and delivered presentations on the frequency coordination dedicated to Res.**559** submissions.

After the end of the 4-month commenting period on 27 February 2021, all Res.**559** Administrations except the Administrations of Afghanistan, Malta, Seychelles and Equatorial Guinea due to lack of resources, have actively engaged in the frequency coordination with the potentially affected administrations by submitting coordination proposals. In these coordination activities, the Bureau continued providing assistance to both Res.**559** Administrations and affected Administrations with a view to providing a fair coordination solution.

In response to specific requests of ITU-R Working Party 4A (WP 4A) at its July 2021 meeting, the Bureau submitted to the October-November 2021 meeting of WP 4A a report on the coordination of submissions made in accordance with Resolution **559 (WRC-19)** (Document [4A/404](https://www.itu.int/md/R19-WP4A-C-0404/en)). Section 4 of the report contained suggestions of the Bureau for consideration by WP 4A in order to further facilitate the coordination of the Res.**559** submissions. In a Note to the Director of the Bureau ([Annex 43](https://www.itu.int/dms_ties/itu-r/md/19/wp4a/c/R19-WP4A-C-0522!N43!MSW-E.docx) to Document [4A/522](https://www.itu.int/md/R19-WP4A-C-0522/en)), WP 4A indicated that it endorsed all of those suggestions and further suggested that the Director of the Bureau brought this endorsement to the attention of the Board for advice and assurance of a transparent approach between now and WRC-23 where a complete report on Resolution **559 (WRC-19)** could be submitted by the Board, as part of its report on Resolution **80 (Rev.WRC-07)**.

Subsequently, the Bureau reported to the 89th meeting of the Board (14 – 18 March 2022) this endorsement of WP 4A together with the following 8 coordination cases that have been considered as completed based on this endorsement.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Res.559 Adm | Res.559 Submission | Affected Adm | Affected Plan Beam |
| 1 | BIH | BIH\_SAT | LBY | LBY\_\_100 |
| 2 | MDA | MDA\_SAT | HNG | HNG10601 |
| 3 | MDA | MDA\_SAT | HRV | HRV14801 |
| 4 | MDA | MDA\_SAT | SVK | SVK14401 |
| 5 | MKD | MKD\_BSS | HRV | HRV14801 |
| 6 | MKD | MKD\_BSS | CZE | CZE14401 |
| 7 | ROU | ROU\_SAT | LBY | LBY\_\_100 |
| 8 | ZMB | ZMB\_2020 | LBY | LBY\_\_100 |

Following the endorsement of WP 4A at its October/November 2021 meeting of all the measures suggested by the Bureau to facilitate the coordination of submissions under Resolution **559 (WRC‑19)**, the Bureau continued providing update to WP 4A on the progress of the coordination activities for Res.**559** submissions and invited the relevant administrations to timely and positively respond to the coordination proposals received from the Res.**559** Administrations.

Based on the coordination agreements between Res.**559** Administrations and the affected Administrations, notably under provisions § 4.1.1 a) and § 4.1.1 b), together with the relevant decisions of the Board at its 89th meeting, the Bureau reported to 90th meeting of the Board the statistics on the coordination activities and submitted additional proposals to the Board to further facilitate the coordination of Res.**559** submissions.

Noting the lower percentage of responses relating to the Regions 1 and 3 Plan compared to responses relating to additional uses, in its updated statistics to WP 4A at its September 2022 meeting, the Bureau also reported detailed information regarding the compatibility between Res.**559** submissions and the Regions 1 and 3 Plans (Annex 2 to Document [4A/844(Rev.1)](https://www.itu.int/md/R19-WP4A-C-0844/en)). Furthermore, the Bureau sought the technical advice of WP 4A to assess in which cases the introduction of those Res.**559** assignments in the Regions 1 and 3 Plans could be accepted without a need to modify the technical parameters of those Res.**559** assignments.

Based on the Note to the Director of the Bureau from WP 4A ([Annex 40](https://www.itu.int/dms_ties/itu-r/md/19/wp4a/c/R19-WP4A-C-0856!N40!MSW-E.docx) to Document [4A/856](https://www.itu.int/md/R19-WP4A-C-0856/en)), the Bureau reported to the 91st meeting of the Board proposing to consider including in its report on Resolution **559 (WRC-19)** for the consideration of WRC-23 that, for cases where the space-to-Earth single-entry carrier-to-interference ratio is greater than 21 dB and the Earth-to-space single-entry carrier-to- interference ratio is greater than 30 dB, the Res.**559** submissions and the corresponding Regions 1 and 3 Plan frequency assignments were considered as compatible. In the light of the decisions of the Board at its 90th meeting, for such compatible cases, in order to preserve the same level of protection of those Regions 1 and 3 Plan frequency assignments from incoming Article 4 submissions, it was also proposed that the reference situation of those Regions 1 and 3 Plan frequency assignments should not be updated when the Res.**559** frequency assignments in the List would be included in the Plans.

In order to assist their members in preparing Part B of Res.**559** submissions and the corresponding requests to WRC-23, SADC and ATU organized special workshops from 6 to 9 December 2022 in Gaborone, Botswana and on 13 December 2022, respectively. The online workshop organized by ATU was extended to all the 45 Res.**559** Administrations. The BR staff actively participated in these special workshops and provided the requested assistance.

Following these two special workshops, 41 out of the 45 Res.**559** Administrations have successfully submitted their Part B to the Bureau in January 2023. Due to lack of resources, the Administrations of Afghanistan, Equatorial Guinea, Malta and Seychelles have not yet started the coordination process with relevant Administrations. The Bureau will continue to assist these administrations to successfully apply Resolution **559 (WRC-19)** by WRC-27.

With regard to the above-mentioned 41 Part B Res.**559** submissions, the Bureau validated, examined and published them in the corresponding 82 Part B Special Sections in BR IFIC 2993 of 4 April 2023 for the inclusions of frequency assignments of these 41 Res.**559** submissions in the List of additional uses of Appendices **30** and **30A**. Subsequently, the Bureau informed all the 41 Res.559 Administrations of the publication of their relevant Part B Special Sections and assisted all of them in preparing a corresponding request in accordance with Resolution **559 (WRC-19)** for submission to WRC-23.

With regard to the technical examination of the 41 Part B submissions, there are a total of 1 393 frequency coordination cases involved. Thanks to the decisions of RRB, the technical advice of ITU-R WP4A, the active roles of Res.**559** Administrations, the spirit of cooperation of the potentially affected Administrations and the assistance of the Bureau, 87.08% of these frequency coordination cases have been completed at the time of this Report. There are 180 frequency coordination cases which are yet to be completed. Statistics of major remaining coordination cases are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Total | Coordination under  A30#4.1.1b) | Coordination under  A30#4.1.1e) | Coordination under  A30A#4.1.1b) |
| 180 | 87 | 60 | 26 |
| Percentage | 48.3% | 33.3% | 14.4% |

With respect to the remaining coordination cases under A30A#4.1.1b), the issue is due to the fact that the potentially affected Appendix **30A** Article 4 submissions have very large or nearly global coverage. This issue is being addressed under Topic F of Agenda item 7 of WRC-23.

With respect to remaining coordination cases under A30#4.1.1b) and A30#4.1.e), the main issue is related to two Administrations, which account for 64.4 % of the total number of frequency coordination cases.

The Bureau continues assisting the Administrations concerned in finding solutions to the remaining coordination cases.

During the implementation of Resolution **559 (WRC-19)**, the Bureau submitted to every meeting of the Board a progress report on its implementation and sought necessary guidance from the Board. It is worth indicating that there has been full collaboration from Administrations concerned in implementing relevant decisions of the Board, notably decisions taken by the Board at its 84th meeting in order to protect the reference situation of Res.**559** submissions from **AP30/30A** submissions with earlier dates of receipt than the one of Res.**559** submissions.

Finally, the Bureau would like to thank the guidance from the Board, the technical advice from ITU-R WP4A and the collaboration from all Administrations concerned including the CEPT and ATU coordinators during the implementation of Resolution **559 (WRC-19)**.

#### 2.3.1.3 Equivalent protection margin (EPM) and overall equivalent protection margin (OEPM) values for the assignments in the Appendices 30 and 30A Plan

The current reference situation in terms of EPM for the Regions 1 & 3 Plan Beams and OEPM for Region 2 Plan assignments contained in Appendices **30** and **30A** is provided at <http://www.itu.int/en/ITU-R/space/plans/Pages/AP30-30A.aspx>.

### 2.3.2 Appendix 30B

The processing tasks under this Appendix include the examination and publication of submissions under Articles 6, 7 and 8 of Appendix **30B**.

Article 6 of Appendix **30B** and its related Rules of Procedure provide the procedures for the conversion of an allotment into an assignment, for the introduction of an additional system and for the modification of an assignment in the List. The characteristics of the satellite network and list of administrations whose frequency assignments are considered to be affected are published in a Special Section AP30B/A6A in BR IFIC. New or modified assignments entered in the List as a result of the successful application of the provisions of Article 6 are then published in a Special Section AP30B/A6B. The above processing entails data capture of received information, validation, examination and publication of relevant Special Sections, including application of Resolution **49**, invoicing according to Council Decision 482, correspondence/assistance to administrations, processing of comments and the update of databases made available to administrations on the ITU website and in BR IFIC.

Article 7 of the Appendix **30B** and its related Rules of Procedure regulate addition of a new allotment to the Plan for a new Member State of the Union, if any.

Article 8 and its related Rules of Procedure cover the notification procedure. The Bureau processes notifications submitted under Article 8 for recording in the Master International Frequency Register, i.e. data capture, validation, publication of the information in Part I-S of BR IFIC, technical examination (establishment of findings) and publication in Part II-S or III-S of BR IFIC, recording in the MIFR, including the update of databases made available to all administrations on the ITU website and in BR IFIC.

Following a request from the Radiocommunication Advisory Group (see item 4 of the [summary of conclusions](https://www.itu.int/md/R00-CA-CIR-0246/en) of the 26th RAG meeting (15-17 April 2019)), statistics on the notices of satellite networks submitted under § 6.1 of Article 6 of RR Appendix **30B** over the period 2019-2023 are presented below.

Statistics of RR Appendix 30B notices received by the Bureau   
(from January 2019 to May 2023 on a quarterly basis)

|  | Request for conversion without change of initial allotment national service area | Request for conversion with changes within the envelop of initial allotment national service area | Request for conversion with changes outside the envelop of initial allotment national service area | Request for conversion with changes outside the envelop of initial allotment supra national service area | Request for additional use national service area | Request for additional use, with supra national service area and global coverage\*) |
| --- | --- | --- | --- | --- | --- | --- |
| 1st Quarter  (Jan. – March) 2019 | **1**  (ROU) | 0 | 0 | 0 | 0 | **2**  (1 (E); 1 (F)) |
| 2nd Quarter  (Apr. – June) 2019 | 0 | **1**  (NPL) | 0 | 0 | 0 | **2**  (1 (F); 1 (TUR)) |
| 3rd Quarter  (July – Sept.) 2019 | 0 | 0 | 0 | 0 | **1**  (NPL) | **3**  (2 (CHN);  1 (E)) |
| 4th Quarter  (Oct. – Dec.) 2019 | 0 | 0 | 0 | 0 | 0 | **16**  (2 (D); 1 (E); 1 (HOL);  2 (IRN);  2 (PNG); 8 (S)) |
| 1st Quarter  (Jan. – March) 2020 | **1** \*\*)  (SRB) | 0 | 0 | 0 | **2**  (IND) | **9**  (5 (CHN);  3 (F); 1 (MLA)) |
| 2nd Quarter  (Apr. – June) 2020 | **6** \*\*)  (MKD; BIH; MDA; SSD; GEO; HRV) | **1**  (PAK) | 0 | 0 | 0 | **5**  (1 (CHN);  1 (E); 1 (F);  1 (ISR);  1 (LUX)) |
| 3rd Quarter  (July – Sept.) 2020 | 0 | 0 | 0 | 0 | 0 | **11**  (1 (D); F (10)) |
| 4th Quarter  (Oct. – Dec.) 2020 | 0 | **1**  (KOR) | 0 | 0 | 1  (KOR) | **2**  (1 (CHN); 1 (VEN)) |
| 1st Quarter  (Jan - March)  2021 | 0 | 0 | 0 | 0 | 0 | **9**  (4 (F); 3 (J); 1 (HOL);  1 (UAE)) |
| 2nd Quarter  (Apr. - June)  2021 | 0 | 0 | 0 | 0 | 0 | **12**  (1 (E); 5 (F); 1 (G); 1 (ISR); 1 (MLA); 1 (QAT); 1 (USA); 1 (UAE)) |
| 3rd Quarter  (July – Sept.) 2021 | 0 | 0 | 0 | 0 | **1**  (VEN) | **7**  (2 (AUS); 1 (D); 1 (F); 1 (IND);  2 (S)) |
| 4th Quarter  (Oct. – Dec.) 2021 | 0 | 0 | 0 | **1**  (I) | **1**  (KOR) | **7**  (1 (CYP); 3 (D); 1 (F); 1 (G);  1 (HOL)) |
| 1st Quarter  (Jan - March)  2022 | 0 | 0 | 0 | 0 | 0 | **3**  (2 (F); 1 (PAK)) |
| 2nd Quarter  (Apr. - June)  2022 | 0 | 0 | 0 | 0 | 0 | **5**  (2 (F); 2 (E); 1 (USA)) |
| 3rd Quarter  (July + Sept.)  2022 | 0 | 0 | 0 | 0 | **4**  (3 (IND);  1 (KOR)) | **1**  (1 (B)) |
| 4th Quarter  (Oct. – Dec.) 2022 | 0 | **1**  (MNG) | 0 | 0 | 0 | **9**  (1 (D); 2 (LUX); 5 (QAT);  1 (USA)) |
| 1st Quarter  (Jan - March)  2023 | 0 | 0 | 0 | 0 | 0 | **8**  (1 (ALG);  1 (CAN); 2 (E); 3 (F); 1 (USA)) |
| 2nd Quarter  (Apr. - May)  2023 | 0 | 0 | 0 | 0 | 0 | **1**  (1 (F)) |
| \* Notices for additional use with service area and coverage beyond the national territory of notifying administration.  \*\* Notices under Article 7 of Appendix **30B** (request from a new Member State for a new allotment in the Plan). | | | | | | | |

#### 2.3.2.1 Treatment time in the processing of requests for AP30B

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The Figure above shows the statistics on the treatment time in the processing of requests for the application of Articles 6 and 7 of Appendix **30B** in the 2019-2023 period. These statistics are regularly updated and the latest version may be found at: <http://www.itu.int/en/ITU-R/space/Pages/Statistics.aspx>.

#### 2.3.2.2 Resolution 148 (WRC‑07)

There is nothing to report for the period 2019-2023 in relation to Resolution **148** **(WRC-07)** –Satellite systems formerly listed in Part B of the Plan of Appendix **30B (WARC Orb-88)**.

#### 2.3.2.3 Resolution 149 (Rev.WRC‑12)

During period 2019-2023 the Bureau received 7 (seven) submissions from new Member States of the Union which do not have a national allotment in the Plan or an assignment in the List stemming from the conversion of an allotment (subject of Resolution **149 (Rev.WRC‑12)** − Submissions from new Member States of the Union relating to Appendix **30B** of the Radio Regulations).

Results of treatment of these submissions may be found in the following Special Sections:

| Notifying ADM | Network Name  (Orbital position) | Special Sections |
| --- | --- | --- |
| SRB | SRB00000 (26.7W) | AP30B/A6A/605 (IFIC 2936 of 22.12.2020) |
| MKD | MKD00000 (16.7W) | AP30B/A6A/606 (IFIC 2938 of 26.01.2021) |
| BIH | BIH00000 (46.0E) | AP30B/A6A/607 (IFIC 2941 of 09.03.2021) |
| MDA | MDA00000 (75.1E) | AP30B/A6A/608 (IFIC 2943 of 06.04.2021) |
| SSD | SSD00000 (23.9W) | AP30B/A6A/609 (IFIC 2944 of 20.04.2021) |
| GEO | GEO00000 (78.0E) | AP30B/A6A/610 (IFIC 2946 of 18.05.2021) |
| HRV | HRV00000 (63.0E) | AP30B/A6A/611 (IFIC 2947 of 01.06.2021) |

The Radio Regulations Board at its 89th meeting (14-18 March 2022) instructed the Bureau to implement, as an interim measure until WRC-23, some additional regulatory measures to avoid the further degradation of the aggregate *C/I* levels of the above-mentioned requests of new Member States.

In this connection, the Bureau has proposed, and relevant notifying administrations kindly accepted the measures that help to keep maximum degradation of the aggregate *C/I* value of potential national allotment of the new Member States less than 0.25 dB.

| **Potentially affected ADM**  **(Network name)** | **ADM accepted additional measures** | **Satellite name** | **Orbital Position** | **Special Sections** |
| --- | --- | --- | --- | --- |
| BIH (BIH00000 (46.0E)) | BLR | BLR-FSS2-51.5E | 51.5 E | AP30B/A6B/177  (IFIC 2972 of 31.05.2022) |
| HRV (HRV00000 (63.0E)) | PNG | NEW DAWN FSS-3 | 62.0 E | AP30B/A6B/186  (IFIC 2980 of 20.09.2022) |
| HRV (HRV00000 (63.0E)) | IND | INSAT-PKU63E | 63.0 E | AP30B/A6B/191  (IFIC 2987 of 10.01.2023) |
| MKD (MKD00000 (16.7W)) | G | UKFSS-18W-A | 18.0W | AP30B/A6B/196  (IFIC 2991 of 07.03.2023) |

In addition, Administration of Montenegro has successfully completed the procedure of Article 6 of Appendix **30B** as a new Member State which does not have a national allotment in the Plan or the assignments in the List stemming from the conversion of an allotment. The assignments of this network have been entered into the List of Appendix **30B**.

| Notifying ADM | Network Name  (Orbital position) | Special Sections |
| --- | --- | --- |
| MNE | MNE00000 (36.6W) | AP30B/A6B/167 (IFIC 2962 of 11.01.2022) |

Thus, this Administration may wish to seek agreement of the Conference for the inclusion in the Plan of a new allotment over its national territory under § 6.35 of Article 6 of Appendix **30B**.

#### 2.3.2.4 Resolution 170 (WRC‑19)

Several workshops have been organized by administrations seeking assistance on the application of Resolution **170 (WRC-19)** among other topics. The Bureau provided all assistance as well as clarification requested. Up to this time of the report, there has been no submission received under this resolution.

#### 2.3.2.5 Reference situation for the allotment of Appendix 30B

The current reference situation values for all allotments in the FSS Plan is provided at <http://www.itu.int/en/ITU-R/space/plans/Pages/AP30B.aspx>

## 2.4 Other Resolutions applicable to both planned and non-planned services

### 2.4.1 Resolution 40 (Rev.WRC-19)

Resolution **40 (Rev.WRC-19)** on the use of one space station to bring frequency assignments to geostationary-satellite networks at different orbital locations into use within a short period of time *instructs* the Radiocommunication Bureau to make available the information provided in *resolves* 1 and 2 on the ITU website within 30 days of its receipt.

During the period from 27 November 2015 to 30 April 2023, the Bureau received **833** submissions under the provisions of Resolution **40 (Rev.WRC-19)**. Of these submissions, 599 (71.91%) indicated that the bringing into use (or resumption of use) of frequency assignments had been performed without relocating any satellite used in the previous three years for bringing into use (or resuming the use) of frequency assignments at another orbital position and 234 (28.09%) indicated that it had been done following the relocation of a geostationary satellite from an orbital position where it had been used for bringing into use (or resuming the use) of frequency assignments to another satellite network within the three previous years.

The following table shows the number of Resolution **40 (Rev.WRC-19)** submissions against the number of orbital positions at which a satellite mentioned in a Resolution **40 (Rev.WRC-19)** submission was previously used.

|  |  |  |
| --- | --- | --- |
| Number of positions at which the satellite was used previously | Number of Res. 40 submissions | Percentage |
| 0 | 599 | 71.91% |
| 1 | 120 | 14.41% |
| 2 | 42 | 5.04% |
| 3 | 26 | 3.12% |
| 4 | 11 | 1.32% |
| 5 | 9 | 1.08% |
| 6 | 7 | 0.84% |
| 7 | 4 | 0.48% |
| 8 | 5 | 0.60% |
| 9 | 3 | 0.36% |
| 10 | 3 | 0.36% |
| 11 | 2 | 0.24% |
| 12 | 1 | 0.12% |
| 13 | 1 | 0.12% |

**46** Administrations submitted information under Resolution **40** **(Rev.WRC-19)** and **33** Administrations indicated at least in one of their submissions that the bringing into use was accomplished with a space station that has previously been used to bring into use, or resume the use of, frequency assignments at a different orbital location within three years prior to the date of submission of this information.

The information gathered from the submissions under Resolution **40** **(Rev.WRC-19)** shows that satellites can be used to bring into use frequency assignments at multiple different orbital positions. There is an example of a satellite bringing into use, or bringing back into use after suspension, frequency assignments at 13 different orbital positions since 27 November 2015.

All information about the submissions received by the Bureau under Resolution **40 (Rev.WRC-19)** can be found on the following webpage: <https://www.itu.int/net/ITU-R/space/snl/sat_relocation/index.asp>.

These statistics are regularly reported to the Radio Regulations Board.

### 2.4.2 Resolution 49 (Rev.WRC‑19) – Due diligence

The Due Diligence Information is published in RES49 Special Sections and made available to administrations in database format within one month of receipt of the submission. See details in the table below for the number of cases received and published.

Table 2.6-1

Implementation of Resolution 49 (Rev.WRC‑19)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Year | Due diligence received | Due diligence published |
|  | (number of networks) | (number of networks) |
| Planned/unplanned services | 2019 | 23/77 | 20/80 |
|  | 2020 | 43/59 | 32/68 |
|  | 2021 | 29/81 | 39/73 |
|  | 2022 | 34/73 | 39/58 |
|  | 2023/5 | 2/10 | 10/37 |

### 2.4.3 Resolution 55 (Rev.WRC‑19)

Resolution **55 (Rev. WRC-19)** instructs the Bureau “to make available coordination requests and notifications (…) “as received” within 30 days of receipt on its website”. Since the implementation of the online application “e-submissions for Satellite Network Filing”, all notices have been made available consistently within 30 days, and in most cases within 7 days instead of 30 days.

### 2.4.4 Resolution 907 (Rev.WRC‑15)

In response to the *instructs the Radiocommunication Bureau* of Resolution **907 (Rev.WRC-15)**, the Bureau has developed an online communication platform “e-Communications” to allow administrations to send and receive administrative correspondences related to Space Services through an online interface. This online application encompasses all types of administrative correspondence related to space services between administrations and the Bureau, as well as between administrations.

As informed in the circular letter CR/450 dated 25 October 2019, this application is available for the exchange of administrative correspondence related to space services since 23 October 2019.

Users can get access to this online application as well as a user’s guide at the following webpage within the BR space website: <https://www.itu.int/ITU-R/go/space-communications>.

The system has been operated smoothly and securely since the initial introduction of the system in 2019. In addition, the system has been improved with several new functions continuously according to the needs and convenience for users.

The numbers of registered administrations and users are increasing as the picture below. The number of registered Administrations has grown to 147, out of which 126 Administrations have sent correspondence via the system as of 18th June 2023. The number of communications via e-Communications is increasing and approximately 80 % of correspondence to BR is received from e-Communications system.

The administrations are encouraged to use the e-Communications system according to *resolves* of Resolution **907 (Rev.WRC-15)**. The Bureau envisages that relevant Rules of Procedure may be adopted to make the “e-Communications” system the sole means of communications according to the increased number of Administrations using the system.

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## 2.4.5 Resolution 908 (Rev.WRC-15)

In response to Resolution **908 (Rev.WRC-15)**, an online application “e-Submission for Satellite Network Filings” (e-Submission) has been developed to allow administrations to submit their satellite network filings or their comments related to a BR IFIC through an online interface without the need for emails or faxes. This online application was released on 1 August 2018 and encompasses all types of submissions related to satellite networks or systems.

As from 1 August 2018, all filings under Articles **9** and **11**, Appendices **30**, **30A** and **30B** and Resolutions **49 (Rev.WRC-15)**, **552 (Rev.WRC-15)** and **553 (Rev.WRC-15)** in application of the procedures of the Radio Regulations, or comments related to a BR IFIC, were submitted exclusively using the e-Submission web interface available at <https://www.itu.int/itu-r/go/space-submission>.

The system has been operated smoothly and securely since the initial introduction of the system. In addition, the system has been improved with several new functions continuously according to the needs for users and the implementation of new regulatory procedures.

*For example, e-Submission system was updated to accept SNS 9 format and SNS 9.1 format when the new SNS versions were introduced respectively. The e-Submission system was also updated to allow users to capture and submit the information of Resolution* ***35 (WRC-19)*** *when the new resolution was implemented.*

The numbers of registered administrations and users are increasing as the picture below, and at the time of writing this report, 153 administrations and 1 intergovernmental satellite organisation (noting that other such organisation have chosen to be registered as satellite operator of their notifying administration) have registered, totalling 958 individual users including both Administration users and Operator users.

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The Bureau would like to take the opportunity of this report to renew its thanks to the Administration of Japan for the specific assistance in the development of this project.

## 2.5 Treatment of frequency assignments with a bandwidth less than the stated averaging bandwidth

The Bureau informed WRC-15 in the Director’s Report (see Section 3.2.5.2.2 of Revision 1 to Addendum 2 to Document [WRC-15/4](https://www.itu.int/md/R15-WRC15-C-0004/en)) on the requirement for administrations to use Recommendation ITU‑R SF.675 to calculate the maximum power spectral density and submit the data in accordance with RR Appendix **4**.

Footnote 2 to Tables A, B, C and D of Annex 2 to RR Appendix **4** as modified by WRC‑12 indicates to use the most recent version of Recommendation ITU‑R SF.675 to calculate the maximum power spectral density of carriers. For the identification of the maximum power spectral density of different type of carriers, it recommends considering the maximum possible number of carriers occupying a given averaging bandwidth.

Importance of footnote 2 is that the maximum power density is averaged over the worst 4 kHz for carriers below 15 GHz and 1 MHz for carriers at or above 15 GHz. It is important that administrations follow this footnote when providing RR Appendix **4** data elements for examinations of power limits to lead to findings in compliance with the provisions of the Radio Regulations.

Regarding this requirement, the Bureau observed that, for a large number of emissions contained in the SRS database having a necessary bandwidth less than the averaging bandwidth, the maximum power density is based on a single carrier occupying the averaging bandwidth. This is contrary to real systems where multiple carrier operations could be envisaged, particularly considering that the frequency assignment group bandwidth far exceeds the necessary bandwidth of an emission for those above-mentioned cases.

WRC-15 suggested that this detailed issue be referred to the appropriate ITU-R Study Group for further consideration.

During the ITU-R Study Cycle 2015-2023, the Bureau presented contributions on this matter explaining the problem, providing status report (see Documents [4A/51](https://www.itu.int/md/R15-WP4A-C-0051/en), [4C/94](https://www.itu.int/md/R15-WP4C-C-0094/en), [7B/58](https://www.itu.int/md/R15-WP7B-C-0058/en), [4A/108](https://www.itu.int/md/R15-WP4A-C-0108/en), [4A/841](https://www.itu.int/md/R19-WP4A-C-0841/en)) and providing new calculation method to derive transmission power used in hard-limit examination (see Documents [4A1/841](https://www.itu.int/md/R19-WP4A-C-0841/en)).

At the same time, the Bureau took additional steps to gradually align pfd calculation to the calculation method which uses the maximum power definition in accordance with Recommendation ITU-R SF.675. These steps are detailed below.

### 2.5.1 Implementation of Space validation rules

New validation rules were implemented in the Space Validation software (v. 8.0.5) to issue a warning when an inconsistency between the defined peak power and the power spectral density is detected at the time of preparation of the notice forms for submission of a Request for Coordination or a Notification. These new validation rules have been released in BR IFIC 2842 (04.04.2017).

The goal of these validation checks was to help and remind administrations to use the most recent version of Recommendation ITU-R SF.675 in their calculations of maximum power density.

Since the Bureau has implemented the new validation rules, the situation appears to be improving (i.e. more administrations seem using Recommendation ITU-R SF.675 to calculate maximum power spectral density).

With new Space Validation rules already in force for 5 years, the Bureau is confident that administrations are more familiar with the requirement to use Recommendation ITU-R SF.675 in the calculation of maximum power density.

### 2.5.2 New version of GIBC software

New version of GIBC software (v9.1) was released implementing new calculation method aligned with Recommendation ITU-R SF.675. Option was added to GIBC PFD/EIRP GSO , GIBC PFD/EIRP NGSO modules responsible for hard-limits validation to calculate transmitted power using Recommendation ITU-R SF.675.

With this additional option an administration can check compliance with RR Article **21** PFD limits using calculation method based on deriving the maximum power definition in accordance with Recommendation ITU-R SF.675.

### 2.5.3 Implementing an on-line pfd verification program (GSO and non-GSO)

The Bureau is currently in the process of implementing an on-line pfd calculation module (GSO and non-GSO) integrated in e-Submission web application. This module will enable administrations to check pfd using their prepared SRS and GIMS database at the time of submission. This also would help to avoid the situation when administrations may suddenly receive unfavourable findings when they submit frequency assignments which they consider favourable from past experience.

The Bureau expects to provide the test functionality of this module within e-Submission platform in the 2nd half of 2023. Production version is expected to be in place before WRC-23.

With these additional measures in place the Bureau will be prepared to implement the new calculation method for RR Article **21** pfd limits examination which is to use maximum power spectral density multiplied by the reference bandwidth in the case when the reference bandwidth is less or equal to the averaging bandwidth.

The Bureau will be informing administrations through Circular Letter that the Bureau will apply the modified methodology to the notice received on and after the date of the on-line pfd tool becoming available, without retroactive application.

## 2.6 Special assistance on coordination, notification and Plans

### 2.6.1 Assistance cases for non-planned services

Due to the requirement to notify assignments within the 7-year period, administrations increasingly rely on the regulatory assistance by the Bureau under Sub-Sections IIB and IID of Article **9** to complete or continue coordination in cases of non-reply or objections without details concerning the assignments that are the reason for objection. Between July 2019 and May 2023, the number of requests for assistance handled were 240 for space stations and 370 for earth stations. The Bureau endeavours to deal with these cases as expeditiously as is consistent with the relevant procedure of Article **9**.

In addition to the regulatory assistance described above, various provisions in the Radio Regulations (notably in Articles **7** and **13**) specify a wide range of possibilities for assisting administrations. This activity requires the identification of the nature of the assistance, identification of procedures and administrations involved and preparation of replies in a timely fashion. The Space Services Department is also involved in a number of contacts, on a daily basis, with many administrations, operating agencies, private companies and the general public which request assistance, support or clarification concerning the application of regulatory and administrative provisions of the Radio Regulations.

### 2.6.2 Assistance cases for Appendices 30, 30A and 30B

The Bureau continued to provide assistance to administrations in application of Appendices **30**, **30A** and **30B** and Article **13** of the Radio Regulations including coordination and detailed information concerning the results of the Bureau’s calculations.

The Bureau received many requests for information from various entities including Member States and Sector Members concerning application of these Appendices by e-mail and telephone. The requested information was provided as quickly as possible. Between December 2019 and May 2023 inclusive, the Bureau also processed 153 formal assistance cases from administrations concerning the detailed results of the calculations performed by the Bureau, including different cases of difficulty in applying the procedures of Appendices **30**, **30A** and **30B**, as mentioned in RR No. **13.1** of Article **13**, or application of provisions of the Radio Regulations including those under § 4.1.10a of Article 4 of Appendices **30** and **30A** (see § 2.4.3 below) and under § 6.13 of Article 6 of Appendix **30B** (see § 2.4.4 below). The administrations were assisted as requested.

### 2.6.3 Request for assistance under § 4.1.10a of Article 4 of Appendices 30/30A

Provision 4.1.10a of Article 4 of Appendices **30** and **30A** allows a notifying administration to request the Bureau to assist in respect of potentially affected administrations which have not made comments within four-month period to a network published under § 4.1.5 of Article 4 of these Appendices.

Between December 2019 and May 2023, the Bureau has received 75 requests for assistance under § 4.1.10a. The Bureau has sent 458 reminders in accordance with §§ 4.1.10b and 4.1.10c to administrations whose assignments were identified as affected. Since the outbreak of Covid-19, the Bureau has been using emails and e-Communications as the only means to send these reminders (See § 3.2.3.2 of Part 2 for the difficulties encountered from this change). The Bureau made additional efforts in assisting the receiving administrations in reducing the possible difficulties that may arise during the Covid-19 pandemic. The Bureau received 208 replies with decisions from those administrations (including 26 replies received after the 30-days deadline), which is around 45% of all reminders sent, with an increase of 25% than the previous reporting cycle.

Provision 4.1.10d of Article 4 of Appendices **30** and **30A** which states that “If no decision is communicated to the Bureau within 30 days after the date of dispatch of the reminder under § 4.1.10b, it shall be deemed that the administration which has not given a decision has agreed to the proposed assignment” has been applied to those administrations who did not respond within the deadline. A list of non-responding administrations whose assignments in the Regions 1 and 3 Appendices **30** and **30A** Plans may be degraded as a result of these assistance cases by at least one of the proposed networks is the following: AFG, AUT, BGD, BLR, CAF, CPV, EST, GHA, GNB, GUI, HOL, KWT, LBN, LBR, LVA, MLD, MTN, NGR, NRU, PLW, PSE, SRL, STP, TKM, TLS, TON, UZB, VUT and YEM.

### 2.6.4 Request for assistance under § 6.13 of Article 6 of Appendix 30B

Provision 6.13 of Article 6 of Appendix **30B** allows a notifying administration to request the Bureau to assist in respect of potentially affected administrations which have not made comments within four-month period to a network published under § 6.7 of Article 6 of that Appendix.

Between December 2019 and May 2023, the Bureau has processed 12 requests for assistance under § 6.13. The Bureau has sent 47 reminders in accordance with §§ 6.14 and 6.14bis to administrations whose allotment(s)/assignments were identified as affected. Since the outbreak of Covid-19, the Bureau has been using emails and e-Communications as the only means to send these reminders (See § 3.2.3.2 of Part 2 for the difficulties encountered from this change). The Bureau made additional efforts in assisting the receiving administrations in reducing the possible difficulties that may arise during the Covid-19 pandemic. The Bureau received 29 replies with decisions from those administrations (including 1 reply received after the 30-day deadline), which is around 62% of all reminders sent, with a 30% increase than the previous reporting cycle.

Provision 6.15 of Article 6 of Appendix **30B** which states that “If no decision is communicated to the Bureau within thirty days after the date of dispatch of the reminder under § 6.14, it shall be deemed that the administration which has not given a decision has agreed to the proposed assignment” has been applied to those administrations who did not respond within the deadline. A list of non-responding administrations whose allotment in the Appendix 30B Plan may be degraded as a result of these assistance cases by at least one of the proposed networks is the following: AND, BLZ, BRU, GNB, KNA, KRE, LBR, MLD, NGR, PHL, PRU, SEY, SRL, URG, UZB, VCT and YEM.

## 2.7 Cost recovery for processing satellite network filings (Council Decision 482)

In accordance with Council Decision 482 (modified 2020), the Bureau has been issuing invoices for satellite network filings. The Bureau also tracks the payment status, sends reminder letters as appropriate, and cancels filings wherein the invoices are not received in accordance with the Council Decision. The implementation of Decision 482 (C-05), and subsequently Decision 482 (modified 2012), Decision 482 (modified 2013), Decision 482 (modified 2017), Decision 482 (modified 2018), Decision 482 (modified 2019) and Decision 482 (modified 2020), by the Radiocommunication Bureau did not give rise to any administrative or operational difficulty either internally or with administrations notifying satellite network filings.

Since the entry into force of Decision 482 (Modified 2019) on 1 July 2019, the Radiocommunication Bureau has received 42 coordination requests of non-geostationary satellite systems exceeding 25 000 units (2 with more than 200 000 units and 1 with 485640 units). It has also received a total of 40 coordination requests of non-geostationary satellite systems including at least two mutually exclusive configurations.

Decision 482 was revised at Council session 2020 to address the case of Notification for recording inter-satellite links of a geostationary-satellite space station communicating with a non-geostationary space station provisionally not subject to coordination, which had been previously omitted. Since the entry into force of Decision 482 (Modified 2020) on 1 September 2020, 11 notification notices for the recording of inter-satellite links of a geostationary-satellite space station communicating with a non-geostationary space station provisionally not subject to coordination, have been invoiced under category N4.

# 3 Application of the Radio Regulations for terrestrial services

## 3.1 General observations

In the period between WRC‑19 and WRC‑23, the Bureau dealt with a substantive number of activities related to terrestrial services. These activities included processing and examination of submissions from administrations, mainly frequency assignment notices to stations in terrestrial services, under the relevant provisions of Articles **9**, **11**, **12** and **20** of the RR and various regional agreements.

In this period, the Bureau examined frequency assignment notices to terrestrial services under two different sets of provisions: under Article **11** of the RR (2016 edition) for notices received between 23 November 2019 and 31 December 2020, and under Article **11** of the RR (2020 edition) for notices received after 31 December 2020. In addition, the submissions related to plan modifications were treated in accordance with the relevant regional agreements.

During the reporting period, all regulatory deadlines for processing terrestrial submissions set up in the Radio Regulations and regional agreements have been met.

The activities related to terrestrial services also covered maintenance of the Master Register, worldwide and regional plans, including periodical review of findings of the corresponding assignments, technical and regulatory assistance to administrations, enhancement of terrestrial software, including the notice processing systems TerRaSys and MARS, web portals and standalone examination tools. These activities are summarised below.

## 3.2 Coordination requests pertaining to terrestrial services

This activity comprises the processing of all coordination requests pertaining to terrestrial services mainly under No. **9.21** of the RR, including the regulatory and technical examinations, publication of the relevant Special Section in BR IFIC, monitoring of the procedures and publication of the resulting situation upon expiry of the deadlines through Special Sections in BR IFIC.

With respect to the cases submitted under RR No. **9.21**, during the reporting period (2019-2023), all of the requests for the application of the procedure under RR No. **9.21** were related to RR Nos. **5.177**, **5.316B**, **5.430A** and **5.441B** (from amongst the 44 footnotes that are applicable to terrestrial services).

Table 3.2-1 summarizes statistics on the Bureau’s activities related to coordination requests pertaining to terrestrial services.

Table 3.2-1

Activities related to coordination requests pertaining to terrestrial services

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2019 | 2020 | 2021 | 2022 | 2023[[5]](#footnote-6) |
| No. of received cases | 0  (Broadcasting services)  392  (Other services) | 0 (Broadcasting services)  1 340  Other services) | 0 (Broadcasting services)  1 515 (Other services) | 2 (Broadcasting services)  248 (Other services) | 0 (Broadcasting services)  309  (Other services) |
| No. of treated cases[[6]](#footnote-7) | 0 (Broadcasting services) 401  (Other services) | 0 (Broadcasting services)  1 712 (Other services) | 0 (Broadcasting services)  2 425 (Other services) | 2 (Broadcasting services)  1 692 (Other services) | 0 (Broadcasting services)  342  (Other services) |

The Bureau processed all these requests within the statutory limits. At the time of preparation of this Report there was no backlog in this activity.

## 3.3 Plan modification procedures for terrestrial services

**3.3.1** This activity comprises the processing of submissions under various plan modification procedures, including the relevant coordination and/or compatibility examinations, where appropriate, and publication of the initial and final results in Special Sections. These activities are performed either through TerRaSys (for the AP25 Plan and for the Plans governed by Regional Agreements ST61, GE84, GE89, GE85EMA, GE06A, GE06D and GE06L) or through other standalone systems, not yet integrated in TerRaSys (for the AP26 Plan, as well as for the Plans governed by Regional Agreements GE75, RJ81 and GE85MM).

The Bureau processed all these requests within the statutory limits. There is no backlog in the treatment of submissions under all these plans. Table 3.3-1 summarizes the Bureau’s activities concerning the processing of submissions for plan modification procedures for terrestrial services.

Table 3.3-1

Activities related to plan modification procedures pertaining to terrestrial services

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2019 | 2020 | 2021 | 2022 | 2023[[7]](#footnote-8) |
| No. of received assignments | 8 401  (Broadcasting services)  380  (Other services) | 13 033  (Broadcasting services)  715  (Other services) | 13 723  (Broadcasting services)  3 813  (Other services) | 42 462  (Broadcasting services)  590  (Other services) | 14 266  (Broadcasting services)  494  (Other services) |
| No. of assignments/allotments resulting in updates to the relevant Plan | 5 250  (Broadcasting services)  356  (Other services) | 7 663 (Broadcasting services)  147  (Other services) | 10 131 (Broadcasting services)  257 (Other services) | 27 750 (Broadcasting services)  360 (Other services) | 12 830 (Broadcasting services)  56 (Other services) |

The relevant details (the notices under treatment and updated versions of the master copies of the Terrestrial Frequency Assignment and Frequency Allotment Plans), are distributed through the consolidated publication BR IFIC-terrestrial services, which is published every two weeks. These master copies of the plans also include the results of the plan modification procedures that are carried out through standalone systems (outside the TerRaSys).

## 3.4 Notification, examination, recording and other regulatory procedures

### 3.4.1 Notification procedure (Article 11 of the Radio Regulations)

**3.4.1.1** This activity comprises the processing (i.e., reception, registering, validation, correspondence, data correction and publication in BR IFIC) of the notices received from administrations, as well as subsequent examination under the relevant provisions of Article **11** of the Radio Regulations. Table 3.4.1‑1 summarizes the Bureau’s activities in this respect.

Table 3.4.1-1

Activities related to notification procedures pertaining to terrestrial services

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2019 | 2020 | 2021 | 2022 | 2023[[8]](#footnote-9) |
| No. of received notices | 129 349 | 249 715 | 130 772 | 75 310 | 62 574 |
| No. of examined notices | 3254 (Broadcasting services)  83 538  (Other services) | 3165  (Broadcasting services)  259 307  (Other services) | 1509 (Broadcasting services)  88 375  (Other services) | 2025  (Broadcasting services)  66 249  (Other services) | 2183  (Broadcasting services)  45 034  (Other services) |
| No. of notices pending examination (earliest date of receipt) | 30 342 (Services other than broadcasting)  24.04.2019 | 12 045  (Services other than broadcasting)  07.07.2020 | 14 126 (Services other than broadcasting)  17.08.2021 | 13 906 (Services other than broadcasting)  27.07.2022 | 18 931 (Services other than broadcasting)  09.01.2023 |

**3.4.1.2** It is also to be noted that, after WRC‑19, the Bureau carried out the following activities with a view to implementing the relevant decisions of WRC‑19 related to the procedures of notification and recording of terrestrial services:

– the existing Rules of Procedure were reviewed and appropriate changes were proposed, where necessary, for consideration by the Radio Regulations Board;

– all internal procedures were reviewed and several elements of the production chain (validation rules, examination rules, finding system) have been adapted to the modified requirements of the Radio Regulations and to the modified Rules of Procedure;

– Findings of frequency assignments recorded in the Master Register were reviewed so as to reflect the modified conditions established by WRC‑19, for example:

• the assignments to stations in the fixed and mobile services in a number of countries in the bands 4 063-4 123 kHz and 4 130-4 438 kHz (RR No. **5.128**), 132‑136 MHz (RR No. **5.201**), 1 621.35-1 626.5 MHz (RR No. **5.359**) and 12.5‑12.75 GHz (RR No. **5.495**) were suppressed due to the deletion of the respective allocations;

• in addition, following the modifications of the allocation situations in RR Appendix **17**, findings of 51 381 frequency assignments of 146 administrations recorded in the Master Register were reviewed in order to check their conformity with the modified channeling arrangement, as well as to other provisions of the RR, applicable to the assignments related to RR Appendix **17**. As the result 2 594 assignments were suppressed and the findings of 18 516 assignments were reviewed.

### 3.4.2 Processing of submissions for HF broadcasting schedules

#### 3.4.2.1 Application of the procedures of Article 12 of the Radio Regulations

This activity comprises the technical examination of submissions related to HF broadcasting schedules under the procedure of Article 12 of the Radio Regulations, including the identification of incompatibilities. It also comprises the selection of appropriate bands and frequencies when requested by administrations, and the preparation of tentative and final schedules.

Starting from January 2019, the CD-ROM publication was discontinued and replaced by free of charge online publication. 49 online publications were issued in 2019 – 2023 by the date of preparation of this document.  The online publication contains, *inter alia*, HFBC schedules, results of compatibility analysis and the latest version of the HFBC software.

This activity also comprises exchange of correspondence with administrations and regional coordination groups concerning possible improvements to software, update of reference data, improvements in the presentation of calculation results, and maintenance of webpages with the latest software updates and reference data. It also comprises participation of the Bureau in the coordination meetings of the regional coordination groups.

Table 3.4.2.1-1 summarizes the Bureau’s activities with respect to the preparation of HFBC schedules.

Table 3.4.2.1-1

Preparation of HF broadcasting schedules

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2019 | 2020 | 2021 | 2022 | 20232 |
| No. of processed cases | 37 381 | 32 812 | 32 523 | 31 215 | 12243 |

## 3.5 Other regulatory procedures pertaining to terrestrial services

### 3.5.1 Resolution 12 (WRC-12)

Resolution **12 (WRC-12)** instructs the Director of the BR to report to the WRC-15 on the progress achieved in the implementation of this Resolution, which deals with assistance and support to Palestine.

In 2023 the Bureau assisted Palestine in the revision of its National Table of Frequency Allocations and Applications.

There has been no request for assistance from Palestine with respect to notifications of frequency assignments for recording in the MIFR or Plan modification procedures or coordination under RR **9.21**.

## 3.5.2 Resolutions 205 (Rev.WRC-19)

Resolution **205 (Rev.WRC-19)** deals with the protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz. The Bureau continued to organize special monitoring programmes in the frequency band 406-406.1 MHz and on the impact of unwanted emissions from systems operating in the frequency bands 405.9-406 MHz and 406.1-406.2 MHz on MSS reception in the frequency band 406-406.1 MHz.

The Bureau continued to ensure the necessary liaison between administrations performing monitoring and the administrations from where unauthorized emissions are generated. As a result of this liaison, several unauthorized emissions ceased. The Bureau also liaised with the COSPAS-SARSAT Secretariat on these issues and participated in the meetings of the Joint Technical Committee of this organization.

The monitoring results on the band 406-406.1 MHz and the adjacent bands are summarized in the Table below (rows 3 and 4). For the completeness of the report on the monitoring activities, Table 3.5.2-1 below also provides the data on regular monitoring in frequency bands between 2 850 kHz and 28 000 kHz (row 1). All observations from this regular monitoring were processed in a timely manner and were made available on the ITU website.

Table 3.5.2-1

Summary information regarding the treatment of monitoring reports

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2019 | 2020 | 2021 | 2022 | 2023\* |
| Regular monitoring in the bands 2 850 kHz and 28 000 kHz: No. of observations processed | 30 825 | 25 642 | 19 868 | 23 555 | 15 165 |
| Special monitoring under Res. **205**: No. of unauthorized emissions in the band 406-406.1 MHz | 227 | 174 | 136 | 387 | 312 |
| Special monitoring under Res. **205**: No. of measurements in the bands 405.9-406 MHz and 406.1-406.2 MHz | 26 | 0 | 55 | 0 | 14 |
| \* The statistics are up to June 2023 | | | | | |

**3.5.3 Progress on the ITU-R studies of Resolution 427 (WRC-19)**

Resolution **427 (WRC-19)** instructs the Director of the Radiocommunication Bureau to report to WRC-23 the progress on the ITU-R studies referred to in *resolves* *to invite the ITU Radiocommunication Sector* of this Resolution: “to study the Articles, limited to Chapters IV, V, VI and VIII of Volume I, of the Radio Regulations and their associated Appendices, as appropriate, in order to identify outdated aeronautical provisions with respect to ICAO standards and recommended practices and to develop examples of regulatory texts for updating these provisions, while ensuring that potential changes to such provisions will not impact any other systems or services operating in accordance with the Radio Regulations”.

After WRC-19, at its 30th meeting on 14-25 November 2022, ITU-R Working Party 5B (WP 5B) has initiated work on a working document toward a preliminary draft new [Report ITU-R M.[AERO-PROVISIONS]](https://www.itu.int/dms_ties/itu-r/md/19/wp5b/c/R19-WP5B-C-0731!N18!MSW-E.docx) ([Annex 18 to WP 5B Chairman Report](https://www.itu.int/md/R19-WP5B-C-0731/en)) − Updating provisions related to aeronautical services in the Radio Regulations, with respect to Resolution **427 (WRC-19)**. In this regard, the International Civil Aviation Organization (ICAO) was invited to provide comments, if any, through a liaison statement. By the time of its last meeting held on 10-21 July 2023 before WRC-23, WP 5B has not receive contributions with respect to the working document and hence it was not updated.

### 3.5.4 Implementation of Resolution 535 (Rev.WRC-19)

Resolution **535 (WRC-19)** deals with the information needed for the application of Article **12** of the Radio Regulations. It *instructs the Director of the Radiocommunication Bureau* in item 2 “to consider improvements to the established arrangements for the preparation, publication and dissemination of the information relating to the application of Article **12**, in consultation with administrations and regional coordination groups”.

For the preparation of HFBC schedules, all current internal and external BR’s software uses Visual Basic which is no longer supported by Windows 10, thus, a re-engineering of the software was initiated on 1 August 2022 to be in line with other existing online terrestrial applications developed on modern technologies. An initial beta version of the new HFBC software (eHFBC) was expected to be made available to administrations for their comments in September 2023.

### 3.5.5 Implementation of Resolution 647 (Rev.WRC‑19)

Resolution **647** **(Rev.WRC-19)**, *inter-alia*, encourages administrations to communicate to BR the relevant up-to-date administration contact information and, where available, the frequencies or frequency bands for use in emergency and disaster relief operations.

To date, the database contains information received from the following administrations: South Africa, Argentina, Armenia, Saudi Arabia, Bahrain, Belarus, Myanmar, Brunei Darussalam, Canada, Spain, Egypt, Estonia, Finland, Italy, Jordan, Kuwait, Malaysia, New Zealand, Oman, Portugal, Qatar, Seychelles, Slovakia, Syria, Thailand, United Arab Emirates and Uzbekistan for terrestrial services, and Canada, Czech Republic, United Kingdom, Malaysia, Romania and Slovakia for space services.

### 3.5.6 Studies on Resolution 223 (Rev.WRC-19) related to the frequency band 4 800‑4 990 MHz

With respect to the frequency band 4 800-4 990 MHz, Resolution **223 (Rev.WRC-19)** *invites ITU‑R*: “2 to study the technical and regulatory conditions for the protection of stations of the AMS and the maritime mobile service (MMS) located in international airspace or waters (i.e. outside national territories) and operated in the frequency band 4 800-4 990 MHz;”

WP 5D carried out the relevant studies of the issue. They have been summarized in the Report of the CPM to WRC-23 (see Chapter 1 under AI 1.1) and, therefore, not reproduced in this document.

During this reporting period there have been 2 883 assignments (1 797 in the fixed service and 1 086 in the mobile service) notified under Article **11** of the RR in the frequency band 4 800-4 990 MHz and 22 assignments to IMT stations in the mobile service under RR No. **5.441B**.

## 3.6 Software development related to the terrestrial services

In the period between WRC‑12 and WRC‑15, the software related to terrestrial services was enhanced with additional functionalities and modules.

### 3.6.1 Activities related to software development for processing of terrestrial notifications under TerRaSys

– Continued development of the examination module for processing of notices under No. **9.21** in the bands identified for IMT at WRC-19;

– Continued development of the software modules for processing HAPS notifications (validation, examination, and publication tools). This task also comprises the development of calculation modules for checking technical conditions specified Resolutions **122 (Rev.WRC-19)**, **145** **(Rev.WRC-19)**, **165 (WRC-19)**, **166 (WRC-19)**, **167 (WRC-19)**, and **168 (WRC-19)**, as well as the corresponding changes in the database and filing structure;

– Continued development of the examination software for identification of affected administrations using digital elevation models (DEM) for several frequency bands and services;

– Continued modernization of the TerRaSys system during the reporting period, including the migration of the terrestrial database to a modern database management system (DBMS), the review of the database structure to accommodate the requirements resulting from WRC-19 decisions, and the rewriting and enhancements of all system modules (processing of notifications, coordination requirements, publication, etc.) using new coding techniques and new features offered by the new DBMS.

### 3.6.2 Activities related to other software developments for processing of terrestrial notifications

–Deployment of eTerrestrial, as an integrated web platform which provides various tools related to FXM and Broadcasting Terrestrial Services (online queries, validation, calculations and what-if studies).

–Deployment of new software packages in eBroadcasting (eTools for Broadcasting services, including the GE84 compatibility and optimization tools (see Section 7.1.3), which were enhanced to add the Rec. ITU-R P.1812 propagation model with various Digital Elevation Models (SRTM3, SRTM1 and ASTER);

–Completion of eQueryFXM under eFXM (FXM - fixed and mobile services) platform, which is a web application that provides online access to BR database (MIFR and PLANs) for terrestrial (except broadcasting) services as a part of eTerrestrial platform;

–Development of ePubFXM/RR9.21 under eFXM platform, which is a web application to provide means to consult Special Sections RR No. **9.21** related to FXM as a part of eTerrestrial platform;

–Addition of maps visualization to all eBroadcasting services and eMIFR for the display of geospatial information and coverage/compatibility contours including terrain-based propagation calculations;

–Migration of the HFBC software Desktop modules to online service and integration with eTerrestrial. Its beta version was shared with ITU Membership to collect their input before going in production.

### 3.6.3 Other software related activities

–Continuation of work on a common BR GIS (Geographical Information System). Establishment of the partnership with the UN Cartographic Unit to benefit from UN GIS expertise and resources and to allow easier access to the UN maps;

–Launch of the project on improvement of the Maritime Service Publications. The objective is to create an online sales platform that would allow users and resellers to purchase and download the digital publications and replace, in future, the current CD‑ROM format;

–The development of a new online platform for treatment of the reports of harmful interference and infringements, concerning terrestrial services was started. This system is called HITS (Harmful Interference to Terrestrial Services). It will allow administrations to consult the archive of its communications being exchanged with the BR, to submit new Appendix 9 or 10 Reports, to provide supplementary information concerning a case of infringement or harmful interference and to receive the information requiring their attention/action.

# 4 Study Groups

## 4.1 BR support for Study Groups activities

Since RA-19, the Radiocommunication Bureau has continued to support the work of six ITU‑R Study Groups, the Coordination Committee for Vocabulary (CCV) and the Conference Preparatory Meeting (CPM). It has contributed to meetings of RAG and subsequently responded to advice offered by RAG concerning Study Groups and other ITU-R activities (See Section 5). Towards the end of the study period, its responsibilities have also included the preparation for the Radiocommunication Assembly 2023 (RA-23) and the World Radiocommunication Conference 2023 (WRC‑23) (See Section 1).

## 4.2 Response to the results of RA-19

The Radiocommunication Assembly in 2019 approved the 40 Resolutions that serve as the basic texts and directives upon which the Study Groups undertake their responsibilities.

Resolutions ITU‑R 4 and 5 provide the structure of the Study Groups and their respective work programmes. These Resolutions were used as the basis for the Study Groups work during the 2019‑2023 study period.

Resolution ITU‑R 9 (Liaison and collaboration with other organizations in particular ISO, IEC and CISPR) recognizes the need to facilitate coordination and information exchange between ITU‑R and other bodies, particularly those involved with standards development, ISO, IEC and CISPR.

RA-19 approved several new and revised Resolutions relating to the work of the Study Groups concerning, for example, spectrum management and monitoring, short-range devices, disaster prediction detection mitigation and relief, cognitive radio systems, terrestrial electronic news gathering systems, reduction of energy consumption for environmental protection, Internet of Things, mitigation of climate change, Telecommunication/ICT accessibility, regulatory procedures for small satellites, international public telecommunications via satellite in developing countries, principles for the future development of broadcasting as well as the role of the Radiocommunication Bureau in the development of television, sound and multimedia broadcasting. The concerned Study Groups have taken due note of such Resolutions in their work programmes.

## 4.3 Preparatory work for WRC‑23

### 4.3.1 General information

Study Groups activity in preparation for WRC‑23 was conducted through the CPM process, in accordance with Resolution ITU‑R 2-8.

The first session of the 2023 Conference Preparatory Meeting (CPM23-1) was held in Sharm el-Sheikh (Egypt) on 25-26 November 2019 to organize the preparatory studies for WRC-23. It also identified studies in preparation for the subsequent WRC. A structure for the CPM Report to WRC-23 was agreed together with a preparatory process, working procedures and a chapter structure. The meeting appointed a Rapporteur or Co‑Rapporteurs for each chapter to assist the Chairman in managing the development and flow of draft report contributions. The results of CPM23-1 were published in Administrative Circular [CA/251](https://www.itu.int/md/R00-CA-CIR-0251/en) of the Radiocommunication Bureau, dated 19 December 2019.

The ITU-R preparations for WRC-23 were concentrated in the following responsible groups (listed in the order of the Study Groups):

**Study Group 4** chaired by Mr Victor Strelets (Russian Federation), WP 4A chaired by Mr Jack Wengryniuk (United States of America) and WP 4C chaired by Mr Nobuyuki Kawai (Japan);

**Study Group 5** chaired by Mr Martin Fenton (United Kingdom of Great Britain and Northern Ireland), WP 5A chaired by Mr José Costa (Canada), WP 5B chaired by Mr John Mettrop (United Kingdom of Great Britain and Northern Ireland), WP 5C chaired by Mr Pietro Nava (Italy), WP 5D chaired by Mr Stephen Blust (United States of America);

**Study Group 6** chaired by Mr Yukihiro Nishida (Japan), Task Group 6/1 chaired by Mr Sergey Pastukh (Russian Federation);

**Study Group 7** chaired by Mr John Zuzek (United States of America), WP 7B chaired by Ms Catherin Sham (United States of America) and WP 7C chaired by Mr M. Dreis (German (Federal Republic of));

Texts for the draft CPM Report were prepared by the responsible groups identified by CPM23‑1 and provided by the Chairmen of these groups to the CPM-23 Chapter (Co-)Rapporteurs.

The work was coordinated by the Chairman of CPM-23, in consultation with the CPM-23 Management Team, as defined in Sections A1.3, A1.5 and 1.6 of Annex 1 to Resolution ITU-R 2-8.

In accordance with Section A1.6 of Annex 1 to Resolution ITU-R 2-8, the CPM-23 Management Team meeting was held in Geneva from 9 to 10 November 2022. It consolidated the draft CPM Report which was made available, in six languages before the deadline stipulated in Resolution ITU-R 2-8, to all Member States and Radiocommunication Sector Members as Document [CPM23‑2/1](https://www.itu.int/md/R19-CPM23.2-R-0001/en).

The Director provided to the second session of CPM-23 (CPM23-2) Reports on WRC-23 agenda items 2 and 4(see Documents CPM23-2/3 and 7 respectively).

The second session of CPM-23 (CPM23-2) met in Geneva from 27 March to 6 April 2023 under the chairmanship of Ms Cindy Cook (Canada) to consider the draft CPM Report, the contributions from the ITU membership and the additional material submitted by the Radiocommunication Bureau.

CPM23-2 divided the work amongst five working groups according to the agreed Chapters structure. Many sub-groups were also established, including a drafting group of plenary to deal with WRC-23 agenda item 10.

table 4.3.1-1

Structure of the CPM23-2 Report

|  |  |  |
| --- | --- | --- |
| CPM23-2 Groups | Topic (WRC‑23 agenda items) | (Co-) Chairperson(s) |
| Working Group 1 | Chapter 1: fixed, mobile and broadcasting issues  (1.1, 1.2, 1.3, 1.4, 1.5) | Dr H. Atarashi (J) Mr U.A. Mahmud (NIG) |
| Working Group 2 | Chapter 2: aeronautical and maritime issues  (1.6, 1.7, 1.8, 1.9, 1.10, 1.11) | Mr M. Alhassani (UAE) |
| Working Group 3 | Chapter 3: science issues  (1.12, 1.13, 1.14) | Mr T.A. Bakaus (B) |
| Working Group 4 | Chapter 4: satellite issues  (1.15, 1.16, 1.17, 1.18, 1.19, 7 Topics A to K) | Ms L. Ferreira (B) Mr G. Kwizera (RRW) |
| Working Group 5 | Chapter 5: general issues  (2, 4, 9.1 Topics a), b), c) and d)) | Mr J. Huang (CHN) |
| Drafting Group of the Plenary | Annex 1 (10) | Mr A. Kühn (D) |

Since CPM23-2, the CPM Report has become a contribution to WRC‑23 as Document 3.

The Report comprises five Chapters, following the structure described above.

The Report also contains in Annex 2 a list of the ITU-R Recommendations, ITU-R Reports and other publications, including certain draft new or revised Recommendations and Reports, that are referred to in the text of the CPM Report. The final version of this list reflecting the decisions of the Radiocommunication Assembly 2023 will be made available to the World Radiocommunication Conference 2023.

### 4.3.2 Studies of the RR No. 21.5 issue

By its Plenary document [550](https://www.itu.int/md/R16-WRC19-C-0550/en), WRC-19 invited ITU-R to study, as a matter of urgency, the applicability of the limit specified in No. **21.5** of the Radio Regulations to those IMT stations, that use an antenna that consists of an array of active elements (AAS – active antenna system), with a view to recommend ways for its possible replacement or revision for such stations, as well as any necessary updates to Table **21-2** related to terrestrial and space services sharing frequency bands. Furthermore, WRC-19 also invited ITU-R to study, as a matter of urgency, verification of No. **21.5** regarding the notification of IMT such stations that use an antenna that consists of an AAS, as appropriate.

Immediately after WRC-19, CPM23-1 identified Working Party (WP) 5D as the responsible group to carry out the above-mentioned requested studies and to report the results of the studies to the Director of the Radiocommunication Bureau (BR) to be considered as the Director deems appropriate. Taking into account the CPM23-1 conclusions, the results of these studies were not included in the Report of the CPM to WRC-23.

WP 5D has studied the RR No. **21.5** issue in the period February 2020 – June 2023 and, as indicated in the [final note](https://www.itu.int/dms_ties/itu-r/md/19/wp5d/c/R19-WP5D-C-1776!H7!MSW-E.docx) from this WP to the Director of the BR (see section 7.2 of the WP 5D Chairman’s Report), several aspects and approaches regarding the studies were discussed but no consensus was reached. While not fully reviewed and agreed by WP 5D, Annex 4.5 to the WP 5D Chairman’s Report in Document [5D/1555](https://www.itu.int/dms_ties/itu-r/md/19/wp5d/c/R19-WP5D-C-1555!H4-N4.05!MSW-E.docx) contains a compilation of input documents received. Statements of some administrations on the RR No. **21.5** issue are contained in Attachment 2 of WP 5D Chairman Report [5D/1776](https://www.itu.int/md/R19-WP5D-C-1776/en).

One of the main points of the discussions was the method of notification of the power delivered to the antenna, i.e., data item 8AA of RR Appendix **4**, which was mandatory for submission to the BR. Some administrations were in favour of considering this data item as the power delivered by a single active element of IMT stations with AAS. Some other administrations believed the total radiated power (TRP) by all active elements of an IMT station with AAS should be notified as data item 8AA.

It could be also noted that at its June 2022 meeting, the Radio Regulations Board considered 1 458 frequency assignments to stations of the land mobile service recorded in the MIFR in the frequency band 24.25-27.5 GHz. Those assignments did not have the identification of IMT stations, and their types of antenna system were not provided. The Board [decided](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.itu.int%2Fdms_pub%2Fitu-r%2Fmd%2F22%2Frrb22.2%2Fc%2FR22-RRB22.2-C-0015!!MSW-E.docx&wdOrigin=BROWSELINK) to insert a remark to the 1 458 recorded assignments and future frequency assignments to land mobile service stations in the frequency band 24.45-27.5 GHz indicating the need to review such frequency assignments once the methodology for determining item 8AA for IMT stations with AAS was completed and approved. The BR has inserted such remark into the recorded assignments.

### 4.3.3 Resolution 655 (WRC-15)

During the study cycle, the work on this topic has been carried out by WP 7A. Additional information provided by WP 7A can be found on Annex 1 to WP 7A Chairman’s Report (Doc. [7A/76](https://www.itu.int/md/R19-WP7A-C-0076/en) (Annex 1)).

## 4.4 Recommendations, Handbooks and Reports

As of July 2023, around 134 new or revised Recommendations and around 100 new or revised Reports have been approved in the 2019-2023 study period. Many of these have stemmed from studies associated with CPM activities, although a good number reflect the vital “basic” studies that underpin the fundamental work of the Study Groups.

## 4.5 Liaison with ITU‑D and ITU‑T

The BR has been instrumental in supporting ITU‑R liaison with ITU‑D and ITU‑T and between the respective Bureaux. Such liaison influences areas of study within the Study Groups and helps to avoid duplication of effort in the three Sectors. See Sections 4.2 and 8 for further detail.

## 4.6 Liaison and collaboration with other organizations

Effective collaboration with other organizations has been undertaken within the framework of Resolution ITU‑R 9. See Section 8 for further details.

## 4.7 Support to membership

During the study period, participants of the ITU‑R Study Groups, as well as staff of the BR, have continued to respond to requests for information and guidance on technical issues concerning the work of the Study Groups. Such questions often relate to problems encountered by Members from developing countries who are seeking relevant ITU‑R texts or an explanation of the material contained therein. Assistance has also been provided by way of presentations at seminars or workshops (see Sections 6 and 9).

## 4.8 Statistics regarding meetings, documentation and finalized texts

The following figures relate to the study period since RA-19 (up to July 2023):

– Number of documents processed: 18 762

– Number of pages processed: 283 437

– Number of meetings: 182

– Number of meeting days (total): 1 057

– Average number of participants at SG and WP meetings: 236

– Number of Recommendations approved: 134

– Number of Reports finalized: 102

– Number of Handbooks finalized: 4

# 5 Radiocommunication Advisory Group

Activities of the Radiocommunication Advisory Group (RAG) are available in Document [RA‑23/PLEN/6](https://www.itu.int/md/R23-RA23-C-0006/en).

# 6 Publications, seminars/workshops, communication and outreach

The purpose of the activities relating to publication, organization and participation in seminars and workshops, and more generally communication and outreach, is to ensure that the outputs produced by the activities of the ITU-R Sector (regulations, recommendations, reports and handbooks) are disseminated worldwide and familiar to the ITU membership, and more generally to all stakeholders on spectrum.

## 6.1 Publications

### 6.1.1 Regulatory publications

During the 2020-2023 timeframe, the preparation of the regulatory publications followed the standard pattern, as foreseen in the Operational Plan, notably:

– the edition of the Radio Regulations reflecting the changes decided by WRC‑19 was published in 2020 in all ITU languages;

– the consolidated version of the Rules of Procedure reflecting the WRC-19 decisions was published in 2021. Since then, three updates have been published with modifications decided by RRB. The Rules of Procedure and their updates are published in all ITU languages.

Table 6.1.1-1 summarizes the Bureau’s activities on statutory publications resulting from the application of the Radio Regulations in the period 2020-2021.

Table 6.1.1-1

Summary information regarding the publications resulting from the application of the Radio Regulations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2020 | 2021 | 2022 | 2023Note |
| BR IFIC (including ILF and all plans) | 25 issues (on DVD‑ROM) | 25 issues (on DVD‑ROM) | 25 issues (on DVD‑ROM) | 25 issues (on DVD‑ROM) |
| HFBC schedules | 11 issues  (online) | 11 issues  (online) | 11 issues  (online) | 11 issues  (online) |
| Preface to the BR IFIC (Space and terrestrial) | 25 issues (incorporated within each BR IFIC) | 25 issues (incorporated within each BR IFIC) | 25 issues (incorporated within each BR IFIC) | 25 issues (incorporated within each BR IFIC) |
| Note: the expected number of publications for the entire year 2023. | | | | |

### 6.1.2 Service publications

#### 6.1.2.1 Background and general observations

The Bureau prepares and issues various service publications, as specified in Article 20 of the Radio Regulations (RR).

In view of the importance of the operational information contained in the maritime-related service publications, particularly with regard to safety, administrations are required to communicate the necessary amendments, as stipulated in No. **20.16** of the RR.

Furthermore, information contained in the maritime-related service publications, in particular the List of Ship Stations and Maritime Mobile Service Identity Assignments (List V), are also used for other administrative procedures (e.g., eligibility for additional MID).

#### 6.1.2.2 List of Coast Stations and Special Service Stations (List IV)

Two editions of List IV have been prepared during this reporting period. This List contains the information notified to ITU, on coast stations and their services, such as public correspondence (CP), Rescue Coordination Centres (RCC), search and rescue (SAR) agencies, NAVINFO, pilot stations, VTS and AIS stations, etc.

Information pertaining to this list is also made available via the online information system ITU Maritime mobile Access and Retrieval System (MARS).

The Bureau continues to provide, every six months, a compilation of all changes notified to the ITU.

#### 6.1.2.3 List of Ship Stations and Maritime Mobile Service Identity Assignments (List V)

Four editions of List V have been prepared during this reporting period. This List contains the information notified to ITU on ship stations, coast stations assigned an MMSI, search and rescue (SAR) aircraft assigned an MMSI, etc.

Information pertaining to this list is also made available via ITU MARS.

The Bureau continues to provide, every three months, a compilation of all changes notified to the ITU.

#### 6.1.2.4 List of International Monitoring stations (List VIII)

One edition of List VIII has been prepared during this reporting period. This List contains the information notified to BR on International Monitoring Stations (Terrestrial and Space) and the different types of measurements covered by these stations as well as contact information for centralizing offices.

#### 6.1.2.5 List of service publications issued

Table 6.1.2.5-1 below summarizes the different publications prepared and delivered during the period 2020-2023:

Table 6.1.2.5-1

Summary information regarding the service publications issued in the period 2020-2023

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2020 | 2021 | 2022 | 2023 |
| List IV (List of Coast Stations and Special Service Stations) | − | Edition of 2021 (December) | − | Edition of 2023 (November) |
| List V (List of Ship Stations and Maritime Mobile Service Identity Assignments) | Edition of 2020 (April) | Edition of 2021 (April) | Edition of 2022 (April) | Edition of 2023 (April) |
| List VIII (List of International Monitoring Stations) | − | − | Edition of 2022 (December) | − |
| Maritime Manual | Edition of 2020 (November) | − | − | − |

### 6.1.3 Study Groups and other publications

During the study period 2020-2023, the preparation of ITU-R Study Groups and other publications followed the standard pattern, as foreseen in the Operational Plan, notably:

– ITU-R Recommendations: 124 were published (posted) on the ITU website in English (E). All Recommendations issued from 2005 to 2021 are available in the six ITU languages (A/C/E/F/R/S), and translation to the remaining five languages is in progress for those Recommendations issued since 2022.

– ITU-R Reports: 111 reports were published (posted) on the ITU website (E) during the period of 2020-2023.

– ITU-R Handbooks (published; by default the English version, unless otherwise indicated):

• Land Mobile (including Wireless Access) - Volume 4: Intelligent Transport Systems (Rev. 2021)

• Handbook on International Mobile Telecommunications (IMT) (Rev. 2022)

• Handbook on Digital Terrestrial Television Broadcasting networks and systems implementation (Rev. 2021)

• A tutorial on frequency adaptive communication systems in the HF bands (New 2022)

• Handbook on Small Satellites (New September 2023)

– Other publications (A/C/E/F/R/S):

• Book of ITU-R Resolutions 2019

• Provisional Final Acts WRC-19

• Final Acts WRC-19

• Rules of Procedure – Edition of 2021

• ITU-R Rules of Procedure 2021, Update 1

• ITU-R Rules of Procedure 2021, Update 2

• ITU-R Rules of Procedure 2021, Update 3

### 6.1.4 ITU-R Publications Downloads

The free online access policy continues to provide a very large dissemination of ITU regulatory texts and standards to a broader public, especially in developing countries with financial constraints. This wide outreach via free online access is helping to build the visibility of ITU’s mission and reinforce ITU as the global telecommunication authority.

ITU-R publications now available free of charge (for download) to the general public on a permanent basis are the following:

– Radio Regulations, latest version: RR Ed. 2020, with decisions from WRC-19

– Rules of Procedures, latest version RoP Ed. 2021 + Update 3 (July 2023)

– ITU-R Recommendations (16 Series, 1,205 Recommendations in Force, as of August 2023).

– ITU-R Reports (13 Series, 627 Reports in force, as of August 2023)

– ITU-R Handbooks (47 Handbooks)

#### 6.1.4.1 Radio Regulations and the Rules of Procedure

Concerning these regulatory documents, Table 6.1.4.1-1 shows the number of deliveries for the RR‑2016 and RR-2020 editions. Following up on the request of the 2021 RAG meeting, both PDF and Word versions of the RR-2020 edition are available for free download from the ITU website. Table 6.1.4.1-2 shows the total number of downloads during the same period for the Rules of Procedure.

Table 6.1.4.1-1

Number of deliveries of the Radio Regulations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2020  (2016 ed and  2020 ed) | 2021 RR-20 | 2022 RR-20 | 2023 RR-20 |
| Hard copies sold | 2016 ed: 59  2020 ed: 1 170 | 274 | 117 | N/A |
| DVD’s sold | 2016 ed: 482  2020 ed: 5 061 | 3 855 | 1 638 | N/A |
| Free downloads | 2016 ed: 36 416  2020 ed: 4 236 | 18 092 | 13 467 | 15 310 |

Table 6.1.4.1-2

The Rules of Procedure (downloads)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2020 | 2021 | 2022 | 2023\* |
| **Rules of Procedure  (ROP)** | 10 882 | 10 539 | 11 887 | 5 243 |

\*Up to April 2023

#### 6.1.4.2 ITU-R Recommendations

As a result of the free online access policy, ITU-R Recommendations are disseminated worldwide, becoming a universal reference. In a 52-month period (January 2020 to April 2023), nearly six million downloads of ITU-R Recommendations from ITU website were recorded. Table 6.1.4.2-1 summarizes their distribution by year and series.

Table 6.1.4.2-1

Distribution of ITU-R Recommendations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Series | 2020 | 2021 | 2022 | 2023\* | Total |
| P | 385 614 | 410 918 | 347 953 | 149 297 | **1 293 782** |
| M | 327 720 | 365 675 | 314 920 | 133 495 | **1 141 810** |
| BT | 226 737 | 231 981 | 218 403 | 96 108 | **773 229** |
| SM | 171 165 | 196 660 | 169 755 | 72 166 | **609 746** |
| F | 154672 | 147 667 | 116 539 | 52 449 | **471327** |
| BS | 142 699 | 166 563 | 143 107 | 60 586 | **512 955** |
| S | 108 174 | 123 593 | 87 801 | 39 344 | **358 912** |
| SA | 46 718 | 43 137 | 33 274 | 16 273 | **139 402** |
| V | 40 634 | 47 032 | 44 707 | 15 580 | **147 953** |
| BO | 26 816 | 23 173 | 16 489 | 7 684 | **74 162** |
| RS | 26 823 | 23 253 | 19 350 | 8 511 | **77 937** |
| TF | 24 077 | 22 729 | 18 211 | 8 217 | **73 234** |
| SF | 19 381 | 16 720 | 13 102 | 5 718 | **54 921** |
| BR | 17 101 | 15 009 | 9 838 | 4 506 | **46 454** |
| RA | 12 315 | 10 777 | 9 169 | 3 907 | **36 168** |
| SNG | 3 319 | 2 548 | 1 987 | 1 127 | **8 981** |
| IS | 1 280 | 1 366 | 1 203 | 593 | **4 442** |
| PI | 372 | 206 | 143 | 98 | **819** |
| Total | **1 735 617** | **1 849 007** | **1 565 951** | **675 659** | **5 826 234** |
| \*Up to April. 2023 | | | | | |

As indicated in the table, almost 42 per cent of downloads come from the Series P and M (Propagation, Mobile), which illustrates the worldwide recognition of ITU-R works on these matters.

#### 6.1.4.3 ITU-R Reports

As ITU-R Recommendations, ITU-R Reports have been promulgated worldwide touching most of the audiences and contributing to good technical practices in certain aspects of radiocommunications. In a 52-month period (January 2020 to April 2023), more than 1 million downloads of ITU-R Reports from ITU website were recorded. Table 6.1.4.3-1 summarizes their distribution by year and series. At this time, there are 627 ITU-R Reports in force, hence the yearly average number of downloads is near 500 per Report.

Table 6.1.4.3-1

Distribution of ITU-R Reports

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Series | 2020 | 2021 | 2022 | 2023 | Total |
| SM | 101 965 | 149 392 | 105 880 | 40 277 | **397 514** |
| M | 105 681 | 118 785 | 102 742 | 46 735 | **373 943** |
| BT | 59 805 | 75 168 | 76 421 | 29 716 | **241 110** |
| BS | 28 707 | 35 392 | 30 002 | 11 987 | **106 088** |
| BO | 14 003 | 16 812 | 16 721 | 6 714 | **54 250** |
| P | 14 785 | 18 142 | 15 647 | 5 646 | **54 220** |
| F | 12 411 | 15 138 | 8 623 | 3 196 | **39 368** |
| S | 10 001 | 9 918 | 9 170 | 3 583 | **32 672** |
| SA | 5 547 | 9 042 | 5 346 | 2 526 | **22 461** |
| RS | 4 796 | 6 343 | 4 486 | 2 054 | **17 679** |
| RA | 4 222 | 4 834 | 4840 | 2 159 | **16055** |
| SF | 387 | 397 | 326 | 127 | **1 237** |
| TF |  | 97 | 466 | 235 | **798** |
| BR | 72 | 61 | 88 | 34 | **255** |
| Total | **362 382** | **459 521** | **380 758** | **154 989** | **1 357 650** |
| \*Up to April. 2023 | | | | | |

As indicated in the table, almost 60 per cent of downloads are of Series SM and M (Spectrum management, Mobile), which illustrates the worldwide recognition of ITU-R works on this matter.

#### 6.1.4.4 ITU-R Handbooks

ITU-R Handbooks are free to download at the ITU website. More than 100 000 downloads were registered in 2022. Table 6.1.4.4-1 provides the distribution of ITU-R Handbooks on spectrum management series as well as other handbooks that are sold.

At this time, a total of 47 ITU-R Handbooks are published including the Spectrum Management Series.

Table 6.1.4.4-1

Distribution of ITU-R Handbooks 2020-2023

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Handbook | 2020 | 2021 | 2022 | 2023 |
| **Spectrum Management Series (hard copies sold)** | 3 | 5 | 0 | NA |
| **Other Handbooks (hard copies sold)** | 4 | 5 | 4 | NA |
| **GRAND TOTAL** | **7** | **10** | **4** | **-** |
|  |  |  |  |  |
| **FREE downloads** | **79 961** | **126 201** | **134 159** | **48 175** |
| \*Up to April. 2023 | | | | |

### 6.1.5 Navigation and analysis tools for ITU-R electronic publications

#### 6.1.5.1 Radio Regulations tools

The Bureau has developed software tools to facilitate the use and review of the Radio Regulations and it continues to update and maintain them:

a) The current version of the Radio Regulation Navigation Tool, which was released during Q2-2022, incorporates the most recent corpus of texts (RR 2020, ITU-R Recommendations, Rules of Procedure 2021 Rev.2). This version is available for download and purchase at the ITU sales website. Until the 1st of January 2024, yearly free updates will be released to incorporate the latest versions of the RoP when available.

b) The software tool to conduct a detailed search and analysis of the Table of Frequency Allocations in Article 5 of the Radio Regulations, enables filtering and reformatting by frequency range, service, category of service, footnote, country, etc. The tool has been updated based on the outcomes of the WRC-19 and the RR 2020 Edition to introduce the changes in the frequency allocations, country footnotes, and related references to associated Resolutions and Recommendations. The updated package also includes links to the relevant ITU-R Recommendations referenced in RR5, as well as the latest version of the relevant Rules of Procedure. The package is now also equipped with a utility to extract the National Table of Frequency Allocations for a specific country as it results from combining the various provisions of RR Article **5**. Throughout the reporting period, the tool was enhanced to link with various provisions in the various articles of the RR. It was demonstrated during various Radiocommunication Regional Seminars. It is available for purchase at the ITU sales website. All software and data updates will be provided regularly and freely to the subscribers, until the WRC-23 and the release of the new version of the Radio Regulations.

## 6.2 Seminars and workshops

### 6.2.1 World and Regional Radiocommunication Seminars (WRS, RRS)

Following WRC-19, BR started (as of January 2020) a new intra-WRCs World and Regional Radio Seminars cycle, aimed at disseminating worldwide the revision of the Radio Regulations made by WRC-15 and the associated Rules of Procedure. This cycle encompasses the biennial World Radio Seminars, WRS, complemented by a set of Regional Radio Seminars, RRS. An analysis of the participation in WRSs and RRSs from 2020-2022 shows that these two types of seminars complement each other, as follows:

– In two WRSs: 1 773 participants from over 156 countries

– In eleven RRSs: 1 906 participants from over 165 countries

Total: 13 seminars, 3 039 participants from over 180 countries.

During this period the BR provided 25 fellowships for RRSs held physically and 23 fellowships for WRSs (one per administration for eligible countries).

#### 6.2.1.1 World Radiocommunication Seminars (WRS)

World Radiocommunication Seminars focused on the regulatory aspects of the use of the radio-frequency spectrum and satellite orbits, in particular the application of the provisions of the ITU Radio Regulations.

Since WRC-19, the biennial World Radiocommunication Seminar were held online:

– **WRS-20**, from 30 November to 11 December 2020, attended by 2 183 participants from 159 countries;

– **WRS-22**, from 24 to 28 October 2022, attended by 540 participants from 123 countries.

**WRS-20** was initially planned for the 1st week of December 2020 in Geneva, but due to the travel restrictions related to the Covid-19 pandemic, WRS changed to a virtual format, with the following changes:

– WRS-20 was presented over 2 weeks, i.e., from 30 November to 11 December, with 3‑hour sessions daily,

– to accommodate participants in different time zones worldwide, WRS-20 sessions were presented twice each day:

• Morning sessions (Geneva time) were presented for participants in the Asia-Pacific, and East and Southern Africa Regions,

• Afternoon sessions (Geneva time) were presented for participants in the Americas, Europe, CIS, Arab States, and West Africa Regions.

– Recordings of the seminar sessions were also made available on the event website.

– The second week, limited to ITU members only, featured basic training workshops on how to use ITU-developed tools for frequency notifications and technical examinations. Web tutorial exercises enabled participants to master both the procedures and the software that the ITU Radiocommunication Sector (ITU-R) uses to process filings. Participants were able to alternate between space and terrestrial services.

**WRS-22** **Plenary** was held as a physical meeting with remote participation.

**WRS-22 Terrestrial and Space Workshops** were held in parallel and organized as physical meetings only and were limited to participation by ITU-R membership. During the four-day WRS‑22 space and terrestrial workshops, participants received hands-on experience with ITU notification procedures, as well as with the software, databases and electronic publications made available by the Radiocommunication Bureau to the ITU membership. Tailored sessions were also available for both beginners and advanced users of BR software tools. The sessions were mainly conducted in English and French. BR granted 23 fellowships for WRS-22.

Noting that more and more people are using and deploying radiocommunication systems and considering the BR role to inform all individuals and organizations worldwide about the Radio Regulations and how to implement them, for the first time during both events, the WRS Plenary sessions were opened to public audience, no matter whether they are members of ITU or not.

#### 6.2.1.2 Regional Radiocommunication Seminars (RRS)

As a complement to the biennial Word Radiocommunication Seminars, the BR has implemented a strategy for regional outreach through the organization of yearly cycles of Regional Radiocommunication Seminars (RRS), held in different regions worldwide, fostering human capacity building on the use of the radio-frequency spectrum and the satellite orbits, and, in particular, the application of the provisions of the ITU Radio Regulations.

Regional seminars include theoretical sessions and workshops on terrestrial and space services, which may be in parallel or in series according to the specific requirements of the region. RRSs are complemented with a one-day forum, dedicated to spectrum-related topics of particular interest to the region.

Table 6.2.1.2-1 provides a summary of the eleven RRSs which were held since WRC-23. These seminars were mainly conducted online during the Covid-19 Pandemic and later hosted by the administrations, the regulator or the spectrum management authority in the country, in cooperation with the relevant regional organizations and the ITU regional/areas offices.

Table 6.2.1.2-1

ITU Regional Radiocommunication Seminars (2020-2023)

| **Date** | **RRS** | **Place** | **Host** | **Cooperation** | **Forum Topics** | **Languages** | **Participants/ administrations** | **Fellowships** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2020** | | | | | | | | |
| 13-24 July 2020 | **RRS-20-Americas** | E-meeting | − | Caribbean Telecommunications Union (CTU)ITU Americas Office | WRC-19 Outcomes : Challenges and opportunities for the Region | E | 350/38 | N/A |
| 19-30 October 2020 | **RRS-20-Asia-Pacific** | E-meeting | − | Asia-Pacific Telecommunity (APT)  ITU Asia and the Pacific Office | WRC-19 Outcomes: Challenges and opportunities for the Region | E | 300/30 | N/A |
| **2021** | | | | | | | | |
| 26 April to 7 May 2021 | **RRS-21-Americas** | E-meeting | − | Inter-American Telecommunication Commission (CITEL)  Colombian National Spectrum Agency (ANE)  ITU Americas Office | Modern spectrum management in the Region | S | 238/49 | N/A |
| 5-16 July 2021 | **RRS-21-Africa** | E-meeting | − | African Telecommunications Union (ATU)  ITU Africa Office | Radiocommunications Trends: Opportunities and challenges for the Region | E & F | 217/68 | N/A |
| 11-22 Oct. 2021 | **RRS-21-Asia-Pacific** | E-meeting | − | Asia-Pacific Telecommunity (APT)  ITU Asia&Pacific Office | Radiocommunications Trends: Opportunities and Challenges for the Region | E | 287/58 | N/A |
| **2022** | | | | | | | | |
| 13-24 March 2022 | **RRS-22-Arab States** | E-meeting | − | Arab Spectrum Management Group (ASMG)  ITU Regional Office for Arab States | Radiocommunications Trends: Opportunities and challenges for the Region | A & E | 185/51 | N/A |
| 30 Aug. to 8 Sept. 2022 | **RRS-22-Europe** | E-meeting | − | ITU Regional Office for Europe | Spectrum Management | E | 286/83 | N/A |
| 15-20 Dec. 2022 | **RRS-22-Asia-Pacific** | Nadi, Fiji | [Ministry of Communications](http://www.fiji.gov.fj/) (MOC) of Fiji | [Pacific Islands Telecommunications Association (PITA)](https://www.pita.org.fj/)  [Department of Infrastructure, Transport, Regional Development, Communications and the Arts](https://www.infrastructure.gov.au/) (DITRDCA) of the Government of Australia  ITU Regional Office for Asia and the Pacific | Radiocommunication Trends: Opportunities and challenges for the Asia-Pacific Region | E | 80/40 | 11 (funded and granted by BR and DITRDCA Australia) |
| **2023** | | | | | | | |  |
| 8-12 May 2023 | **RRS-23-Americas** | Havana, Cuba | [Ministerio de Comunicaciones of Cuba](https://www.mincom.gob.cu/es) | [Comisión Técnica Regional de Telecomunicaciones](https://www.sica.int/comtelca/inicio)  ITU Americas Office | Spectrum Management: Challenges on the Americas | S | 87/26 | 3 |
| 20-23 June 2023 | **RRS-23-Africa** | Brazzaville, Congo | [Agence de Régulation des Postes et des Communications Électroniques](https://www.arpce.cg/)  (ARPCE) | [Policy and Regulation Initiative for Digital Africa](https://prida.africa/) (PRIDA)  [African Telecommunications Union](https://atuuat.africa/) (ATU)  ITU African Office | ITU-PRIDA Workshop: Wireless broadband (terrestrial and satellite) | E & F | 103/46 | 11 (funded and granted by BR and PRIDA (EU)) |

The BR, together with the regional partners, granted 11 full and 24 partial fellowships for RRS (only one per administration for eligible countries).

### 6.2.2 Other Events

Support also provided to other ITU seminars related to topics such as spectrum management, space radiocommunication applications, WRC-23 preparation, etc. Events organized within ITU-R can be found at: <http://www.itu.int/ITU-R/go/seminars>.

Other relevant events during the period include:

– Workshop on ITU in service of space

– ITU Workshop “Radio Spectrum for IMT-2020 and beyond: Fostering Commercial and Innovative Use”

– ITU WRC-23 Regional seminars for Africa, Americas, Asia-Pacific, Arab States and Europe

– ITU PRIDA Workshops

– ITU-ITSO Workshops

– Joint ITU-R SG 6-EBU Workshop on “Broadcasting in times of crisis”

– ITU-R SG 6 Webinar on “Energy Aware Broadcasting”

## 6.3 Communication and Outreach

### 6.3.1 Membership

Table 6.3.1-1 shows the evolution of the number of ITU-R Sector Members, Associates and Academia during the period of January 2020 to August 2023.

Table 6.3.1-1

Evolution of the ITU-R membership since 2020

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2020 | 2021 | 2022 | 2023\* | 2020 vs 2023 | % Increase |
| **Sector Members** | 274 | 277 | 277 | 280 | +6 | 2.2% |
| **Associates** | 20 | 26 | 37 | 42 | +22 | +110% \*\* |
| **Academia** | 159 | 158 | 170 | 168 | +9 | +5.7% |
| \*Until July 2023  \*\*There was a big jump of 110% in the Associates category between 2020 and 2023 following the introduction of SMEs in the ITU-R Associate category to support small organizations to join ITU-R in a specific Study Group. | | | | | | |

### 6.3.2 Communication and Promotion

In order to position the ITU-R in line with its strategic objectives (create brand value, strengthen reputation, mobilize internal and external stakeholders, engage supporters and advocate in the interest of membership), the Bureau works in close collaboration with the Corporate Communications Division (CCD) and ITU Press and Media relations Office, the Membership Department and other relevant Departments of the General Secretariat. This work has included several ITU Inter-Sectoral meetings: Inter-Sectoral Coordination Mechanism, SDG Digital Day, WSIS and SDG Task Force, Corporate Communications Groups, ITU News Editorial, Web Editorial, and Gender Task Force Group.

The following ITU News Articles scheduled for issue on the [ITU Hub](https://www.itu.int/hub/) (WordPress) as a build-up to the Special Editions for WRC-23 will be issued before, during or following the conference:

– [Countdown to WRC-23, Magazine No. 1, 2023](https://www.itu.int/hub/publication/s-gen-news-2023-1/)

– [The future of Coordinated Universal Time, Magazine No. 2, 2023](https://www.itu.int/hub/publication/s-gen-news-2023-2/)

– [Land, sea and airwaves, Magazine No. 3, 2023](https://www.itu.int/hub/publication/s-gen-news-2023-3/)

– Science Services, Magazine No. 4, 2023

– Science Services (Remote sensing), Magazine No 5, 2023

– WRC-23 Results, Magazine No. 1, 2024

– Lunar Spectrum Management, Magazine No. 2, 2024

The following were organized to create brand value and strengthen visibility and reputation:

– A highlight was the ‘[Exhibition on Future Radio](https://www.itu.int/futureradionow/)’ organized from 27 March to 6 April 2023 alongside the CPM23-2. It was open to the public with free admission at the CICG Jeanne Hirsch space, Geneva, Switzerland

– In 2020 the ‘Best of [WRS ONLINE 2020](https://www.itu.int/bestofwrs/)’ series for visibility and capacity building was created following the 2020 World Radiocommunication Seminar (WRS-20) which was presented as a two-week online event where for the first time, the seminar Plenary Sessions were open to everyone, including entities that are not members of the Radiocommunication Sector (ITU-R).

### 6.3.3 Web management

The BR continued to support the ITU-R Sector strategic goals with communications issued through the BR website www.itu.int/ITU-R/, top-level pages which is regularly updated reflecting the work being undertaken by the Sector and, as far as possible, in the six official languages of the ITU. A number of main conference, seminar and important websites were migrated into WordPress, as follows: World Radiocommunication Conference 2023 ([WRC-23](https://www.itu.int/wrc-23/)), Radiocommunication Assembly 2023 ([RA-23](https://www.itu.int/ra-23/)), Network of Women for WRC-23 ([NOW4WRC23](https://www.itu.int/now4wrc23/)), [Future Radio Now Exhibition 2023](https://www.itu.int/futureradionow/), [World Radiocommunication Seminar 2022 (WRS-22)](https://www.itu.int/wrs-22/), [World Radio Day 2022](https://www.itu.int/wrd-22/) (WRD-22). The advantages of migration to WordPress are user-friendly interface, quick and easy to edit content management and mobile friendly responsiveness.

ITU-R Communications continued to distribute information via articles on the [ITU Hub](https://www.itu.int/hub/news/) and via social media on the [ITU-R twitter Newsroom](https://twitter.com/ITUradiocomms) targeting the ITU membership, ITU-R Study Groups participants and delegates, academia members, specialized technical magazines, research institutions, media, ITU staff and the general public.

The [BR Director’s corner](https://www.itu.int/en/ITU-R/Director/Pages/default.aspx) was revamped in 2022 to update the Director's biography following his re-election at PP-22 and includes blogs published under his name as well as ITU News magazines and articles that focus on the work of the Bureau. This was in addition to the photos, speeches and presentation meetings schedule, videos and photos.

A [WRC-23 Newsroom](https://www.itu.int/wrc-23/newsroom/wrc-news/) was designed for membership, delegates, exhibitors, media and the general public etc. to keep regularly informed about the issues discussed and decided at the ITU World Radiocommunication Conference 2023 ([WRC-23](https://www.itu.int/wrc-23/) ) Social media hashtags are in place: [#ITUWRC](https://twitter.com/hashtag/ITUWRC?src=hash).

### 6.3.4 Frequently Asked Questions (FAQ) and Backgrounders

BR continues to keep regularly updated the various sets of Frequently Asked Questions (FAQs). They are available for consultation by the media, industry and general public and currently cover the following topics:

– Radio Regulations (RR), ITU-R Study Groups (SG), RRB, RAG, BR;

– International Mobile Telecommunications (IMT) and Wireless Broadband;

– Satellite filings and associated procedures.

They can be found online on the right-hand top of the ITU-R web page (<http://www.itu.int/en/ITU-R/Pages/default.aspx>.

In addition to the FAQ, the BR regularly updates Backgrounders on key subjects of interest by media outlets, as follows:

– [5G - Fifth Generation of Mobile Technologies (IMT-2020 and beyond)](https://www.itu.int/en/mediacentre/backgrounders/Pages/5G-fifth-generation-of-mobile-technologies.aspx)

– [High-Altitude Platform Systems (HAPS)](https://www.itu.int/en/mediacentre/backgrounders/Pages/High-altitude-platform-systems.aspx)

– [ITU Study Groups](https://www.itu.int/en/mediacentre/backgrounders/Pages/itu-study-groups.aspx) brokering standards by consensus

– [ITU-R: Managing the radio-frequency spectrum for the world](https://www.itu.int/en/mediacentre/backgrounders/Pages/itu-r-managing-the-radio-frequency-spectrum-for-the-world.aspx)

– Radiocommunications for keeping ships and people safe at sea;

– [Satellite issues: Earth stations in motion (ESIM)](https://www.itu.int/en/mediacentre/backgrounders/Pages/Earth-stations-in-motion-satellite-issues.aspx)

– [Satellite issues: Non-GSO FSS satellite systems](https://www.itu.int/en/mediacentre/backgrounders/Pages/Non-geostationary-satellite-systems.aspx)

– [Satellite issues: Small SATS: Nano and Pico - short duration missions](https://www.itu.int/en/mediacentre/backgrounders/Pages/non-GSO-satellite-systems-with-short-duration-missions.aspx)

– Satellite Issues: Regulation of Satellite Systems, filings and associated procedures

– Radio Interference

– Climate Change

– Human exposure to electromagnetic fields (EMF) and health

# 7 Assistance to Member States

## 7.1 Assistance to administrations of developing countries

In the period between WRC‑19 and WRC‑23, the Bureau provided assistance to the administrations of developing countries by:

– Supporting national spectrum management activities and providing technical assistance in the field of space radiocommunication;

– Participating in the meetings of the regional coordination groups, as requested by Article **12** of the Radio Regulations;

– Providing assistance in Long Term Frequency management and assignment for mobile broadband (IMT);

– Providing guidance and technical support for the transition to Digital Television and the allocation of the digital dividend.

– Participation in capacity building seminars on satellite communications;

– Providing assistance in coordination procedure under RR **9.18**, RR **9.19** and RR **9.21**;

– Providing assistance in Plan modification procedure under GE06 Agreement;

– Providing assistance in assignments of call signs and MMSI;

– Providing assistance in space procedures as explained in section 2.6;

– Providing focused assistance in the implementation of Resolution **559 (WRC-19)** (see section 2.3.1.2).

## 7.2 Assistance to Regional Groups

In 2021-2022, BR thoroughly analysed and proposed relevant modifications to a series of spectrum related documents and recommendations developed by the African Telecommunication Union (ATU), such as African Spectrum Allocation, ATU-R recommendations on 5G implementation in Africa, state of Digital Sound Broadcasting in Africa, Spectrum Management Recommendations (on licensing, spectrum management, spectrum evolution), etc.

The Bureau actively participated in various activities in the framework of in the Policy and Regulation Initiative for Digital Africa “PRIDA” of the African Union, the European Union and the ITU. Amongs those activities are:

– a capacity building workshop on modern spectrum management and the ITU spectrum. management software for developing countries (SMS4DC), May 2020.

– a capacity building workshop on IoT and digital services, August 2020.

– an online Technical Committee meeting, November 2020.

– Online workshop for validation technical reports and guidelines, 9-11 March 2021.

– Online workshop on the preparation of the National Frequency Table of Allocations, May 2021.

– Online workshop on HCM4A (Harmonized Calculation Method for Africa), November 2021.

– Online focal points meeting, October 2021.

– Technical Committee meeting, June 2022.

– Training on aeronautical and maritime communication services, April 2023 (in English).

– Training on aeronautical and maritime communication services, May 2023 (in French).

The Bureau also participated to several workshops organized by ATU or SADC on the implementation Resolution **559 (WRC-19)** and other space procedures (see section 2.3.1.2).

## 7.3 Assistance to other groups of countries

### 7.3.1 Assistance to the administrations of the African Region

In 2019-2022, the Radiocommunication Bureau, in collaboration with the African Telecommunication Union (ATU), organized and successfully completed the project for the optimization of the GE84 Plan for Africa.

The project aimed to achieve an efficient and equitable use of the 87.5-108 MHz (FM) band for analogue sound broadcasting and to identify new frequencies to FM broadcasting for African administrations.

This assistance was provided through several preparatory workshops and three virtual frequency coordination meetings, taking place between February 2021 and January 2022. It resulted in approximately 85% satisfied frequency requirements, i.e., 18 326 successfully coordinated FM frequency channels.

## 7.4 Treatment of cases of harmful interference

### 7.4.1 General overview

In the application of the procedures of Article **15** of the Radio Regulations, the Bureau has treated all reports of harmful interference as a matter of urgency, particularly where safety services were involved. Each reported case is normally handled by the Bureau within 48 hours from its receipt. Some cases were reported to the RRB, as requested by administrations whose services suffered interference. For some cases, the Bureau received declaration, from affected administrations, claiming the cases were closed. Table 7.4.1‑1 summarizes statistical information regarding terrestrial systems and Table 7.4.1-2 with respect to cases affecting space services.

Table 7.4.1-1

Statistical information regarding the treatment of cases of harmful interference affecting terrestrial services

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2019 | 2020 | 2021 | 2022 | 2023 (till 30.06) |
| Cases submitted for BR information | 41 | 46 | 37 | 32 | 42 |
| Cases of assistance to administrations | 27 | 20 | 16 | 17 | 9 |

Statistical information regarding the treatment of cases of harmful interference affecting space services

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2020** | **2021** | **2022** | **2023 (end of May)** |
| Cases submitted for BR information | 56 | 51 | 30 | 21 |
| Cases of assistance to administrations | 33 | 9 | 26 | 3 |

Summary of specific cases of harmful interference affecting space services reported to the Bureau between WRC-19 and WRC-23, consequent actions and suggestions to WRC-23, including the need to address the critical case of interference affecting the RNSS safety service are presented in Part 2 of this Director’s Report to the Conference.

### 7.4.2 General activities aimed at preventing and mitigating interference affecting space services

#### 7.4.2.1 International Monitoring System

During this 4-year period, ITU signed Cooperation Agreements for the use of Space Monitoring facilities with the Administrations of Brazil and Oman, extending the system to other regions in addition to previous MoUs signed with Administrations of Belarus, China, Germany, Korea, Pakistan and Vietnam.

These Cooperation Agreements will allow measurements to be performed in relation to cases of harmful interference for which an administration is seeking the assistance of the Bureau under Article **15** or No. **13.2** of the Radio Regulations, as well as in cases of reported interference arising from coordination issues (Article **11**, No. **11.41**).

Within the assistance framework provided by the Bureau in this domain to Administrations affected by harmful interference, two space monitoring facilities were used and effectively contributed to the resolution of cases of harmful interference affecting geostationary satellites since WRC-19.

In response to Plenipotentiary Resolution 186 Rev. Bucharest 2022, the Bureau created a new website dedicated to Space Radio Monitoring activities where technical and administrative information, including copy of signed Memoranda of Understandings and details of Space Monitoring Facilities are available to the Membership. The Webpage can be accessed [here.](https://www.itu.int/en/ITU-R/space/Pages/ITU-Space-RadioMonitoring.aspx)

#### 7.4.2.2 ITU Satellite Events

During the pandemic, ITU organized virtual meetings bringing together regulators, satellite operators, space agencies and the satellite industry to raise awareness of the current radio frequency interference situation, the importance of preventing harmful interference in accordance with the procedures of the Radio Regulations and to disseminate information on latest technologies in space monitoring, interference detection, geolocation and mitigation.

A series of satellite webinars attended by over 4 500 participants from 122 countries may be found [here](https://www.itu.int/en/ITU-R/space/workshops/sat-webinars/Pages/default.aspx).

ITU regularly participates to the annual International Space Radio Monitoring Meetings (ISRMM) and organized the 21st ISRMM in September 2021. Link to the event and presentations may be found [here.](https://www.itu.int/en/ITU-R/space/workshops/ISRMM/Pages/default.aspx)

#### 7.4.2.3 ITU-R Recommendations

The Radiocommunications Bureau contributed to the development and adoption of the first international standard to be used for reporting interference to space services: Recommendation [ITU‑R SM.2149](https://www.itu.int/rec/R-REC-SM.2149-0-202209-I/en).

This Recommendation provides guidance on supplementary elements on the use of Appendix **10** of the Radio Regulations to convey information related to harmful interference to space radiocommunication services.

In addition, it describes the different possible interfering scenarios, incorporating the space to space and space to earth (non-GSO constellation to GSO associated earth station) to account for possible cases exceeding Article **22** epfd limits.

This ITU-R Recommendation also considered the Satellite Interference Reporting and Resolution System (SIRRS) online application developed by the Bureau as the primary mechanism (as per [Circular Letter CR/435](https://www.itu.int/md/R00-CR-CIR-0435/en)) for formal submissions of reports and subsequent exchanges of information concerning cases of harmful interference affecting space services.

### 7.4.3 Developments regarding specific cases of harmful interference

#### 7.4.3.1 Harmful interference caused by Italy to the broadcasting services (sound and television) of its neighbouring countries

After considerable efforts undertaken by the Administration of Italy Interference caused to Digital Television stations to neighbouring countries is considered as resolved.

With respect to FM and DAB sound broadcasting, the BR continues to monitor the cases of harmful interference caused by Italian sound broadcasting stations to its neighbouring countries and reports on the evolution of such cases to every RRB meeting.

Upon the requests of the RRB, the Bureau participated in multilateral meetings between Italy and its neighbouring administrations. Since WRC-19, such meetings took place virtually in June 2021 and June 2022, and a hybrid format in June 2023. The meetings evaluated the situation and discussed possibilities to resolve the harmful interference caused by Italian VHF sound broadcasting stations to its neighbouring countries.

Concerning FM sound broadcasting, some administrations reported little improvement while others have observed no changes. This issue still seems to take significant time to be definitively settled. Italy informed about the recent adopted law and the establishment of a working group (WG) to study the FM situation and propose solutions.

One implemented solution by the WG is the FM switch-off of single transmitters or networks and transition to DAB in exchange of points in the ranking for the DAB use attribution (license). Italy launched a call of interest in 4 regions (Sardinia, Lazio, Emilia Romagna, Marche) to register the broadcasters willing to release the FM frequencies on a voluntary basis according to the proposed incentives as a 1st step, and the rest of Italy before the end of the year. The WG is discussing among others, a proposal for the adoption of a new law concerning the switch-off of FM transmitters with financial support. The feasibility of this proposal will be investigated within the next few months with concerned governmental entities.

As for T-DAB, the Administration of Italy signed agreements with some most of the neighbouring countries. Discussions are still ongoing with Slovenia to finalize and sign the Adriatic-Ionian Agreement.

All the related monitoring and interference reports regularly received by the BR are available on the ITU website at <http://www.itu.int/md/R11-MMHI-SP/en>.

# 8 Cooperation

## 8.1 Cooperation with ITU‑D

The BR has maintained close collaboration with the BDT on issues of mutual interest to ITU-R and ITU-D. The BR has participated in relevant meetings of ITU-D Study Groups, Rapporteur Groups and TDAG, where liaison activities have involved topics such as spectrum management, digital broadcasting and migration from analogue systems, transition towards and implementation of IMT, and broadband wireless access technologies.

In order to facilitate collaboration using existing mechanisms, BR SGD provides summaries of their SG’s or WPs’ recent accomplishments to the relevant ITU-D SGs by keeping up to date all the recently approved outputs. This information is published on a regular basis on the [ITU-R SGs website](https://www.itu.int/dms_pub/itu-r/oth/0a/0e/R0A0E0000E80001PDFE.pdf). The file contains a list of recently approved texts in a chronological order for the 2019‑2023 study period as well as a brief description of the content of each document. BR SGD has mapped the ITU‑D and/or ITU-T Study Group and study question for which each ITU-R document could be relevant. This also contributes to avoid duplication of effort, and to make use of the results of work done by the ITU-R SGs.

In response to requests from the BDT, experts from ITU-R and BR have participated in ITU seminars and workshops organized by ITU-D.

BR continues to pursue its objective of informing and assisting the ITU membership, in particular in developing countries, on issues relating to radiocommunication matters. For this purpose, the BR organizes and participates in a number of spectrum related workshops, seminars, meetings and capacity building activities, including training sessions. For instance, the BDT/BR national training IMT-2020/5G training in four CIS countries, namely Azerbaijan, Kyrgyzstan Kazakhstan and Uzbekistan in 2022.

### 8.1.1 GSR

Recognizing the importance of expert information to Member States, the BR continues to support the BDT by providing technical expertise in relation to spectrum management, digital broadcasting and digital dividend. The BR contributed to the ITU Global Symposium of Regulators (in 2020, 2021 and 2022) with the organization of, and participation in, sessions related to spectrum management.

### 8.1.2 ICT Survey and ICT Eye

ICT-eye and its survey form an essential tool for gathering data from administrations on key ICT metrics. The BDT does the tracking of such data on a yearly basis and displays the data results in a meaningful way in the statistics portal. In order to capitalize from the existing platform provided by ICT-eye, the BR cooperated with the BDT to expand the current survey and include a chapter on key spectrum-specific information (i.e. auctions, caps, mobile technologies/standards, spectrum licensing). The spectrum chapter was developed by BR and published in the ICT survey for the first time in 2013. BR kept working closely with BDT in collecting, processing, and disseminating this chapter.

This chapter includes a new section with KPIs on IMT frequencies national allocation and assignments, jointly developed by BR and BDT. National data gathering are still in progress.

### 8.1.3 World Telecommunication/ICT Indicators Symposium, WTIS

The BR cooperated with the BDT on the indicators and definitions for gathering data on mobile broadband technologies, especially when referring to standards.

The WTIS 2020 was held online from 1-3 December 2020. BR and BDT jointly supported the discussions relating to IMT National Spectrum Allocations and Assignments.

The WTIS was not held neither in 2021 nor in 2022.

In 2023, the WTIS agenda did not include a session on spectrum-related topics.

### 8.1.4 Spectrum Management Training Programme (SMTP)

Since 2013, the BR has actively participated in a joint project with the BDT to develop the Spectrum Management Training Programme (SMTP) through its different phases: design, material preparation, peer review, and pilot test. Several updates occurred over the years and BR performed regularly a review of the material contained in the current SMTP. Recent updates were performed to include the outcomes from WRC-19/RA-19.

Considering the resources necessary to maintain/update this tool and its importance for many administrations, a discussion is currently taking place in BDT to verify if SMTP could be further enhanced or migrated to a different tool.

## 8.2 Cooperation with ITU-T

In addition to climate change and emergency communications, topics of mutual interest between ITU-R and ITU-T include IMT-2020, the effects of human exposure to radio frequencies, power line transmission systems, intelligent transport systems, connected automated vehicles, Internet of Things, artificial intelligence, common patent policy and intellectual property rights and audio‑visual media accessibility.

Therefore, there continues to be a requirement for close coordination on the various topics being addressed by ITU-T that impinge on radiocommunication issues in order to reduce the potential for overlap, duplication and avoid redundancies.

– BR representatives attended the World Telecommunication Standardization Assembly 2020.

– BR also participated in the Kaleidoscope academic conference organized by ITU-T in 2020.

## 8.3 Cooperation with international and regional organizations

The Bureau continued to maintain close cooperation with international and regional organizations with the following objectives:

1 promote dialogue amongst bodies having common interests;

2 better coordination leading to more effective preparation for events such as WRCs; and

3 keep ITU‑R abreast of relevant activities in other organizations for a more strategic planning of work programmes.

The Bureau continues its close cooperation with the relevant international and regional organizations including, but not limited to:

− APT, ASMG, ATU, CEPT, CITEL and RCC for regional coordination and issues related to the use of spectrum;

− ABU, ASBU, EBU, ETSI, HFCC and SMPT for broadcasting matters;

− ITSO, ESOA, GVF, GSMA, GSOA, GSA for the use of specific radiocommunication systems and services;

− 3GPP, IEEE and several regional standardization organizations for activities related to the Global Standards Collaboration (GSC);

− the World Meteorological Organization (WMO), the World Health Organization (WHO), ISO and IEC (including CISPR), Space Frequency Coordination Group, the International Union of Radio Science (URSI) and several others on an ad-hoc basis for liaison with respect to SG activities;

− the UN Committee on the Peaceful Uses of Outer Space (UN-COPUOS), the United Nations Economic Commission for Europe (UNECE), the International Maritime Organization (IMO), the International Maritime Satellite Organization (IMSO), Bureau International des Poids et Mesures (BIPM), the International Telecommunications Satellite Organization (ITSO), COSPAS-SARSAT, the International Committee of the Red Cross (CICR) the International Civil Aviation Organization (ICAO) with regard to the application of ITU treaty texts. BR experts also participated in various meetings of these organizations.

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1. The equivalent power flux-density is defined in RR No. 22.5C.1. As for pfd values, epfd values are correlated to the interference power, Itot, measured at the output of the receiving antenna by the formula: Itot = epfd - 10log(4p/2) + Gr,max where Gr,max is the maximum gain (in dBi) of the antenna of the receive station. [↑](#footnote-ref-2)
2. On a related matter, WRC-19 did not adopt any specific provision related to the application of Section II of Article **9** to the non-geostationary satellite systems notified before 23 November 2019 in the frequency bands 37.5-42.5 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz. Therefore, there is no coordination procedure between these systems under RR No. **9.12** but coordination under RR No. **9.12** has to be conducted for coordination requests received as from 23 November 2019 with respect to the frequency assignments notified in these frequency bands before the end of WRC-19. [↑](#footnote-ref-3)
3. The Administration of Austria contacted the Bureau about the implementation of Resolution **559 (WRC-19)**. [↑](#footnote-ref-4)
4. The Administration of Denmark requested the assistance of the Bureau to find an appropriate orbital position. The Bureau replied to this request on 28 April 2020. [↑](#footnote-ref-5)
5. This Column includes cases up to the end of June 2023. [↑](#footnote-ref-6)
6. The difference between the number of cases received and treated is due to the fact that sometimes notices received during one year were completed during subsequent year. [↑](#footnote-ref-7)
7. This Column includes cases up to the end of June 2023. [↑](#footnote-ref-8)
8. This Column includes cases up to the end of June 2023. [↑](#footnote-ref-9)