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| **Radiocommunication Advisory Group** | C:\Users\murphy\AppData\Local\Temp\Temp1_ITU logo Entire package.zip\jpg\ITU official logo_blue_RGB.jpg | |
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|  | | **Addendum 1 to  Document RAG/1-E** |
| **13 February 2024** |
| **Original: English** |
| |  | | --- | | Director, Radiocommunication Bureau | | report TO the tHIRTY-FIRST meeting  of the radiocommunication advisory group | | STUDY GROUPS ACTIVITIES | | | |

# 1 Introduction

This document provides status reports and information on some of the issues that appear on the draft agenda for the 31st meeting of RAG (see [CA/271](https://www.itu.int/md/R00-CA-CIR-0271/en)).

# 2 Working methods

Working methods for Study Groups (SGs) and Working Parties (WPs) were satisfactorily applied in accordance with Resolution ITU-R 1 and the associated [Guidelines for the working methods](https://www.itu.int/oth/R0A01000004), which are undergoing revision for consideration by RAG.

# 3 Access to meeting documents

In line with the provisions of Resolution ITU-R 1, meeting documents are posted by BR SGD staff within one working day “as received” on a webpage established for this purpose, and the official versions are posted on the website within three working days.

BR SGD is in the final phase for the implementation of automatic posting of “as received” contributions.

# 4 Electronic working facilities

There is continuing emphasis on the use of electronic facilities, which has brought considerable benefit to delegates as well as a significant reduction in paper consumption.

## 4.1 SharePoint website

Access to documentation during meetings via a dedicated SharePoint website is the standard practice.

SharePoint sites for Correspondence and Rapporteur Groups are also used extensively in the periods between the WP meetings.

## 4.2 File synchronization

The file synchronization facility has been updated for all SG/WP meetings to facilitate access to the most recent versions of documents during meetings and to the meeting room assignments.

## 4.3 Physical meetings with remote participation

ITU-R SGs and WPs held physical meetings with remote participation as of April 2022. The platform used for these physical meetings with remote participation is Zoom which allows interactive remote participation of chairs and delegates. All meeting arrangements are made in agreement with the respective SGs leadership.

Interpretation into the six official languages of the Union was also provided for physical meetings with remote participation of SGs. In order to save resources and given the lack of availability of interpreters, invitations to SGs meetings will request Administrations the need for specific official language interpretation. The use of six languages interpretation will be implemented to the extent possible.

## 4.4 Study Group webpages

In alignment with the ITU policy, updates to webpages are continuously performed in order to provide necessary information to delegates.

The list of CGs/RGs can be found on each SG main page under a specific link and they are aligned for all SGs. Following the link for each CG/RG, the user can access the information about the group name, the SharePoint page, the Rapporteur/Chairman/Convener, the mailing list, the archive, etc. and other necessary information.

## 4.5 Captioning

Since December 2013, all SG meetings have been provided with live captioning in English. However, this feature has an impact on the costs of the meeting, in particular if the meetings are held outside of ITU premises.

# 5 Participation

There has been a considerable increase in the level of participation in ITU-R SGs and WPs meetings in the last 20 years, particularly since 2020 when all meetings have been held electronically or physically with remote participation. This is very encouraging, but at the same time it might create some difficulties if those numbers are used to estimate future participation of in-person meetings.

The average participation per meeting is shown in Figure 1.

Figure 1

General average participation to ITU-R Study Group/  
Working Party meeting per year since 2003

\* Higher values corresponding to a year with fewer meetings but with more participants, e.g., CPM‑2.

\*\* Higher values corresponding to a year when most of the meetings have been held electronically or when there were physical meetings with remote participation.

# 6 Meeting rooms

The shortage of meeting rooms at ITU Headquarters continues to hinder the effective planning of meetings. This problem has been exacerbated by the following factors:

– the increased number of meetings being arranged by all of the Sectors and the General Secretariat;

– the shortage of meeting rooms with a capacity of more than 120 participants;

– the need to avoid overlap and clashes of meeting dates as well as the requirement of having meetings of ITU-R Groups in parallel;

– the limited availability and very long lead times required for bookings in alternative facilities, such as CICG;

– the future demolition of Varembé building and the construction of the new ITU building, which will have an impact on a large number of meeting rooms, as during the demolition, the meeting rooms in the Tower and Montbrillant buildings will not be useable due to the noise.

Consequently, when the physical work associated with the new ITU building will start, an increasing number of meetings will need to be held at other locations outside ITU or as a mixture of physical and remote participation. To that end, offers from the membership to host SGs/WPs meetings during this period will be particularly welcome. Furthermore, such arrangements require considerable advance planning and preparation.

# 7 Activities in the Study Groups

Some of the activities and other ongoing standardization studies in each SG are described below. The table below summarizes the studies carried out since RAG-23 as well as the production of ITU‑R Recommendations and ITU-R Reports approved since then.

| Study Group | Status of studies | | | | |
| --- | --- | --- | --- | --- | --- |
| Recommendations ITU-R approved | Reports ITU-R approved | Questions ITU-R approved | Handbooks ITU-R approved | Opinions ITU-R approved |
| **SG 1** | SM.1838-1 | SM.2048-1, SM.2179-2, SM.2182-3, SM.2257-7, SM.2303-4, SM.2355-2, SM.2454-1, SM.2523-0 |  | Establishment of the WP 1C Rapporteur Group to prepare the next edition of the Handbook on Spectrum Monitoring |  |
| **SG 3** | P.371-9, P.452-18, P.531‑15, P.618-14, P.840‑9, P.1144-12, P.1238-12, P.1239-4, P.1409-3, P.1410-6, P.1411-12, P.1812-7, P.2001-5, P.2040-3, P.2109-2 | P.2346-5, P.2406-3 | 203-9/3, 211‑8/3, 235‑1/3, 236/3 |  |  |
| **SG 4** | M.633-5, M.2159-0, S.1503-4, S.2157-0, S.2158-0 | M.2529-0 | 218-2/4 | Handbook on Small Satellites |  |
| **SG 5** | F.746-11, F.1568-2, M.493-16, M.541-11, M.1036-7, M.1171-1, M.1568-2, M.1851-2, M.2012-6, M.2070-2, M.2071-2, M.2121-1, M.2150-2, M.2159-0, M.2160-0, M.2161-0, M.2162-0, M.2164-0 | F.2323-2, M.2377-2, M.2415-1, M.2444-1, M.2479-1, M.2527-0, M.2528-0, M.2529-0, M.2530-0, M.2531-0, M.2532-0, M.2533-0, M.2534-0 | 77-9/5, 209‑7/5, 229‑6/5, 256‑2/5, 257‑2/5, 262‑1/5, 264/5 |  |  |
| **SG 6** | BS.1285-1, BS.1352‑4, BS.1387-2, BS.1423-1, BS.1698-1, BS.1873-1, BS.2126-1, BT.500-15, BT.1833‑5, BT.2036‑5, BT.2075‑5, BS.1615-3, BS.1770-5, BS.1864-1, BS.1909-1, BS.2127-1, BT.1702-3, BT.1775‑1, BT.2074‑2, BT.2163-0 | BS.2266-3, BS.2502-1, BS./BT.2522-0, BS./BT.2524-0, BT.2140-14, BT.2246-8, BT.2267-12, BT.2343-8, BT.2344-3, BT.2383-5, BT.2386-4, BT.2390-11, BT.2408-7, BT.2467-2, BT.2469-3, BT.2485-2, BT.2521-0, BT.2525-0, BT.2526-0 | 12-4/6, 34-4/6, 111‑2/6, 120‑1/6, 130‑4/6, 132‑7/6, 136‑3/6 |  |  |
| **SG 7** | RA.314-11, RS.1166-5, RS.1263-3, RS.1813-2, RS.2042-2, RS.2105-2, RS.2165-0, SA.1014-4, SA.2079-1 | SA.2307-1, RS.2456-1, RS.2535-0, RS.2536-0, RS.2537-0 | 236-3/7, 256‑1/7 |  |  |

## 7.1 Study Group 1

Study Group 1 is continuing to develop ITU-R Recommendations, Reports and Handbooks related to spectrum management principles and techniques, general principles of sharing, spectrum monitoring, long-term strategies for spectrum utilization, economic approaches to national spectrum management, automated techniques and assistance to developing countries in cooperation with the Telecommunication Development Sector. Its studies also include methods for identification and elimination of interference, unwanted emissions, maintenance of data dictionary, spectrum redeployment, spectrum use measurement, unlicensed and shared uses of spectrum, dynamic spectrum access, smart grids and wireless power transmission.

Working Parties 1A, 1B and 1C held a physical meeting with remote participation in May-June 2023 in Thessaloniki, Greece, at the kind invitation of the Administration of Greece. SG 1 met on 5 and 6 June 2023 in Geneva. Since RAG-23, one new ITU-R Recommendation was developed and subsequently adopted and approved. SG 1 also approved one new and seven revised ITU‑R Reports. In addition, 22 ITU‑R Recommendations and 2 ITU-R Reports were editorially updated.

Recommendation ITU-R:

– SM.1838-1 “Test procedure for measuring the noise figure of radio monitoring receivers”

Report ITU-R:

– SM.2048-1 “Use of the x dB bandwidth criterion for determination of spectral properties of a transmitter in the out-of-band domain”

– SM.2179-2 “Short-range radiocommunication devices measurements”

– SM.2182-3 “Measurement facilities available for the measurement of emissions from both GSO and non-GSO space stations”

– SM.2257-7 “Spectrum management and monitoring during major events”

– SM.2355-2 “Spectrum monitoring evolution”

– SM.2454-1 “Spatial assessment of radio signals in different frequency bands”

– SM.2523-0 “Assessment of spectrum efficiency and economic value”

The next meetings of WPs 1A, 1B and 1C are planned from 12 to 19 June 2024. SG 1 is planned to meet on 20 June 2024.

## 7.2 Study Group 3

Study Group 3 continues to undertake extensive research using propagation measurements, data analysis and model development to extend the applicability of radio wave propagation prediction methods in relevant parts of the spectrum up to 375 THz. Study Group 3 also continues to revise or develop new recommendations, reports and handbooks under its purview to support the design of radiocommunication systems and the assessment of interference. The latter is often required for sharing and compatibility studies in support of work on WRC agenda items.

Since RAG-23, 15 revised ITU-R Recommendations were adopted and approved, and SG 3 also approved the revision of two ITU-R Reports. Two ITU‑R Recommendations were also editorially amended. Moreover, one new and three revised ITU-R Question was approved by ITU-R SG 3.

In order to progress with their work, WPs 3J, 3K, 3L and 3M established four additional Correspondence Groups (currently 36 active CGs). Those CGs conducted a significant proportion of the work between official WP meetings. Working Parties of SG 3 had used CGs in this manner for more than a decade, particularly noting the fact that the four Working Parties meet usually only once a year and that the completion of some topics of work spans periods of longer than five or even ten years. It should therefore not be seen that the use of CGs in this manner was specifically and only due to the situation created by the COVID-19 pandemic during the period 2020-2022.

In 2023, the P-series recommendations remained the most popular of all ITU-R series of recommendations, with over 46 000 downloads more than the second most popular series, which reflected its importance to all users of radio systems within the ITU and the greater radiocommunications community.

Question ITU-R:

– 203-9/3 “Propagation prediction methods for terrestrial broadcasting, fixed (broadband access) and mobile services using frequencies above 30 MHz”

– 211-8/3 “Propagation data and propagation models in the frequency range 300 MHz to 450 GHz for the design of short-range wireless radiocommunication systems and wireless local area networks (WLAN)”

– 235-1/3 “Impact of engineered electromagnetic surfaces on radiowave propagation”

– 236/3 “Use of machine learning methods for radiowave propagation studies”

Recommendation ITU-R:

– P.371-9 “Choice of indices for long-term ionospheric predictions”

– P.452-18 “Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies above about 100 MHz”

– P.531-15 “Ionospheric propagation data and prediction methods required for the design of satellite networks and systems”

– P.618-14 “Propagation data and prediction methods required for the design of Earth-space telecommunication systems”

– P.840-9 “Attenuation due to clouds and fog”

– P.1144-12 “Guide to the application of the propagation methods of Radiocommunication Study Group 3”

– P.1238-12 “Propagation data and prediction methods for the planning of indoor radiocommunication systems and radio local area networks in the frequency range 300 MHz to 450 GHz”

– P.1239-4 “ITU-R reference ionospheric characteristics”

– P.1409-3 “Propagation data and prediction methods for systems using high-altitude platform stations and other elevated stations in the stratosphere at frequencies greater than about 700 MHz”

– P.1410-6 “Propagation data and prediction methods required for the design of terrestrial broadband radio access systems operating in a frequency range from 3 GHz to 60 GHz”

– P.1411-12 “Propagation data and prediction methods for the planning of short-range outdoor radiocommunication systems and radio local area networks in the frequency range 300 MHz to 100 GHz”

– P.1812-7 “A path-specific propagation prediction method for point-to-area terrestrial services in the frequency range 30 MHz to 6 GHz”

– P.2001-5 “A general purpose wide-range terrestrial propagation model in the frequency range 30 MHz to 50 GHz”

– P.2040-3 “Effects of building materials and structures on radiowave propagation above about 100 MHz

– P.2109-2 “Prediction of building entry loss”

**Report ITU-R:**

– P.2346-5 “Compilation of measurement data relating to building entry loss”

– P.2406-3 “Studies for short-path propagation data and models for terrestrial radiocommunication systems in the frequency range 6 GHz to 450 GHz”

The next meetings of WPs 3J, 3K, 3L and 3M are scheduled from 29 May to 7 June 2024 in Denver, Colorado (United States of America) and that of SG 3 on 17 June 2024.

## 7.3 Study Group 4

Study Group 4 is continuing to study fixed, mobile, broadcasting and radiodetermination-satellite systems and networks characteristics, air interfaces, performance and availability objectives as well as sharing of orbit/spectrum resources among GSO and non-GSO satellite systems, enabling the sustainable development of the space ecosystem. The Radiocommunication Assembly 2023 (RA-23) included in the scope of Study Group 4 the related use of links in the inter-satellite service.

Since RAG-23, SG 4 has adopted and approved one revised ITU-R Question, as well as three new and two revised ITU-R Recommendations. SG 4 also approved one new ITU-R Report. The approval of a new Handbook on Small Satellites was another major achievement of SG 4. At its last meeting, SG 4 also suppressed Recommendation ITU-R S.354-2 and Question ITU-R 244/4 and editorially updated ten ITU-R Questions. SG 4 also organized the “Workshop ITU in Service of Space”.

Question ITU-R:

– 218-2/4 “On-board processing in mobile-satellite service and fixed-satellite service systems”

**Recommendation ITU-R:**

– M.633-5 “Transmission characteristics of a satellite emergency position indicating radio beacon (satellite EPIRB) operating through a satellite system in the 406.0-406.1 MHz band”

– M.2159-0 “Technical and regulatory measures to provide compatibility between IMT and MSS, with respect to MSS operations in the frequency band 1 518-1 525 MHz for administrations wishing to implement IMT in the frequency band 1 492-1 518 MHz” *(jointly developed by SGs 4 and 5)*

– S.1503-4 “Functional description to be used in developing software tools for determining conformity of non-geostationary-satellite orbit fixed-satellite service systems or networks with limits contained in Article **22** of the Radio Regulations”

– S.2157-0 “Procedures for the evaluation of interference from any non-GSO system into a global set of the generic GSO reference links 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)”

– S.2158-0 “Methodology for examining the compliance of an aeronautical earth station in motion (A-ESIM) communicating with geostationary space stations in the fixed-satellite service in the 27.5-29.5 GHz band with a set of pre-established pfd limits on the Earth’s surface”

Report ITU-R:

– M.2529-0 “Adjacent band compatibility studies of IMT systems in the mobile service in the band 1 492-1 518 MHz with respect to systems in the mobile-satellite service in the frequency band 1 518-1 525 MHz” *(jointly developed by SGs 4 and 5)*

Handbook ITU-R:

– Handbook on Small Satellites

WP 4B held a fully electronically meeting on 23 January 2024 with a specific focus to consider the acknowledgement of receipt of submissions for candidate radio interface technologies (RITs) or a set of RITs (SRITs) for the satellite component of IMT-2020 under Step 3 of the satellite IMT-2020 process as well as any additional input contributions related to candidate RITs/SRITs.

The next meetings of WPs 4A, 4B and 4C are planned from 24 April to 9 May 2024, preceded and followed by the meetings of SG 4 on 23 April and 10 May 2024.

## 7.4 Study Group 5

Study Group 5 is continuing studies on systems and networks for the fixed, mobile (terrestrial, maritime and aeronautical), radiodetermination (including both, radiolocation and radionavigation), amateur and amateur-satellite services, paving the way for the continuing development of all these services, including IMT, HAPS/HIBS, ITS and PPDR.

SG 5 approved one new and six revised ITU-R Questions as well as the suppression of Questions ITU-R 205-6/5 and ITU-R 261/5. It also approved the editorial update of 21 ITU-R Questions. Furthermore, five new and 13 revised ITU-R Recommendations and eight new and five revised ITU‑R Reports pertaining to the scope of SG 5 were approved. SG 5 also approved the suppression of Recommendation ITU-R M.1075-0 and Reports ITU-R M.319-7, ITU‑R M.902-1, ITU-R M.904‑2 and ITU-R M.1021-0.

Question ITU-R:

– 77-9/5 “Consideration of the needs of developing countries in the development and implementation of the terrestrial component of IMT”

– 209-7/5 “Use of the mobile, amateur and the amateur satellite services in support of disaster radiocommunications”

– 229-6/5 “Future development of the terrestrial component of IMT”

– 256-2/5 “Technical and operational characteristics of the land mobile service in the frequency range 275-1 000 GHz”

– 257-2/5 “Technical and operational characteristics of stations in the fixed service in the frequency range 275-1 000 GHz”

– 262-1/5 “Usage of the terrestrial component of IMT systems for specific applications”

– 264/5 “Studies related to Intelligent Transport Systems, including Connected Automated Vehicles and future applications”

Recommendation ITU-R:

– F.746-11 “Radio-frequency arrangements for fixed service systems”

– F.1568-2 “Radio-frequency block arrangements for fixed wireless access systems in the range 10.15-10.3/10.5-10.65 GHz”

– M.493-16 “Digital selective-calling system for use in the maritime mobile service”

– M.541-11 “Operational procedures for the use of digital selective-calling equipment in the maritime mobile service” *(approved by RA-23)*

– M.1036-7 “Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications in the bands identified for IMT in the Radio Regulations”

– M.1171-1 “Radiotelephony procedures in the maritime mobile service” *(approved by RA‑23)*

– M.1568-2 “Radio-frequency block arrangements for fixed wireless access systems in the range 10.15-10.3/10.5-10.65 GHz”

– M.1851-2 “Mathematical models for radiodetermination radar systems antenna patterns for use in interference analyses”

– M.2012-6 “Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications Advanced (IMT-Advanced)”

– M.2070-2 “Unwanted emission characteristics of base stations using the terrestrial radio interfaces of IMT-Advanced”

– M.2071-2 “Unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT-Advanced”

– M.2121-1 “Harmonization of frequency bands for Intelligent Transport Systems in the mobile service”

– M.2150-2 “Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-2020 (IMT-2020)”

– M.2159-0 “Technical and regulatory measures to provide compatibility between IMT and MSS, with respect to MSS operations in the frequency band 1 518-1 525 MHz for administrations wishing to implement IMT in the frequency band 1 492-1 518 MHz” *(jointly developed by SGs 4 and 5)*

– M.2160-0 “Framework and overall objectives of the future development of IMT for 2030 and beyond” *(approved by RA-23)*

– M.2161-0 “Guidelines to assist administrations to mitigate in-band interference from FSS earth stations operating in the frequency bands 24.65-25.25 GHz, 27-27.5 GHz, 42.5-43.5 GHz and 47.2-48.2 GHz into IMT stations”

– M.2162-0 “Technical and operational characteristics of radiolocation systems operating in the frequency range 92-100 GHz and radionavigation systems operating in the frequency range 95-100 GHz”

– M.2164-0 “Guidance on technical and operational measures for the use of the frequency band 1 240-1 300 MHz by the amateur and amateur-satellite service in order to protect the radionavigation-satellite service (space-to-Earth)” (approved by RA-23)

Report ITU-R:

– F.2323-2 “Fixed service use and future trends”

– M.2377-2 “Radiocommunication objectives and requirements for Public Protection and Disaster Relief (PPDR)”

– M.2415-1 “Spectrum aspects of Public Protection and Disaster Relief”

– M.2444-1 “Examples of arrangements for Intelligent Transport Systems deployments under the mobile service”

– M.2479-1 “The use of land mobile systems, excluding IMT, for machine-type communications”

– M.2527-0 “Applications of the terrestrial component of IMT for specific societal, industrial and other usages”

– M.2528-0 “Capabilities of the terrestrial component of IMT-2020 for multimedia communications”

– M.2529-0 “Adjacent band compatibility studies of IMT systems in the mobile service in the band 1 492-1 518 MHz with respect to systems in the mobile-satellite service in the frequency band 1 518-1 525 MHz” *(jointly developed by SGs 4 and 5)*

– M.2530-0 “Digital voice communication in the VHF maritime frequency band”

– M.2531-0 “Operational procedures for both ship and coast stations for automatic connection system using digital selective calling communications in MF and HF bands”

– M.2532-0 “Amateur and amateur-satellite services characteristics and usage in the 1 240-1 300 MHz frequency band”

– M.2533-0 “Utility radiocommunication systems operating in the land-mobile service”

– M.2534-0 “Connected Automated Vehicles”

While the recent WP 5D meeting (31 January to 7 February 2024) confirmed the 46th meeting to be from 26 June to 3 July 2024, the 47th meeting has been shifted by some days (9 to 17 October 2024) to (potentially) overlap with the meeting of WP 4C (16-22 October 2024).

The meetings of Working Parties 5A, 5B and 5C are planned from 14 to 24 May 2024, preceded by the meeting of SG 5 on 13 May 2024.

## 7.5 Study Group 6

Study Group 6 is continuing studies on radiocommunication broadcasting, particularly on emerging topics including advanced technologies for terrestrial digital broadcasting, a global platform for the broadcasting service, high dynamic range television (HDR-TV), integrated broadcast-broadband (IBB) systems, new audio and video codecs for digital broadcasting, Advanced Immersive Audio‑Visual (AIAV) systems, renderer specifications for advanced sound systems, application of Artificial Intelligence for broadcasting, audio‑visual accessibility (AVA).

Study Group 6 has also been actively coordinating the work of mutual interest with ITU-T SGs 9 and 16 through the Intersector Rapporteur Group (IRG) on Audio-Visual Accessibility (IRG‑AVA).

Seven revised ITU-R Questions, one new and 19 revised ITU-R Recommendations as well as six new and twelve revised Reports were approved by SG 6 since RAG-23. In addition, four ITU-R Recommendations and nine ITU-R Questions were editorially updated. SG 6 also approved the suppression of 39 ITU-R Recommendations and two ITU-R Questions.

Question ITU-R:

– 12-4/6 “Generic bit-rate reduction coding of digital video signals for production, for contribution, for primary and secondary distribution, for emission and for related applications”

– 34-4/6 “File formats and transport for the exchange of audio, video, data and metadata materials in the professional broadcast environments”

– 111-2/6 “Technical methods for the protection and utilization of the personal data of end‑users in broadcasting systems”

– 120-1/6 “Digital sound broadcasting below 174 MHz”

– 130-4/6 “Digital interfaces for production, post-production and international exchange of sound and television programmes for broadcasting”

– 132-7/6 “Digital terrestrial broadcasting planning”

– 136-3/6 “Worldwide broadcasting roaming”

Recommendation ITU-R:

– BS.1285-1 “Pre-selection methods for the subjective assessment of small impairments in audio systems”

– BS.1352-4 “File format for the exchange of audio programme materials with metadata on information technology media”

– BS.1387-2 “Method for objective measurements of perceived audio quality”

– BS.1423-1 “Guidelines for producing multichannel soundtracks using surround matrix techniques”

– BS.1615-3 “Planning parameters for digital sound broadcasting at frequencies below 30 MHz”

– BS.1698-1 “Evaluating electromagnetic fields from terrestrial broadcasting transmitting systems to assess human exposure non-ionizing emissions”

– BS.1770-5 “Algorithms to measure audio programme loudness and true-peak audio level”

– BS.1864-1 “Operational practices for loudness in the international exchange of digital television programmes”

– BS.1873-1 “Serial multichannel audio digital interface for broadcasting studios”

– BS.1909-1 “Performance requirements for an advanced sound system for use with or without accompanying picture”

– BS.2126-1 “Methods for the subjective assessment of sound systems with accompanying picture”

– BS.2127-1 “Audio Definition Model renderer for advanced sound systems”

– BT.500-15 “Methodologies for the subjective assessment of the quality of television images”

– BT.1702-3 “Guidance for the reduction of photosensitive epileptic seizures caused by television”

– BT.1775-1 “File format with editing capability, for the exchange of metadata, audio, video, data essence and ancillary data for use in broadcasting”

– BT.1833-5 “Broadcasting of multimedia and data applications for mobile reception by handheld receivers”

– BT.2036-5 “Characteristics of a reference receiving system for frequency planning of digital terrestrial television systems”

– BT.2074-2 “Service configuration, media transport protocol, and signalling information for MMT-based broadcasting systems”

– BT.2075-5 “Integrated broadcast-broadband system”

– BT.2163-0 “measurement algorithm for evaluation of the brightness of high dynamic range television”

Report ITU-R:

– BS.2266-3 “Framework of future audio broadcasting systems”

– BS.2502-1 “Measuring techniques for digital audio broadcasting coverage performance”

– BS./BT.2522-0 “A framework for the future of broadcasting”

– BS./BT.2524-0 “A framework for future of broadcast production”

– BT.2140-14 “Transition from analogue to digital terrestrial television broadcasting”

– BT.2246-8 “The present state of ultra-high definition television”

– BT.2267-12 “Integrated broadcast-broadband systems”

– BT.2343-8 “Collection of field trials of UHDTV over DTTB networks”

– BT.2344-3 “Technical parameters, operational characteristics and deployment scenarios of SAB/SAP as utilized in broadcasting”

– BT.2383-5 “Typical frequency sharing characteristics for digital terrestrial television broadcasting systems in the frequency band 470-862 MHz”

– BT.2386-4 “Digital terrestrial broadcasting: Design and implementation of single frequency networks (SFN)”

– BT.2390-11 “High dynamic range television for production and international programme exchange”

– BT.2408-7 “Guidance for operational practices in HDR television production

– BT.2467-2 “Methods for the evaluation of the quality of service of second generation DTTB systems”

– BT.2469-3 “Typical frequency sharing characteristics of digital terrestrial broadcasting systems in the frequency band 174-230 MHz”

– BT.2485-2 “Advanced network planning and transmission methods for enhancements of digital terrestrial television broadcasting”

– BT.2521-0 “Practical examples of actions to realize energy aware broadcasting”

– BT.2525-0 “A method of skin tone analysis for programme production”

– BT.2526-0 “Field trials of Terrestrial Multimedia Mobile Broadcasting systems”

WPs 6A, 6B and 6C meetings are scheduled from 4 to 14 March 2024 followed by SG 6 meeting on 15 March 2024.

### 7.5.1 Emmy Award

As a major achievement of this study period, SG 6 received an Emmy Award on Engineering, Science and Technology for its work on Recommendation ITU-R BT.2100 “*Image parameter values for high dynamic range television for use in production and international programme exchange*”.

ITU-R has been honoured with this award for the third time, now in 2023, marking a remarkable achievement. The first Emmy Award to ITU-R SG 6 was granted in 1983, followed by another one in 2011.

**7.6 Study Group 7**

Study Group 7 is continuing to develop ITU-R Recommendations, Reports and Handbooks that are used for development and for ensuring non-interference into the operation of space operation, space research, Earth-exploration and meteorological systems (including the related use of links in the inter-satellite service), radio astronomy and radar astronomy; and for the dissemination, reception and coordination of standard-frequency and time-signal services (including the application of satellite techniques) on a worldwide basis.

The systems addressed by SG 7 are used in activities that are a critical part of our everyday life such as:

– definition and dissemination of Coordinated Universal Time;

– global environment monitoring – atmosphere (including greenhouse gases emissions), oceans, land surface, biomass, etc.;

– weather forecasting and climate change monitoring and prediction;

– detection and tracking of many natural and man-made disasters (earthquakes, tsunamis, hurricanes, forest fires, oil leaks, etc);

– providing alerting/warning information;

– damage assessment and planning relief operations;

– monitoring and mitigation of space weather events.

Since RAG-23, one new and eight revised ITU-R Recommendations, two revised ITU-R Questions, and three new and two revised ITU-R Reports were approved. SG 7 also approved the suppression of Questions ITU-R 152-2/7, ITU-R 238/7, ITU-R 239/7 and ITU-R 253/7 and Report ITU-R RS.2455. Finally, SG 7 editorially updated 2 ITU-R Recommendations.

Question ITU-R:

– 236-3/7 “The future of the UTC time scale”

– 256-1/7 “Space weather observations”

Recommendation ITU-R:

– RA.314-11 “Preferred frequency bands for radio astronomical measurements below 1 THz”

– RS.1166-5 “Performance and interference criteria for active spaceborne sensors”

– RS.1263-3 “Interference criteria for meteorological aids operated in the 400.15-406 MHz and 1 668.4-1 700 MHz bands”

– RS.1813-2 “Reference antenna pattern for passive sensors operating in the Earth exploration-satellite service (passive) to be used in compatibility analyses in the frequency range 1.4-100 GHz”

– RS.2042-2 “Typical technical and operating characteristics for spaceborne radar sounder systems using the 40-50 MHz band”

– RS.2105-2 “Typical technical and operational characteristics of Earth exploration-satellite service (active) systems using allocations between 432 MHz and 238 GHz”

– RS.2165-0 “Evaluation of the potential for pulsed interference from planned and future spaceborne synthetic aperture radar sensors in the earth exploration-satellite (active) service to radionavigation-satellite service receivers in the 1 215-1 300 MHz band”

– SA.1014-4 “Radiocommunication requirements for manned and unmanned deep space research”

– SA.2079-1 “Frequency sharing between SRS and FSS (space-to-Earth) systems in the 37.5-38 GHz band”

Report ITU-R:

– RS.2456-1 “Space weather sensor systems using radio spectrum”

– RS.2535-0 “Studies related to possible EESS (passive) allocations in the frequency range 231.5-252 GHz”

– RS.2536-0 “Sharing and compatibility studies related to spaceborne radar sounders in the 40-50 MHz frequency band”

– RS.2537-0 “Representative system characteristics and examples of evaluating interference into receiving earth stations in the radionavigation-satellite service (space-to-Earth) from spaceborne synthetic aperture radar sensors in the Earth exploration-satellite (active) service in the 1 215-1 300 MHz band”

– SA.2307-1 “Protection of SRS and FSS systems sharing the 37.5-38 GHz band”

The next meeting of Study Group 7 is scheduled for 18 March 2024, while WPs 7A, 7B, 7C and 7D are planned to meet from 18 to 22 March 2024.

## 7.7 Coordination Committee for Vocabulary

The Coordination Committee for Vocabulary (CCV) is continuing to assist in ensuring the consistency among the various ITU-R terms and definitions, filter all the proposals coming from the Radiocommunication Study Groups and validate the terms and definitions before introducing them into the [ITU Terms and definitions database](https://www.itu.int/br_tsb_terms/#/). CCV is responsible for coordination and approval concerning:

− vocabulary, including abbreviations and initials;

− related subjects (quantities and units, graphical and letter symbols).

ITU-R CCV is responsible for reviewing and revising, where necessary, the existing Recommendations of the V series; new and revised Recommendations should be adopted by ITU-R CCV and submitted for approval in accordance with Resolution ITU-R 1, through the Director the BR.

After the adoption of Council [Resolution 1386](https://www.itu.int/md/S17-CL-C-0127/en), “ITU Coordination Committee for Terminology (ITU CCT)”, the ITU CCT meetings are conducted with extensive use of electronic methods. Work is progressing on improvements to the ITU terminology database.

The ITU CCT is composed of:

− ITU-R CCV functioning in accordance with Resolution ITU-R 36;

− ITU-T SCV functioning in accordance with WTSA Resolution 67 (Rev. Geneva, 2022), and − representatives of ITU-D.

All of them working in close collaboration with the ITU General Secretariat (Conferences and Publications Department) and the editors in the Bureaux.

ITU-R and ITU-T study groups, within their terms of reference, should continue their work on technical and operational terms and their definitions in English only.

The next meeting of CCT is scheduled in April 2024.

## 7.8 Participation of Vice-Chairs in the work of their respective Groups

In accordance with § A1.4.5 of Resolution 1-9, RAG shall be made aware of the non-attendance of Vice-Chairs at RAG and SG meetings. The participation of Vice-Chairs to the meetings of their concern during the 2019‑2023 study period is reported hereinafter.

### 7.8.1 Participation of SG 1 Vice-Chairs in the work of SG 1

SG 1 had 17 appointed Vice-Chairs for the 2019-2023 study period.

SG 1 held four meetings during the 2019-2023 study period.

− No. of SG 1 Vice-Chairs who participated in 4 SG 1 meetings: **8/17**

− No. of SG 1 Vice-Chairs who participated in 3 SG 1 meetings only: **7/17**

− No. of SG 1 Vice-Chairs who participated in 2 SG 1meetings only: **1/17**

− No. of SG 1 Vice-Chairs who did not participate in any SG 1 meeting: **1/17**

### 7.8.2 Participation of SG 3 Vice-Chairs in the work of SG 3

SG 3 had 10 appointed Vice-Chairs for the 2019-2023 study period.

SG 3 held four meetings during the 2019-2023 study period.

− No. of SG 3 Vice-Chairs who participated in 4 SG 3 meetings: **5/10**

− No. of SG 3 Vice-Chairs who participated in 3 SG 3 meetings only: **1/10**

− No. of SG 3 Vice-Chairs who participated in 1 SG 3 meeting only: **2/10**

− No. of SG 3 Vice-Chairs who did not participate in any SG 3 meeting: **2/10**

### 7.8.3 Participation of SG 4 Vice-Chairs in the work of SG 4

SG 4 had 19 appointed Vice-Chairs for the 2019-2023 study period.

SG 4 held five meetings during the 2019-2023 study period.

− No. of SG 4 Vice-Chairs who participated to 5 SG 4 meetings: **10/19**

− No. of SG 4 Vice-Chairs who participated to 4 SG 4 meetings only: **4/19**

− No. of SG 4 Vice-Chairs who participated to 3 SG 4 meetings only: **3/19**

− No. of SG 4 Vice-Chairs who participated to 2 SG 4 meetings only: **1/19**

− No. of SG 4 Vice-Chairs who participated to 1 SG 4 meeting only: **1/19**

− No. of SG 4 Vice-Chairs who did not participate to any SG 4 meeting: **0/19**

### 7.8.4 Participation of SG 5 Vice-Chairs in the work of SG 5

SG 5 had 19 appointed Vice-Chairs for the 2019-2023 study period.

SG 5 held five meetings during the 2019-2023 study period.

− No. of SG 5 Vice-Chairs who participated in 5 SG 5 meetings: **8/19**

− No. of SG 5 Vice-Chairs who participated in 4 SG 5 meetings: **2/19**

− No. of SG 5 Vice-Chairs who participated in 3 SG 5 meetings only: **2/19**

− No. of SG 5 Vice-Chairs who participated in 2 SG 5 meetings only: **3/19**

− No. of SG 5 Vice-Chairs who participated in 1 SG 5 meeting only: **2/19**

− No. of SG 5 Vice-Chairs who did not participate in any SG 5 meeting: **2/19**

### 7.8.5 Participation of SG 6 Vice-Chairs in the work of SG 6

SG 6 had 12 appointed Vice-Chairs for the 2019-2023 study period.

SG 6 held eight meetings during the 2019-2023 study period.

− No. of SG 6 Vice-Chairs who participated in 8 SG 6 meetings: **9/12**

− No. of SG 6 Vice-Chairs who participated in 1 SG 6 meeting only: **1/12**

− No. of SG 6 Vice-Chairs who did not participate in any SG 6 meeting: **2/12**

### 7.8.6 Participation of SG 7 Vice-Chairs in the work of SG 7

SG 7 had 12 appointed Vice-Chairs for the 2019-2023 study period.

SG 7 held four meetings during the 2019-2023 study period.

− No. of SG 7 Vice-Chairs who participated in 4 SG 7 meetings: **7/12**

− No. of SG 7 Vice-Chairs who participated in 3 SG 7 meetings: **1/12**

− No. of SG 7 Vice-Chairs who participated in 2 SG 7 meetings only: **2/12**

− No. of SG 7 Vice-Chairs who participated in 1 SG 7 meeting only: **1/12**

− No. of SG 7 Vice-Chairs who did not participate in any SG 7 meeting: **1/12**

### 7.8.7 Participation of CCV Vice-Chairs in the work of the ITU Coordination Committee for Terminology (CCT)

CCV had 6 appointed Vice-Chairs for this study period.

The CCT held eleven conference calls during this study period.

− No. of CCV Vice-Chairs who participated in 8 CCT conference calls: **1/6**

− No. of CCV Vice-Chairs who participated in 5 CCT conference calls: **2/6**

− No. of CCV Vice-Chairs who participated in 4 CCT conference calls: **1/6**

− No. of CCV Vice-Chairs who did not participate in any CCT conference call: **2/6**

## 7.9 WRC-27 preparation, including CPM27-1

See section 5 of Doc. [RAG/1](https://www.itu.int/md/R23-RAG-C-0001/en).

# 8 Liaison and collaboration with ITU-D and ITU-T, and with other organizations

Intersectoral activities have continued throughout the period, particularly concerning ITU’s priority topics of climate change, emergency communications and accessibility.

*•* *ITU-D*

BR continues to contribute to the BDT workshops and seminars.

BR actively participated in the meetings of the ITU-D SGs to provide the latest development in the activities of the ITU-R SGs, as well as guidance and mapping on ITU-R Recommendations, Reports and Handbooks of particular interest to developing countries and studies developed by ITU-D SGs 1 and 2.

*•* *ITU-T*

In addition to climate change and emergency communications, topics of mutual interest between ITU‑R and ITU-T include IMT, the effects of human exposure to radio frequencies, power line transmission systems, smart grid, smart cities, EMC/EMI, intelligent transport systems, audio-visual media accessibility, common patent policy and intellectual property rights.

The 45th meeting of WP 5D (31 January to 7 February 2024) informed that there is still overlap of activities between ITU-T and ITU-R Sectors and felt necessary to inform the BR Director about this recurring situation.



*• Other organizations*

Healthy liaison has continued between ITU-R SGs and other organizations, with due reference to Resolution [ITU-R 9](https://www.itu.int/pub/R-RES-R.9), where required.

The Bureau continued to maintain close cooperation with several organizations with the following objectives:

1. promote dialogue amongst bodies having common interests;
2. improve 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 collaboration with the relevant international and regional organizations including, but not limited to:

− APT, ASMG, ATU, CEPT, CITEL and RCC for regional coordination;

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

− ITSO, ESOA, GVF, GSMA 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, the World Health Organization, 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;

− 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 Mobile 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.

# 9 Other intersectoral activities

BR has actively participated in other intersectoral activities that are relevant to the work of ITU‑R SGs, as described below:

*–* Climate Change and Emergency Communications: The BR participates in the Intersectoral activities coordinated by the ITU Climate Change and Emergency Telecommunications Task Force for the implementation of Resolution 136 (Rev. Bucharest, 2022). There are also studies in response to Resolution [ITU-R 60-3](https://www.itu.int/pub/R-RES-R.60) (Reduction of energy consumption for environmental protection and mitigating climate change by use of ICT/radiocommunication technologies and systems).

– Accessibility: ITU-R has been actively participating in the ITU-T JCA-AHF (Joint Coordination Activity on Accessibility and Human Factors).

– WSIS and CWG on WSIS and SDGs: In response to Resolution 140 (Rev. Bucharest, 2022) of the Plenipotentiary Conference on “ITU’s role in implementing the outcomes of the World Summit on the Information Society and the 2030 Agenda for Sustainable Development, as well as in their follow-up and review processes”, ITU-R liaises with the CWG on WSIS and SDGs, and contributes with the updates on the work carried out by the ITU-R Study Groups. BR SGD has prepared and published a website that lists the ITU-R publications related to each SDG. This can be found here: <https://www.itu.int/en/ITU-R/study-groups/Pages/Sustainable-dev-goals.aspx>.

– The Bureau is continuing its participation in the activities related to the major ITU events, conferences and meetings. These activities are in support of the Plenipotentiary Conference, the ITU Council, WTSA and WTDC.

As requested by new Resolution ITU-R 75 on “Strengthening coordination and cooperation among the three ITU Sectors on matters of mutual interest”, BR will continue to cooperate with ITU-D and ITU-T as appropriate.

# 10 Follow-up actions requested by the RAG at its meeting in 2023

The Bureau performed the follow-up actions as per RAG request during its last meeting in May 2023 (as contained in the Summary of Conclusions – Administrative Circular [CA/267](https://www.itu.int/md/R00-CA-CIR-0267/en)).

− Concerning the RAG request to prepare material to support the work of the Budget Committee of WRC-23 for estimating the budget required for the implementation of WRC‑23 decisions and for the preparatory work for future agenda items, BR experts provided their support and necessary material to the Budget Committee prior to and during WRC-23.

− the RAG stressed that both ITU-T and ITU-R should avoid initiating any work that was clearly within the mandate of the other sector. In that context, recognizing that contributions might be received that were outside of the mandate of a sector, the RAG encouraged the leadership of the group receiving such contributions to inform the submitting party that this topic was not within their terms of reference and submit the contribution to the appropriate group. ITU‑R SGs will act accordingly.

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