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| **Radiocommunication Advisory Group Geneva, 6-9 April 2020** | | 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 RAG20/1-E** | |
| **27 February 2020** | |
| **Original: English** | |
| **Director, Radiocommunication Bureau** | | |
| report TO the twenty-SEVENTH meeting of the radiocommunication advisory group | | |
| STUDY GROUPS ACTIVITIES | | |

# 1 Working methods

Study Group activities were pursued within a stable Study Group (SG) and Working Party (WP) structure with some modifications to take into account the decisions of the first session of the Conference Preparatory Meeting for WRC-23 (CPM23-1). Working methods were satisfactorily applied in accordance with Resolution ITU‑R 1 and the associated Guidelines for the working methods.

# 2 Access to meeting documents

In line with the provisions of Resolution ITU‑R 1, meeting documents are posted by 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.

# 3 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.

## 3.1 SharePoint website

Access to documentation during meetings via a dedicated SharePoint website is the standard practice. All Study Group and Working Party meetings are now completely paperless.

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

## 3.2 File synchronization

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

## 3.3 Online list of participants

Online versions of the lists of participants for all Study Group and Working Party meetings have been implemented with access to the online version restricted to TIES users. The dynamic list can be searched based on parameters such as name, member and position in the delegation.

## 3.4 Remote participation

Audio webcasts of all available languages have been provided during the plenary sessions of all Study Group and Working Party meetings held in Geneva.

In line with guidance provided by the RAG, the possibility of active remote participation has been offered during Working Party meetings only, when no formal decision process is involved. Remote participants wishing to actively participate (e.g. to introduce a contribution) need to register for the meeting beforehand and coordinate their active participation with the responsible Counsellor.

Active remote participation was provided to participants in Working Parties on only a few occasions since the last meeting of RAG. Such participation has been useful, but it can be difficult or impossible to schedule and it increases the time required for the meeting.

While the Secretariat will make every effort to facilitate such active participation, it should be recognized that on some occasions this may not be possible due to factors such as the limited number of support staff, availability of equipped rooms, many parallel meetings and the need for the remote participants to have a high-quality Internet and phone connection.

However, remote participation has proven invaluable in the case of Correspondence and Rapporteur Group activities during intersessional periods. Such participation has enabled considerable progress in items relating to WRC-19 agenda items, where expected results are required at specified deadlines.

## 3.5 Study Group webpages

In alignment with the ITU policy, updates to webpages are continuously performed in order to satisfy requests of delegates.

Study Group and Working Party webpages are regularly updated to meet the requirements for each meeting and they are also adapted to the demand of clarity and transparency.

## 3.6 Captioning

Since December 2013, all Study Group meetings have been provided with live captioning in English. Feedback on this facility has been generally positive because it is also an aid to delegates in following discussions. However the accuracy of the captioning, particularly with respect to frequency bands, radiocommunication acronyms and delegate names tends to be poor.

# 4 Participation

There has been a progressive increase in the level of participation in ITU-R Study Group and Working Party meetings since 2003. This is very encouraging, but at the same time it does create some logistical difficulties.

Participation in the largest groups can now exceed 300 – too large to be accommodated in large rooms on the ITU premises (Popov, C). The average participation per meeting is now of the order of 120 participants (see Figure 1 below), which is too large to be comfortably accommodated in the medium size rooms at ITU (A, C1, C2, Popov 1, Popov 2, H, K). Even the smallest groups now have an average participation exceeding 60 participants, which in turn is too large to be comfortably accommodated in the smaller rooms at ITU (H1, H2, K1, K2, L and M).

This is creating increasing difficulties in accommodating meetings, particularly for Study Groups 4 and 5 that have large numbers of attendees.

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.

# 5 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;

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

Consequently, in the coming years an increasing number of meetings will need to be held at other locations outside ITU. To that end, offers from the membership to host Study Group/Working Party meetings during this period will be particularly welcome. In the longer term, the requirements for meeting rooms at ITU will need to be carefully taken into account in the design of the Varembé 2 building.

# 6 Notable activities in the Study Groups

Some of the notable activities and other ongoing standardization studies in each Study Group are highlighted below. The table below summarizes the ITU-R Study Groups status of studies carried out between RAG-19 and RA-19 as well as the production of Recommendations and Reports approved at the beginning of 2019-2023 study period. The full list of Recommendations and Reports can be found in section 8.1.3 of Doc. [RAG-20/1](https://www.itu.int/md/R20-RAG20-C-0001/en).

| Study Group | Status of studies | | | |
| --- | --- | --- | --- | --- |
| Period between RAG-19 and RA-19 | 2019-2023 study cycle | | |
| Recommendations ITU-R approved | Reports ITU-R approved | Questions ITU-R approved |
| SG 1 | Most of the activities were related to the preparations and in support of RA-19 and WRC-19 |  |  |  |
| SG 3 |  |  |  |
| SG 4 |  |  |  |
| SG 5 | F.387-13, F.636-5, F.758-7, F.1565-1, M.1746-1, M.1808-1, M.1826 1, M.2012-4, M.2084-1 |  | 77-8/5, 101-5/5, 205-6/5, 209-6/5, 229‑5/5, 238-3/5, 256-1/5, 241-4/5, 246‑1/5, 257-1/5, 261/5, 262/5 |
| SG 6 | BT.1877-2 | BS.2482-0 BT.2295-3, BT.2390-8 |  |
| SG 7 |  |  |  |

## 6.1 Study Group 1

Study Group (SG) 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, maintenance of data dictionary, spectrum redeployment, spectrum use measurement, unlicensed and shared uses of spectrum, dynamic spectrum access, smart grids and wireless power transmission.

The last meeting of SG 1 Working Parties 1A, 1B and 1C was held in May-June 2019. As a result, one new and six revised Recommendations were developed and subsequently adopted and approved. A new study Question was also approved. The meeting also approved six new and seven revised ITU‑R Reports. Editorial amendments were also made to sixty nine recommendations.

Question ITU-R:

– 241/1 “Methodologies for assessing or predicting spectrum availability”

Recommendation ITU-R:

– SM.2129-0 “Guidance on frequency ranges for operation of non-beam wireless power transmission systems for mobile and portable devices”

– SM.1054-1 “Monitoring of radio emissions from spacecraft at monitoring stations”

– SM.1138-3 “Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions” [[1]](#footnote-1)\*

– SM.1268-5 “Method of measuring the maximum frequency deviation of FM broadcast emissions at monitoring stations”

– SM.1448-1 “Determination of the coordination area around an earth station in the frequency bands between 100 MHz and 105 GHz”

– SM.1875-3 “DVB-T coverage measurements and verification of planning criteria”

– SM.2110-1 “Guidance for the use of frequency ranges for operation of non-beam wireless power transmission for electric vehicles”

Report ITU-R:

– SM.2449-0 “Technical characteristics and impact analyses of non-beam inductive wireless power transmission for mobile and portable devices on radiocommunication services”

– SM.2450-0 “Sharing and compatibility studies between land-mobile, fixed and passive services in the frequency range 275-450 GHz”

– SM.2451-0 “Assessment of impact of wireless power transmission for electric vehicle charging on radiocommunication services”

– SM.2452-0 “Electromagnetic field measurements to assess human exposure”

– SM.2453-0 “Cooperation in the field of space radio monitoring”

– SM.2454-0 “Spectrum monitoring techniques in the radionavigation-satellite service frequency bands”

– SM.2015-1 “Methods for determining national long-term strategies for spectrum utilization”

– SM.2153-7 “Technical and operating parameters and spectrum use for short-range radiocommunication devices”

– SM.2182-2 “Measurement facilities available for the measurement of emissions from both GSO and non-GSO space stations”

– SM.2257-5 “Spectrum management and monitoring during major events”

– SM.2355-1 “Spectrum monitoring evolution”

– SM.2422-1 “Visible light for broadband communications”

The next meeting of SG 1 and its Working Parties is schedule in May-June 2020.

## 6.2 Study Group 3

In furthering its work on propagation measurement, data analysis, modelling and prediction in various parts of the spectrum up to 375 THz, thereby laying the foundation for the design of radiocommunication systems and the assessment of interference, Study Group 3 continues to revise or develop new recommendations, reports and handbooks under its purview. Study Group 3 and its working parties also continue to provide assistance to all other ITU-R Study Groups on radio wave propagation prediction aspects, most notably those relating to sharing studies and system design. Twenty-eight revised ITU-R Recommendations and three revised ITU-R Reports were adopted and approved by SG 3 in its last meeting. In addition, one new and six revised Questions were approved.

Question ITU-R:

– 201-7/3 “Radiometeorological data required for the planning of terrestrial and space communication systems and space research application”

– 203-8/3 “Propagation prediction methods for terrestrial broadcasting, fixed (broadband access) and mobile services using frequencies above 30 MHz”

– 208-6/3 “Propagation factors in frequency sharing issues affecting space radiocommunication services and terrestrial services”

– 211-7/3 “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)”

– 214-6/3 “Radio noise”

– 228-3/3 “Propagation data required for the planning of radiocommunication systems operating above 275 GHz”

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

Recommendation ITU-R:

– P.310-10 “Definitions of terms relating to propagation in non-ionized media”

– P.341-7 “The concept of transmission loss for radio links”

– P.372-14 “Radio noise”

– P.453-14 “The radio refractive index: its formula and refractivity data”

– P.525-4 “Calculation of free-space attenuation”[[2]](#footnote-2)\*

– P.526-15 “Propagation by diffraction”\*

– P.527-5 “Electrical characteristics of the surface of the Earth”

– P.528-4 “A propagation prediction method for aeronautical mobile and radionavigation services using the VHF, UHF and SHF bands”

– P.531-14 “Ionospheric propagation data and prediction methods required for the design of satellite networks and systems”

– P.533-14 “Method for the prediction of the performance of HF circuits”

– P.617-5 “Propagation prediction techniques and data required for the design of trans-horizon radio-relay systems”

– P.619-4 “Propagation data required for the evaluation of interference between stations in space and those on the surface of the Earth”

– P.676-12 “Attenuation by atmospheric gases and related effects”

– P.681‑11 “Propagation data required for the design systems in the land mobile-satellite service”

– P.840-8 “Attenuation due to clouds and fog”

– P.841-6 “Conversion of annual statistics to worst-month statistics”

– P.1057-6 “Probability distributions relevant to radiowave propagation modelling”

– P.1144-10 “Guide to the application of the propagation methods of Radiocommunication Study Group 3”

– P.1238-10 “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.1407-7 “Multipath propagation and parameterization of its characteristics”

– P.1411-10 “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.1511-2 “Topography for Earth-to-space propagation modelling”

– P.1546-6 “Method for point-to-area predictions for terrestrial services in the frequency range 30 MHz to 4 000 MHz”

– P.1812-5 “A path-specific propagation prediction method for point-to-area terrestrial services in the VHF and UHF bands”

– P.1816-4 “The prediction of the time and the spatial profile for broadband land mobile services using UHF and SHF bands”

– P.1853-2 “Time series synthesis of tropospheric impairments”

– P.2001-3 “A general purpose wide-range terrestrial propagation model in the frequency range 30 MHz to 50 GHz”

– P.2109-1 “Prediction of Building Entry Loss”

Report ITU-R:

– P.2297-1 “Electron density models and data for transionospheric radio”

– P.2346-3 “Compilation of measurement data relating to building entry loss”

– P.2406-1 “Studies for short-path propagation data and models for terrestrial radiocommunication systems in the frequency range 6 GHz to 450 GHz”

The next meeting of SG 3 and its Working Parties are planned to be convened during the period 10‑19 June 2020.

## 6.3 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.

One new and six revised ITU-R Recommendations and eight new and one revised ITU-R Reports pertaining to the scope of SG 4 were adopted and approved by Study Group 4.

Recommendation ITU-R:

– S.2131-0 “A method for the determination of performance objectives for satellite hypothetical reference digital paths using adaptive coding and modulation”

– S.1782-1 “Guidelines on global broadband Internet access by fixed-satellite service systems”

– M.1901-2 “Guidance on ITU-R Recommendations related to systems and networks in the radionavigation-satellite service operating in the frequency bands 1 164-1 215 MHz, 1 215‑1 300 MHz, 1 559-1 610 MHz, 5 000-5 010 MHz and 5 010-5 030 MHz”

– M.1902-1 “Characteristics and protection criteria for receiving earth stations in the radionavigation-satellite service (space-to-Earth) operating in the band 1 215‑1 300 MHz”

– M.1903-1 “Characteristics and protection criteria for receiving earth stations in the radionavigation-satellite service (space-to-Earth) and receivers in the aeronautical radionavigation service operating in the band 1 559-1 610 MHz”

– M.1904-1 “Characteristics, performance requirements and protection criteria for receiving stations of the radionavigation-satellite service (space-to-space) operating in the frequency bands 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz”

– M.1905-1 “Characteristics and protection criteria for receiving earth stations in the radionavigation-satellite service (space-to-Earth) operating in the band 1 164‑1 215 MHz”

Report ITU-R:

– BO.2071-2 “Broadcasting-satellite service system parameters between 17.3 GHz and 42.5 GHz and associated feeder links”

– BO.2465-0 “Assessment on limitations mentioned in Annex 7 to RR Appendix 30 (Rev.WRC 15) in the 11.7-12.7 GHz band for the GSO broadcasting-satellite service in all Regions”

– M.2458-0 “Radionavigation-satellite service applications in the 1 164-1 215 MHz, 1 215‑1 300 MHz and 1 559-1 610 MHz frequency bands”

– M.2459-0 “Introduction of additional mobile-satellite service systems into the Global Maritime Distress Safety systems”

– M.2460-0 “Key elements for integration of satellite systems into Next Generation Access Technologies”

– S.2461-0 “Spectrum needs for the fixed satellite service in the 51.4-52.4 GHz band”

– S.2462‑0 “Sharing between 50/40 GHz geostationary networks and non-geostationary systems”

– S.2463-0 “Sharing with incumbent services in the 51.4-52.4 GHz band and adjacent and nearby bands”

– S.2464-0 “Operation of earth stations in motion communicating with geostationary space stations in the fixed-satellite service allocations at 17.7-19.7 GHz and 27.5‑29.5 GHz”

The next meetings of WPs 4A, 4B and 4 C will be convened in May 2020 and SG 4 will meet in November 2020.

## 6.4 Study Group 5

Study Group 5 is continuing studies on systems and networks for the fixed, mobile, radiodetermination, amateur and amateur-satellite services, paving the way for the continuing development of all these services, including IMT, HAPS, ITS and PPDR.

Two new and twelve revised Recommendations and eleven new ITU-R Reports pertaining to the scope of SG 5 were approved. Other than the normal revision of existing documents the WPs have worked on several studies producing relevant Reports/Recommendations and also two new and ten revised ITU-R Questions. Besides, SG 5 decided to suppress one Question.

Question ITU-R:

– 77-8/5 “Consideration of the needs of developing countries in the development and implementation of IMT”

– 101-5/5 “Quality of service requirements in the land mobile service”

– 205-6/5 “Intelligent Transport Systems”

– 209-6/5 “Use of the mobile, amateur and the amateur-satellite services in support of disaster radiocommunications”

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

– 238-3/5 “Mobile broadband wireless access systems”

– 241-4/5 “Cognitive radio systems in the mobile service”

– 246-1/5 “Technical characteristics and channelling requirements for adaptive HF systems”

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

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

– 261/5 “Radiocommunication requirements for connected automated vehicles (CAV)”

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

Recommendation ITU-R:

– M.2134-0 “Receiver characteristics and protection criteria for systems in the mobile service in the frequency range 27.5-29.5 GHz for use in sharing and compatibility studies”

– M.2135-0 “Technical characteristics of autonomous maritime radio devices operating in the frequency band 156-162.05 MHz”

– M.585-8 “Assignment and use of identities in the maritime mobile service”[[3]](#footnote-3)\*

– M.1036-6 “Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations”

– M.1174-4 “Technical characteristics of equipment used for on-board vessel communications in the bands between 450 and 470 MHz”\*

The approval procedure was completed after RA-19 for the following Recommendations:

– F.387-13 “Radio-frequency channel arrangements for fixed wireless systems operating in the 10.7-11.7 GHz band”

– F.636-5 “Radio-frequency channel arrangements for fixed wireless systems operating in the 14.4-15.35 GHz band”

F.758-7 “System parameters and considerations in the development of criteria for sharing or compatibility between digital fixed wireless systems in the fixed service and systems in other services and other sources of interference”

– F.1565-1 “Performance degradation due to interference from other services sharing the same frequency bands on a co-primary basis, or from other sources of interference, with real digital fixed wireless systems used in the international and national portions of a 27 500 km hypothetical reference path at or above the primary rate”

– M.1746-1 “Harmonized frequency channel plans for the protection of property using data communication”

– M.1808‑1 “Technical and operational characteristics of conventional and trunked land mobile systems operating in the mobile service allocations below 869 MHz to be used in sharing studies in bands below 960 MHz”

– M.1826‑1 “Harmonized frequency channel plan for broadband public protection and disaster relief operations at 4 940-4 990 MHz in Regions 2 and 3”

– M.2012-4 “Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications Advanced (IMT-Advanced)”

– M.2084-1 “Radio interface standards of vehicle-to-vehicle and vehicle-to-infrastructure two-way communications for Intelligent Transport System applications”

Report ITU-R:

– F.2471-0 “Sharing and compatibility studies of HAPS systems in the fixed service in the 21.4 22 GHz frequency range for Region 2”

– F.2472-0 “Sharing and compatibility studies of HAPS systems in the fixed service in the 24.25 27.5 GHz frequency range in Region 2”

– F.2473-0 “Sharing and compatibility studies of HAPS systems in the fixed service in the 27.9-28.2 GHz and 31.0-31.3 GHz frequency ranges”

– F.2475-0 “Sharing and compatibility studies of High Altitude Platform Station systems in the fixed service in the 38-39.5 GHz frequency range”

– F.2476-0 “Sharing and compatibility studies of HAPS systems in the fixed service in the 47.2-47.5 GHz and 47.9-48.2 GHz frequency ranges”

– M.2474-0 “Conventional digital land mobile radio systems”

– M.2477-0 “Radiocommunications for suborbital vehicles”

– M.2478-0 “Spectrum needs for the amateur service in the frequency band 50-54 MHz in Region 1 and sharing with mobile, fixed, radiolocation and broadcasting services”

– M.2479-0 “The use of land mobile systems, excluding IMT, for machine-type communications”

– M.2480‑0 “National approaches of some countries on the implementation of terrestrial IMT systems in bands identified for IMT”

– M.2481-0 “In-band and adjacent band coexistence and compatibility studies between IMT systems in 3 300-3 400 MHz and radiolocation systems in 3 100-3 400 MHz”

Working Party 5D held its 33rd meeting in December 2019 with only Technology Aspects Group being in session. The agreed focus of WP 5D Meeting #33 was the completion of Step 3, continuation of Step 4, the evaluation of IMT-2020 submitted candidate technologies, which included a Workshop, and related matters. This meeting of WP 5D did not forwarded any documents to SG 5 for consideration.

Working Party 5D (WP 5D) held a workshop on “IMT-2020 Terrestrial Radio Interfaces Evaluation” on 10 and 11 December 2019, with around 100 participants.

The objectives of the workshop were:

– to promote information sharing on IMT-2020;

– to facilitate dialogue within ITU-R WP 5D and amongst the proponents as well as the evaluation groups.

The objectives of the workshop were well achieved.

The next meeting of SG 5 is scheduled in May 2020.

## 6.5 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), and preparation for WRC-19 agenda items or issues related to broadcasting services.

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

Following the SG 6 block meetings in July 2019, which was the last meeting of SG 6 and its Working Parties during the 2015-2019 study period, there were 4 new and 13 revised Recommendations; 2 new, 12 revised and 9 suppressed Questions; and 9 new and 17 revised Reports approved, as follows:

Question ITU-R:

– 34-3/6 “File formats and transport for the exchange of audio, video, data and metadata materials in the professional broadcast environments”

– 56-4/6“Characteristics of terrestrial digital sound/multimedia broadcasting systems for reception by vehicular, portable and fixed receivers”

– 102-4/6 “Methodologies for subjective assessment of audio and video quality”

– 130-3/6 “Digital interfaces for production, post-production and international exchange of sound and television programmes for broadcasting”

– 131-1/6 “Common core data format for multimedia broadcasting”

– 132-5/6 “Digital terrestrial television broadcasting planning”

– 133-2/6 “Enhancements of digital terrestrial television broadcasting”

– 135-2/6 “System parameters for and management of digital sound systems with and without accompanying picture”

– 137-1/6 “Internet Protocol (IP) interfaces for programme production and exchange”

– 139-2/6 “Methods for rendering of advanced audio formats”

– 142-3/6 “High dynamic range television for broadcasting”

– 143-1/6 “Advanced Immersive Audio-Visual Systems for Programme Production and Exchange for Broadcasting”

– 145/6 “Systems for enabling access to broadcast and cooperative media for persons with disabilities

– 146/6 “Spectrum requirements for terrestrial broadcasting”

Recommendation ITU-R:

– BS.2126-0 “Methods for the subjective assessment of sound systems with accompanying picture”

– BS.2127‑0 “Audio Definition Model renderer for advanced sound systems”

– BS.2132-0 “Method for the subjective quality assessment of audible differences of sound systems using multiple stimuli without a given reference”

– BT.2133‑0 “Transport of advanced immersive audio visual content in IP-based broadcasting systems”

– BS.450-4 “Transmission standards for FM sound broadcasting at VHF”

– BS.1114-11 “Systems for terrestrial digital sound broadcasting to vehicular, portable and fixed receivers in the frequency range 30-3 000 MHz”

– BS.1196-8 “Audio coding for digital broadcasting”

– BS.1283-2 “Guidance for the selection of the most appropriate ITU-R Recommendation(s) for subjective assessment of sound quality”

– BS.1548-7 “User requirements for audio coding systems for digital broadcasting”

– BS.1660-8 “Technical basis for planning of terrestrial digital sound broadcasting in the VHF band”

– BS.2076-2 “Audio Definition Model”

– BS.2088-1 “Long-form file format for the international exchange of audio programme materials with metadata”

– BT.500-14 “Methodologies for the subjective assessment of the quality of television images”

– BT.1702-2 “Guidance for the reduction of photosensitive epileptic seizures caused by television”

– BT.1872-3 “User requirements for broadcast auxiliary services including digital television outside broadcast, electronic/satellite news gathering and electronic field production”

– BT.2036-3 “Characteristics of a reference receiving system for frequency planning of digital terrestrial television systems”

– BT.2111-1 “Specification of colour bar test pattern for high dynamic range television systems”

The approval procedure was completed after RA-19 for Recommendation ITU-R BT.1877-2 “Error-correction, data framing, modulation and emission methods and selection guidance for second generation digital terrestrial television broadcasting systems”.

Report ITU-R:

– BS.2466-0 “Guidelines for the use of the ITU-R ADM Renderer”

– BS.2482-0 “Planning analysis for the HD Radio system in the MF band”

– BT.2446-0 “Methods for conversion of high dynamic range content to standard dynamic range content and vice-versa”

– BT.2447-0 “Artificial intelligence systems for programme production and exchange”

– BT.2448-0 “Technical realisation of signing in digital television”

– BT.2467‑0 “Methods for the evaluation of the quality of service of second generation DTTB systems”

– BT.2468-0 “Guidance for selection of system parameters and implementation of second generation DTTB systems”

– BT.2469-0 “Characteristics of digital terrestrial broadcasting systems in the frequency band 174-230 MHz”

– BT.2470-0 “Use of Monte Carlo simulation to model interference to DTTB”

– BS.2159-8 “Multichannel sound technology in home and broadcasting applications”

– BS.2214-4 “Planning parameters for terrestrial digital sound broadcasting systems in VHF bands”

– BS.2384-1 “Implementation considerations for the introduction and transition to digital terrestrial sound and multimedia broadcasting”

– BT.2140-12 “Transition from analogue to digital terrestrial broadcasting”

– BT.2209-2 “Calculation model for SFN reception and reference receiver characteristics of ISDB-T system”

– BT.2245-7 “HDTV and UHDTV including HDR-TV test materials for assessment of picture quality”

– BT.2267-10 “Integrated broadcast-broadband systems”

– BT.2295-3 “Digital terrestrial broadcasting systems”

– BT.2342-3 “Production, emission and exchange of closed captions for all worldwide language character sets (latin and non-latin)”

– BT.2343-5 “Collection of field trials of UHDTV over DTT networks”

– BT.2384-1 “Implementation considerations for the introduction and transition to digital terrestrial sound and multimedia broadcasting”

– BT.2386-2 “Digital terrestrial broadcasting: Design and implementation of single frequency networks (SFN)”

– BT.2387-1 “Spectrum/frequency requirements for bands allocated to broadcasting on a primary basis”

– BT.2390-7 “High dynamic range television for production and international programme exchange”

– BT.2390-8 “High dynamic range television for production and international programme exchange”

– BT.2400-3 “Usage scenarios, requirements and technical elements of a global platform for the broadcasting service”

– BT.2408-3 “Guidance for operational practices in HDR television production”

SG 6 met in February 2020. One draft revision and 9 draft suppressions of Recommendations were considered and agreed to seek approval by use of PSAA procedure. Fifteen editorial amendments to Recommendations were approved; 5 suppressions of Questions were adopted; 1 new and 2 revisions of Reports were approved.

In accordance with the [CA/251](https://www.itu.int/md/R00-CA-CIR-0251/en), Task Group 6/1 on WRC-23 agenda item 1.5 was established, Mr. Sergey PASTUKH (RUS) was appointed as the Chairman.

**6.6 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 Study Group 7 are used in activities that are a critical part of our everyday life such as:

– 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.

Study Group 7 approved 4 revised Recommendations and 3 new Reports. Study Group 7 also suppressed two Recommendations and one Question.

Recommendation ITU-R:

– SA.1016-1 “Sharing considerations relating to space research service (deep space)”

– SA.1027-6 “Sharing criteria for space-to-Earth data transmission systems in the Earth exploration-satellite and meteorological-satellite services using satellites in low-Earth orbit”

– SA.1161-3 “Sharing and coordination criteria for data transmission systems in the Earth exploration-satellite and meteorological-satellite services using satellites in geostationary orbit”

– SA.1164-4 “Sharing and coordination criteria for service links in data collection systems using GSO satellites in the Earth exploration-satellite and meteorological-satellite services”

Report ITU-R:

– RA.2457-0 “Coexistence between the radio astronomy service and radiolocation service applications in the frequency band 76-81 GHz”

– RS.2455-0 “Preliminary results of sharing studies between a 45 MHz radar sounder and incumbent fixed, mobile, broadcasting and space research services operating in the 40‑50 MHz frequency range”

– RS.2456‑0 “Space weather sensor systems using radio spectrum”

SG 7, WPs 7B, 7C and 7D will meet in April 2020 in Geneva and Working Party 7A will hold its meeting in France hosted by BIPM.

## 6.7 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 terminology database.

After the adoption of Council Resolution 1386, “ITU Coordination Committee for Terminology (ITU CCT)”, the ITU CCT meetings were conducted with extensive use of electronic methods. Work is on-going on improvements to the ITU terminology database.

CCV adopted and approved in its last meeting in September 2019 new Recommendation ITU-R V.2130-0 on “Guidelines for the preparation of terms and definitions”.

## 6.8 CPM

A summary of the CPM23-1 meeting can be found in the section 5 of Document [RAG-20/1](https://www.itu.int/md/R20-RAG20-C-0001/en).

# 7 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.

*Concerning ITU‑D*: BR continues to contribute to the BDT workshops and seminars. These events provide an opportunity to present ITU‑R’s standardization activities and, in turn, to demonstrate their contribution to Resolution 123 (Rev. Dubai, 2018) in bridging the standardization gap.

BR actively participated in the meetings of the ITU-D Study Groups to provide the latest development in the activities of the ITU-R study groups, as well as guidance on ITU-R Recommendations, Reports and Handbooks of particular interest to developing countries. The ITU-D Study Groups were invited to consider the ITU-R information provided in order to avoid duplication of effort, and to make use of the results of work done by the ITU-R Study Groups.

*Concerning 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, audio-visual media accessibility, common patent policy and intellectual property rights.

There continues to be a requirement for close coordination on the various topics being addressed by ITU‑T that have implications for radiocommunication systems to reduce the potential for overlap, duplication and conflict of work undertaken by the two Sectors.

*Concerning other organizations*:Healthy liaison has continued between ITU‑R Study Groups and other organizations, with due reference to Resolution ITU‑R 9, where required.

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. 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 cooperation with the relevant international and regional organizations dealing with the use of spectrum, including the Regional Telecommunication Organizations recognized by the ITU for regional coordination (APT, ASMG, ATU, CEPT, CITEL and RCC); broadcasting organizations (ABU, ASBU, EBU and HFCC); and those focused on the use of specific radiocommunication systems and services (*e.g.* ITSO, ESOA, GVF, GSMA) by organizing, promoting and participating in events to build capacity on the use of the Radio Regulations, including World Radiocommunication Seminars and Regional Radiocommunication Seminars.

The Bureau continues to participate in the activities of the Global Standards Collaboration (GSC). Involvement with the 3GPP and IEEE has been maintained, as well as several regional standardization organizations, given their importance and relevance to the work of Study Group 5. Other notable areas of liaison with Study Group activities include those with the World Meteorological Organization, the World Health Organization, ISO and IEC (including CISPR), Space Frequency Coordination Group and several others on an ad-hoc basis.

The Bureau ensured liaison and cooperation with the UN Committee on the Peaceful Uses of Outer Space (UN-COPUOS), 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.

# 8 Other intersectoral activities

BR has actively participated in other intersectoral activities that are relevant to the work of ITU‑R Study Groups, 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. Dubai, 2018). There are also studies in response to Resolution ITU‑R 60-2 (Reduction of energy consumption for environmental protection and mitigating climate change by use of ICT/radiocommunication technologies and systems). The ITU‑R webpage on climate change has been updated to reflect the latest developments in this field.

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

– Spectrum/EMC: When addressing spectrum related/EMC issues, close coordination with the relevant ITU-R groups is ensured before liaising with external organizations on those issues, particularly where well-established and efficient collaboration between ITU-R and those organizations already exists.

– Preparation for and participation at ITU meetings: BR is continuing its participation in the activities related to the major ITU events, conferences and meetings and their preparation in relation to the work of the ITU-R Study Groups. This includes the Plenipotentiary Conference, the ITU Council, WTSA, WTDC, WSIS and ITU TELECOM World.

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1. \* Recommendation incorporated by reference in the RR. [↑](#footnote-ref-1)
2. \* Recommendation incorporated by reference in the RR. [↑](#footnote-ref-2)
3. \* Recommendation incorporated by reference in the RR. [↑](#footnote-ref-3)