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| **Radiocommunication Assembly (RA-19) Sharm el-Sheikh, Egypt, 21-25 October 2019** |  |
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| **PLENARY MEETING** | **Document RA19/PLEN/1-E** |
| **18 September 2019** |
| **Original: English** |
| Director, Radiocommunication Bureau | |
| Director’s Report | |
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# 1 Introduction

In response to § A2.2.1 of Resolution ITU-R 1-7, this Report covers the period from the last Radiocommunication Assembly in 2015 (RA-15). It addresses the activities of the six Radiocommunication Study Groups, the Coordination Committee for Vocabulary (CCV) and the Conference Preparatory Meeting (CPM). Liaison and cooperation with the other two Sectors, as well as that with other organizations, is briefly described and mention is also made of activities in relation to meetings of the Radiocommunication Advisory Group (RAG) and the Plenipotentiary Conference.

The role of the Radiocommunication Bureau, in particular the Study Group Department (SGD), in supporting these activities is also presented, as well as the financial environment in which the work is undertaken.

# 2 Response to the results of RA-15

The Radiocommunication Assembly in 2015 approved the 41 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 Group work during the 2015‑2019 study period.

Resolution ITU‑R 9 (Liaison and collaboration with other organizations) recognizes the need to facilitate coordination and information exchange between ITU‑R and other bodies, particularly those involved with standards development. The Resolution as revised at RA-15 includes the principles for interaction of ITU‑R with other organizations, and these principles have been used by BR and the Study Groups for such interactions. In particular, the collaboration with the CISPR has been increased significantly.

RA-15 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, and the concerned Study Groups have taken due note of such Resolutions in their work programmes.

Proposal for revision of Resolution ITU-R 50-3 – *Role of the Radiocommunication Sector in the ongoing development of IMT* can be found in Document [5/1004](https://www.itu.int/md/R15-SG05-RP-1004/en) Annex 1.

With respect to Resolution ITU-R 55-2 – *ITU-R studies of disaster prediction, detection, mitigation and relief*, Study Group 6 has revised related Recommendation and Report to reflect the latest situation. Proposal for revision of this Resolution can be found in the Annex 2 to Document [6/1004](https://www.itu.int/md/R15-SG06-RP-1004/en).

With respect to Resolution ITU-R 59-1 – *Studies on availability of frequency bands and/or tuning ranges for worldwide and/or regional harmonization and conditions for their use by terrestrial electronic news gathering systems,* Study Groups 5 and 6 have developed or revised several Recommendations and Reports relevant to terrestrial electronic news gathering systems and updated information. Proposal for revision of this Resolution can be found in the Annex 3 to Document 6/1004.

With respect to Resolution ITU-R 60 – *Reduction of energy consumption for environmental protection and mitigating climate change by use of ICT/radiocommunication technologies and systems*, Study Group 5 has incorporated new developments in technology into its reports and recommendations on mobile systems and standards that will result in reduced energy consumption. While there have been no outputs specifically devoted to this topic, it is covered in the regular updating of the technical and operational characteristics of systems and standards under the purview of Study Group 5. Study Group 6 continues to work on further reduction of energy consumption in broadcasting through the “green broadcasting” and “sustainable broadcasting” initiatives. Proposal for revision of Resolution ITU-R 60-1 can be found in Document 5/1004 Annex 2.

With respect to Resolution ITU-R 67-0 – *Telecommunication/ICT accessibility for persons with disabilities and persons with specific needs*, Study Group 6 developed ITU-R Reports and Recommendation on signing, captions and advanced immersive audio-visual issues, and a new Question which defines quite a number of topics to be studied in this regard. Proposal for revision of Resolution ITU-R 67-0 can be found in the Annex 4 to Document 6/1004.

In accordance with Resolution 169 (Rev. Dubai, 2018), to further enhance participation of academia in the work of the Union, academia members have been granted access to all Study Groups documentation and are able to participate in the Radiocommunication Assembly, Study Groups and Working Party meetings. In accordance with *resolves* 5 of Resolution 169 (Rev. Dubai, 2018), academia do not have a role in decision-making, including the adoption of resolutions and recommendations regardless of the approval procedure.

During the study period 2015-2019, 165 delegates from academia members have participated in meetings of Study Groups and Working Parties.

Resolution ITU-R 69 – *Development and deployment of international public telecommunications via satellite in developing countries* was approved by the Radiocommunication Assembly (RA-15). It mandates ITU-R to conduct a number of activities and studies. Resolution ITU-R 69 (RA-15) continues to serve as a guidance to studies and activities carried out in both ITU-R and ITU-D concerning the development and deployment of international public telecommunications via satellite in developing countries.

Two specific topics associated to Resolution ITU-R 69 have been addressed by ITU-R: broadband technologies via satellite and Next Generation Access Technologies.

ITU-R produced a revision of Recommendation ITU-R S.1782-0 – *Possibilities for global broadband Internet access by fixed satellite systems*, with a new title *Guidelines on global broadband Internet access by fixed-satellite service systems*, which reflects the very significant evolution, both in technology and deployment, of FSS systems to provide broadband services.

ITU-R also produced Report ITU-R M.2460-0 – *Key elements for integration of satellite systems into Next Generation Access Technologies* which provides key elements of satellite networks and use cases envisaged for Next Generation Access Technologies.

ITU-R has been responding to ITU-D with requested information and collaboration and liaised key Recommendations and Reports associated to broadband Internet over satellite networks and will continue to inform ITU-D on the progress of this work and provide relevant updates when available.

# 3 Preparatory work for WRC-19

Study Group activities in preparation for WRC‑19 were conducted through the CPM process, in accordance with Resolution ITU‑R 2-7.

The first session of the 2019 Conference Preparatory Meeting (CPM19-1) was held in Geneva on 30 November-1 December 2015 to organize the preparatory studies for WRC-19. It also identified studies in preparation for the following WRC. A structure for the CPM Report to WRC-19 was agreed together with a preparatory process, working procedures and a chapter structure. The meeting appointed a Rapporteur for each chapter to assist the Chairman in managing the development and flow of draft report contributions. The results of CPM19-1 were published in Administrative Circular [CA/226](https://www.itu.int/md/R00-CA-CIR-0226/en) of the Radiocommunication Bureau, dated 23 December 2015.

The ITU-R preparations for WRC-19 were concentrated in the following responsible groups (listed in the order of the Study Groups):

**Study Group 1** chaired by Mr S. Pastukh (Russian Federation), WP 1A chaired by Mr Raphael Garcia De Souza (Brazil (Federative Republic of)) and WP 1B chaired by Mr Ruoting Chang (China (People’s Rep. of)) and since September 2018 by Mr Leo Kibet Boruett (Kenya (Republic of));

**Study Group 4** chaired by Mr C. Hofer (United States of America), WP 4A chaired by Mr J. Wengryniuk (United States of America) and WP 4C chaired by Mr Nobuyuki Kawai (Japan);

**Study Group 5** chaired by Mr M. Fenton (United Kingdom of Great Britain and Northern Ireland), WP 5A chaired by Mr J. Costa (Canada), WP 5B chaired by Mr J. Mettrop (United Kingdom of Great Britain and Northern Ireland), WP 5C chaired by Mr. P. Nava (Italy), WP 5D chaired by Mr S. Blust (United States of America), **Task Group 5/1** chaired by Ms C. Cook (Canada);

**Study Group 7** chaired by Mr J. Zuzek (United States of America), WP 7B chaired by Mr B. Kaufman (United States of America).

Texts for the draft CPM Report were prepared by the responsible groups identified by CPM19‑1 and provided by the Chairmen of these groups to the CPM-19 Chapter Rapporteurs.

The work was coordinated by the Chairman of CPM-19, in consultation with the CPM-19 Management Team, as defined in Sections 5 and 6 of Annex 1 to Resolution ITU-R 2-7.

In accordance with Section 6 of Annex 1 to Resolution ITU-R 2-7, the CPM-19 Management Team meeting was held in Geneva from 6 to 7 September 2018. It consolidated the draft CPM Report which was made available, in six languages before the deadline stipulated in Resolution ITU-R 2-7, to all Member States and Radiocommunication Sector Members as Document CPM19-2/1.

The Director provided to the second session of CPM-19 (CPM19-2) Reports on WRC-19 agenda items 2 and 4, as well as a preliminary draft Report on WRC-19 agenda item 9 (see Documents [CPM19-2/12](https://www.itu.int/md/R15-CPM19.02-C-0012/en), [CPM19-2/9](https://www.itu.int/md/R15-CPM19.02-C-0009/en) and [CPM19-2/17](https://www.itu.int/md/R15-CPM19.02-C-0017/en) respectively).

The second session of CPM-19 (CPM19-2) met in Geneva from 18 to 28 February 2019 under the chairmanship of Mr K. Al-Awadhi (United Arab Emirates) to consider the draft CPM Report, the contributions from the ITU membership and the additional material submitted by the Radiocommunication Bureau.

CPM19-2 divided the work amongst six working groups according to the agreed Chapter structure. Many sub-groups were also established, including a drafting group of plenary to deal with footnote No. **5.441B** of the Radio Regulations.

table 4.3-1

Structure of the CPM19-2 Report

|  |  |  |
| --- | --- | --- |
| CPM19-2 Groups | Topic | Chairman |
| Working Group 1 | Chapter 1 (Land mobile and fixed services) – AI 1.11, 1.12, 1.14, 1.15 | Ms K. Zhu (CHN) |
| Working Group 2 | Chapter 2 (Broadband applications in the mobile service) – AI 1.13, 1.16, 9.1 (issues 9.1.1, 9.1.5, 9.1.8) | Mr J. Arias Franco (MEX) |
| Working Group 3 | Chapter 3 (Satellite services) – AI 1.4, 1.5, 1.6, 7, 9.1 (issues 9.1.2, 9.1.3, 9.1.9) | Mr N. Varlamov (RUS) |
| Working Group 4 | Chapter 4 (Science services) – AI 1.2, 1.3, 1.7 | Mr V. Meens (F) |
| Working Group 5 | Chapter 5 (Maritime, aeronautical and amateur services) – AI 1.1, 1.8, 1.9 (1.9.1, 1.9.2), 1.10, 9.1 (issue 9.1.4) | Mr W. Sayed (EGY) |
| Working Group 6 | Chapter 6 (General issues) – AI 2, 4, 9.1 (issues 9.1.6, 9.1.7), 10 | Mr P.N. Ngige (KEN) |

Drafting Group of the Plenary RR footnote No. **5.441B**, resulting in text included in Chapter 6 (General issues) under AI 9.1 with cross reference in Chapter 2. Mr S. Pastukh (RUS). Since CPM19-2, the CPM Report has become a contribution to WRC‑19 as Document [3](https://www.itu.int/md/R16-WRC19-C-0003/en). The Report comprises six Chapters, following the structure described above.

The Report also contains in the Annex a list of ITU-R Recommendations, ITU-R Reports and other publications, including certain draft new and 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 2019 will be made available to the World Radiocommunication Conference 2019.

# 4 Activities of the Study Groups

A detailed account of the activities of each of the Study Groups and the CCV during the study period is given in Documents X/1001 submitted to RA-19 (where X = concerned Study Group).

## 4.1 Recommendations, Reports and Handbooks

Up to September 2019, around 200 new or revised Recommendations and 180 new or revised Reports have been approved in the 2015-2019 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. Some notable topic areas for which recommendations and reports are being produced include:

– harmonization of short-range devices;

– propagation studies dealing with building entry loss, loss due to clutter and propagation models and related characteristics for higher frequencies (6-100 GHz);

– transmission system for UHDTV satellite broadcasting, integration of satellite systems into Next Generation Access Technologies;

– systems and networks in the radionavigation-satellite service;

– non-GSO fixed-satellite service systems, global broadband Internet access by fixed-satellite service systems, earth stations in motion communicating with geostationary space stations in the fixed-satellite service;

– technology trends of terrestrial IMT systems considering year 2020 and beyond;

– radiocommunication objectives and requirements for public protection and disaster relief;

– studies on usage and arrangements for Intelligent Transport Systems deployments under the mobile service;

– description of Railway Radiocommunication Systems between Train and Trackside (RSTT);

– characteristics of amateur radio stations in the range 5 250-5 450 kHz;

– technical parameters, operational characteristics and deployment scenarios of ENG, SAB/SAP as utilized in broadcasting programme making and special event coverage;

– digital terrestrial broadcasting systems and related spectrum planning/usages for television, sound radio and multimedia services, including two new second generation digital terrestrial television broadcasting (DTTB) systems;

– artificial intelligence systems for broadcasting programme production and exchange;

– space weather sensor systems;

– technical characteristics for telemetry, tracking and command in the space operation service below 1 GHz for non-GSO satellites with short duration missions;

– EESS (passive) systems in the frequency range 275-450 GHz.

Six new or revised handbooks have also been published, addressing:

– National spectrum management.

– Global trends in International Mobile Telecommunications.

– Computer-aided techniques for spectrum management.

– Guidance for bilateral/multilateral discussions on the use of frequency range 1 350 MHz-43.5 GHz by fixed service systems.

– Digital Terrestrial Television Broadcasting networks and systems implementation.

– Use of Radio Spectrum for Meteorology: Weather, Water and Climate Monitoring and Prediction.

## 4.2 Statistics regarding meetings, workshops/seminars, documentation and finalized texts (in electronic or paper form)

The following figures relate to the study period since RA-15:

– Number of documents processed (to September 2019): 26 153

– Number of pages processed (to September 2019): 388 667

– Number of meetings: 177

– Number of meeting days (total): 988

– Number of days on which meetings were held (block meeting days): 488

– Number of workshops/seminars collocated with meetings: 10

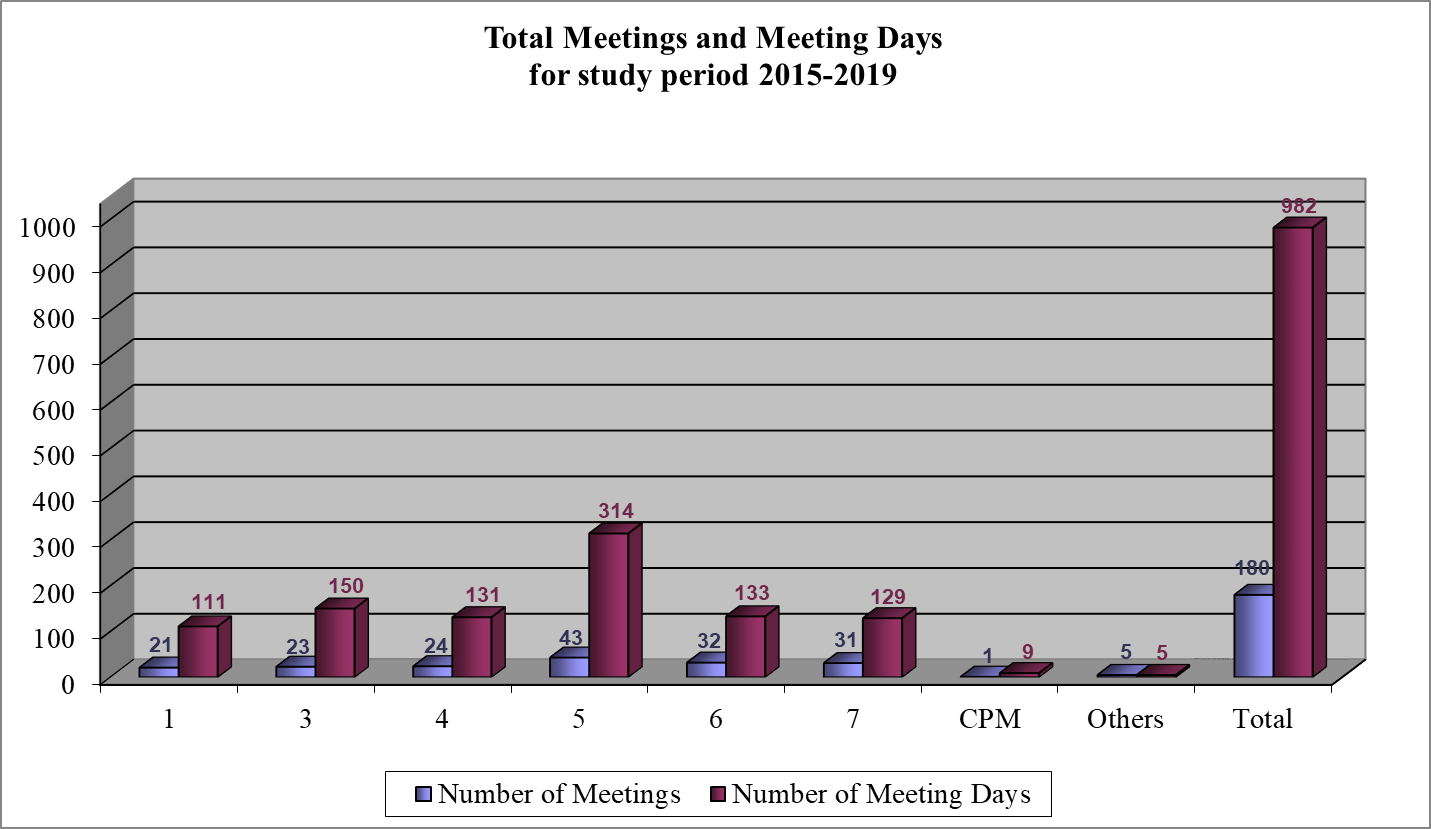
– Average number of participants at SG and WP meetings: 108

– Number of Recommendations approved (to September 2019): 200

– Number of Reports finalized (to September 2019): 186

– Number of Handbooks finalized (to September 2019): 6

The total number of study group and associated working party/task group meetings and meeting days during this study period are shown in the figure below.



## 4.3 Meeting rooms

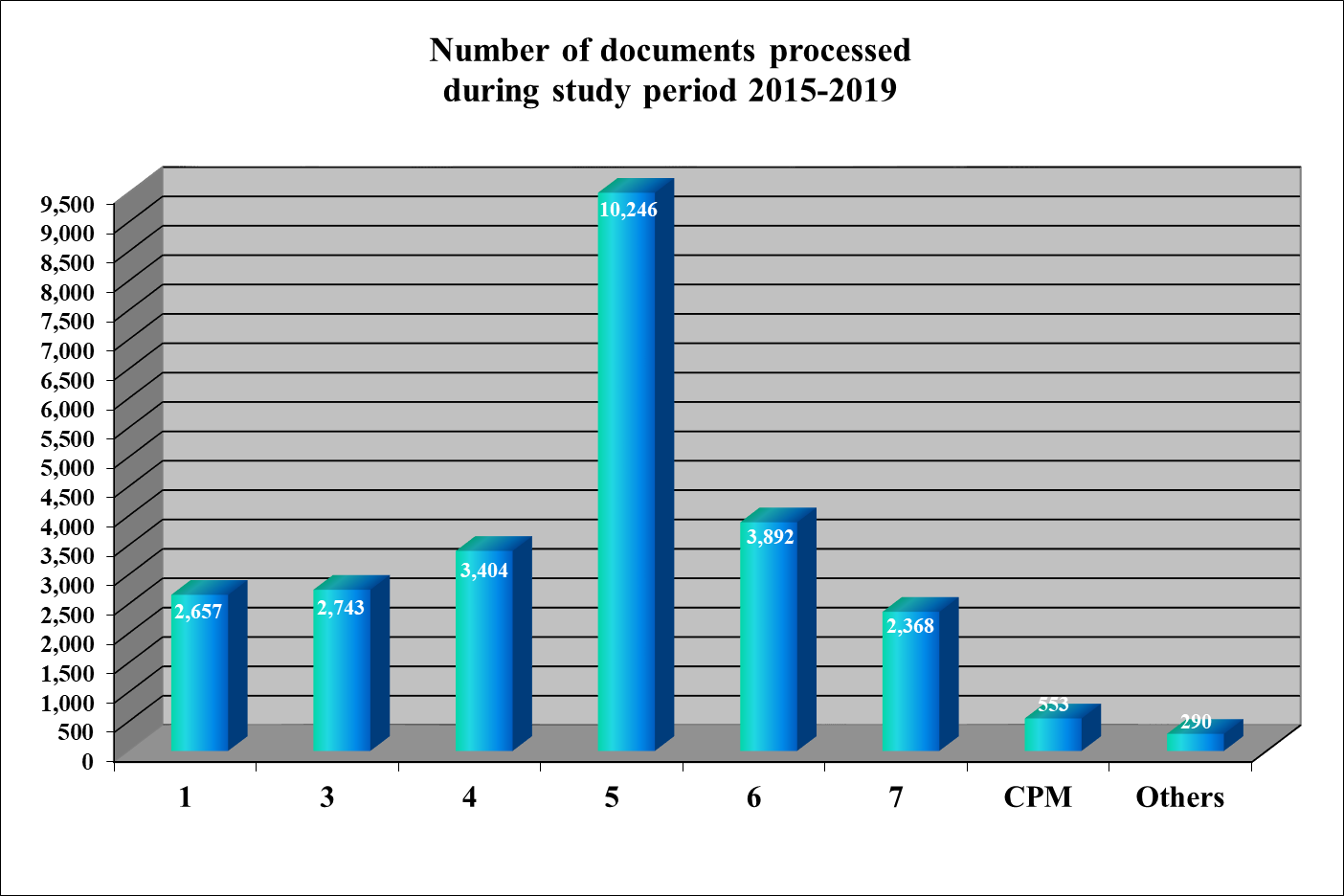
The increased activities of the study groups, in particular, in Study Groups 4 and 5, together with an increased participation of delegates has resulted in the need for a higher number of big meeting rooms (~100-200 people) for concurrent meetings of large working parties. This has led to difficulties in scheduling meetings, extending working hours, and, on some occasions, the need to use external facilities such as CCV and CICG, or the need to hold meetings outside Geneva. This problem has been exacerbated by the increased numbers of meetings being scheduled by the other Sectors and the General Secretariat and by the long lead times now required for booking nearby facilities such as the CICG and CCV. In the coming study period, considering also planned restructuring on the Varembé building, it may be necessary to hold more meetings outside Geneva.

## 4.4 Level of participation

With respect to the previous study period the overall level of participation in all study groups and working parties has increased on average by approximately 21%. In the coming years, it is expected that this increase of participation will continue.

## 4.5 Number of documents

The number of documents produced during this study period, as shown in the figure below, are approximately 17% higher than the numbers for the previous study period.



## 4.6 Interpretation

Study Group meetings are held with interpretation in the six official languages. All Working Party meetings are held in English only.

## 4.7 Approval process

During this study period (up to September 2019), approximately 90% of new or revised Recommendations were approved using the procedure for the simultaneous adoption and approval by correspondence (PSAA). A further 5% were approved by consultation of the Member States following adoption at a study group meeting, and 5% were approved by the process of adoption by correspondence followed by approval by consultation. In all study groups, application of the procedure for simultaneous adoption and approval of Recommendations has become the norm.

## 4.8 Electronic working methods

During this study period the SharePoint tool has been used to facilitate development of draft texts during Working Party and Study Group meetings. This tool has proved to be very popular and is used extensively by all study groups and working parties.

The study groups and working parties are now completely paperless. The SharePoint tool is used for all meetings held outside of Geneva and all such meetings are also completely paperless. It is also used by Rapporteur/Correspondence Groups between the meetings for discussions, organizing meetings and document exchange.

A file synchronization facility has been implemented for all Study Group/Working Party meetings to facilitate access to the most recent versions of documents during meetings.

In order to facilitate remote participation in ITU-R meetings an audio webcast of Study Group and Working Party plenary sessions is provided through the ITU Internet Broadcasting Service (IBS).

Remote participants are able to actively participate in Working Party meetings (e.g. to introduce a contribution) by registering in advance for the meeting and coordinating their active participation at least one month prior to the meeting with the responsible Counsellor.

Captioning is now also provided for the plenary sessions of all Study Group meetings.

## 4.9 ITU-R texts search tool

The development of the database search tool, initiated in 2014, has been completed. The tool enables ITU-R documents, Recommendations, Questions, Reports, Handbooks, Resolutions to be searched and filtered by categories such as the radiocommunication service(s) and applicable frequency band.

# 5 Issues associated with the Radiocommunication Advisory Group (RAG)

These issues are described in the Report from the Chairman of the RAG (Document [RA19/PLEN/6](https://www.itu.int/md/R19-RA19-C-0006/en)).

# 6 Results of the Plenipotentiary Conference 2018 of particular relevance to the Radiocommunication Assembly

The 2018 Plenipotentiary Conference (PP-18) took place in Dubai, United Arab Emirates, from 29 October to 16 November 2018. The main results of direct interest to ITU‑R may be summarized as follows:

Elected Officials to the top five management posts

Mr Houlin Zhao was re-elected to the post of Secretary-General.

Mr Malcolm Johnson was re-elected to the post of Deputy Secretary-General.

Dr Chaesub Lee was re-elected to the post of Director of Telecommunication Standardization Bureau (TSB).

Mr Mario Maniewicz was elected to the post of Director of Radiocommunication Bureau (BR).

Ms Doreen Bogdan-Martin was elected to the post of Director of Telecommunication Development Bureau (BDT).

Elected members of the Radio Regulations Board

Region A: The Americas: Chantal Beaumier (Canada); Fernando Borjón Figueroa (Mexico).

Region B: Western Europe: Yvon Henri (France); Lilian Jeanty (Netherlands).

Region C: Eastern Europe & Northern Asia: Sahiba Hasanova (Azerbaijan); Nikolay Varlamov (Russian Federation).

Region D: Africa: Elsayed Azzouz (Egypt); Samuel Mandla Mchunu (South Africa); Hassan Talib (Morocco).

Region E: Asia & Australasia: Tariq Alamri (Saudi Arabia); Akira Hashimoto (Japan); Doan Quang Hoan (Viet Nam).

Revenues and expenses for the Union – Decision 5 (Rev. Dubai, 2018)

The financial plan of the Union for 2020-2023 was approved, and measures for improving ITU’s efficiency and reducing its expenses are listed in Annex 2 to Decision 5. Measures include the elimination of all forms and instances of duplication of functions and activities between all ITU structural bodies, coordination and harmonization of all seminars, workshops and cross-sector activities, etc.

Strategic Plan – Resolution 71 (Rev. Dubai, 2018)

Resolution 71 approved the strategic plan setting the targets for 2020-2023, and asserting ITU's role in facilitating progress towards the implementation of the Sustainable Development Goals through ICTs. These targets are divided into five strategic goals: growth; inclusiveness; sustainability; innovation; and partnership.

Use of ICTs in emergency and disaster situations – Resolution 136 (Rev. Dubai, 2018)

Resolution 136 instructs the Directors of the Bureaux to continue to support studies through the relevant ITU study groups concerning technical and operational implementation of solutions and identification of the best practices on public policies on emergency telecommunications at local, national and regional levels in order to enhance disaster early warning, prevention, preparedness, relief and recovery, including response to health-related emergencies, taking into account technical and technological developments.

Digital Divide – Resolution 139 (Rev. Dubai, 2018)

The Resolution resolves the ITU should continue the work and activities to support Member States in strengthening their regulatory and policy frameworks. The Bureaux should compile and disseminate best practices and regulatory experiences on national and regional strategies employed to promote investment in telecommunication/ICT infrastructure and services in unserved and/or underserved areas, and facilitate and promote the development of high-speed broadband infrastructure. Specifically the Resolution instructs the Director of the Radiocommunication Bureau to implement actions, in coordination with the Director of the Telecommunication Development Bureau, in order to support studies and projects and, at the same time, promote joint activities aiming to build capacities for increasingly efficient use of the orbit/spectrum resource, with the purpose of expanding affordable access to satellite broadband and facilitating connectivity between networks, and between different zones, countries and regions, especially in developing countries.

Deadline for submission of proposals – Resolution 165 (Rev. Dubai, 2018)

The Resolution establishes a firm submission deadline for all contributions no later than 21 calendar days before the opening of conferences and assemblies of the Union, including plenipotentiary conferences, so as to ensure timely translation and their thorough consideration by delegations (exception, amendment to the Constitution or the Convention – 8 months). It also establishes a firm submission deadline for ITU secretariat documents of no later than 35 calendar days before the opening of conferences and assemblies of the Union, including plenipotentiary conferences, so as to ensure timely translation and their thorough consideration by delegations.

Outer space activities – Resolution 186 (Rev. Dubai, 2018)

The Resolution encourages the dissemination of information, capacity building and the sharing of best practices in the use and development of radiocommunication satellite networks/systems, with the objectives of, inter alia, bridging the digital divide and enhancing the reliability and availability of the satellite networks/systems. Specifically the Resolution instructs the Director of the Radiocommunication Bureau to promote access to information, upon request by administrations concerned, related to satellite-monitoring facilities, in order to address cases of harmful interference in accordance with Article **15** of the Radio Regulations.

Coordination efforts – Resolution 191 (Rev. Dubai, 2018)

This Resolution resolves that the RAG, TSAG and TDAG, including through ISCG, shall continue to consider current and new activities and their distribution among ITU-R, ITU-T and ITU-D for approval by the ITU Member States. It invites RAG, TSAG and TDAG to continue to assist ISCG in identifying of subjects common to the three Sectors and mechanisms to enhance cooperation and collaboration in all Sectors on matters of mutual interest.

Internet of Things – Resolution 197 (Rev. Dubai, 2018)

The Resolution on IoT resolves to promote investment in the development of the IoT, and smart sustainable cities and communities (SSCCs) to support the Sustainable Development Goals. It also instructs the Director of the Radiocommunication Bureau to support the work of relevant ITU-R study groups on IoT and SSCCs and to facilitate the emergence of diverse services in the globally connected world.

Connectivity to broadband networks – Resolution 203 (Rev. Dubai, 2018)

The Resolution instructs the Director of the Radiocommunication Bureau to work in cooperation with Sector Members involved in the provision of services and applications to people, families, businesses and societal functions in order to address the need for further improved broadband networks, including wireless broadband networks, and to share relevant information, experience and expertise with the Telecommunication Development Bureau.

Chairmen and vice-chairmen of Sector advisory groups, study groups and other groups – Resolution 208 (Dubai, 2018)

The conference defined the procedures for appointment of chairmen and vice-chairmen of groups, their qualifications, nomination requirements, and their maximum term.

Small and Medium Enterprises (SMEs) – Resolution 209 (Dubai, 2018)

The new Resolution encourages the participation of SMEs as Associates in the Sectors of the Union by introducing reduced fees for such entities.

Streamlining resolutions

The conference acknowledged the need for streamlining of resolutions and invited Member States, Conferences and Assemblies to support the principle of streamlining the resolutions in order to avoid repetition.

# 7 Assistance to Member States

## 7.1 Assistance to administrations of developing countries

In the period between WRC‑15 and WRC‑19, the Bureau provided assistance to the administrations of developing countries by:

– Supporting national spectrum management activities in the field of space radiocommunication; to this end, missions were undertaken either on request of administrations, or under special missions jointly organized with the BDT, including participation of BR experts to provide capacity building in regional seminars organized by BDT or regional organizations. Furthermore, experts from administrations of least developed countries were granted fellowships to attend BR radiocommunication seminars and workshops. Experts from administrations were also received for individual or group in‑service training in the ITU headquarters on radio regulatory procedures;

– 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.

## 7.2 Assistance to Regional Groups and other groups of countries

In the period between WRC‑15 and WRC‑19, assistance was provided by the Bureau in support of frequency coordination between the administrations of smaller groups of countries.

### 7.2.1 Assistance to the Administrations of Central America and Caribbean (CAC) Region

The Bureau, in collaboration with CITEL, COMTELCA and CTU, organized and successfully completed the assistance to 30 Administrations from Central America and Caribbean (CAC) Region, concerning the use of the VHF band (174-216 MHz) and the UHF band (470-806 MHz).

This assistance was provided through CAC frequency coordination meetings, taking place between March 2017 to September 2018, as well as compatibility analysis performed by the Bureau between the meetings. The assistance was intended to facilitate the processes of transition from analogue to Digital Television (DTT) and the allocation of the Digital Dividend. It lasted 18 months and was finalized at the 4th and final coordination meeting held from 11 to 14 September 2018.

The Reference List of coordinated digital assignments was established. The percentage of assignable channels, corresponding to the submitted digital requirements exceeded 94% in the UHF band and 96% in the VHF band for the countries involved.

The achieved results involved the following activities:

– MIFR update of missing or erroneous data for CAC countries for television broadcasting assignments;

– Elaboration of the new Report ITU-R BT.2432-0 – *Technical criteria used for DTT planning in Central American and Caribbean Region*, adopted by SG 6 at its meeting in October 2018;

– Adaptation and enhancement of the GE06Calc Compatibility analysis to the region, to enable to:

• take into account the recorded fixed and mobile assignments in the Master Register;

• perform Digital-to-Digital, Digital-to-Analogue, Analogue-to-Digital, Digital-to-Fixed and Mobile and Fixed and Mobile to Digital compatibility analysis;

• adopt at the end of the coordination process the Reference List of assignable and coordinated assignments;

• protect this Reference List, using a fully automated system for the compatibility analyses calculations via eTools, which examines all incoming analogue assignments against the records in the Reference List.

### 7.2.2 Assistance to the Black Sea, Caspian Sea and Central Asia Group on frequency coordination matters in the band 470-862 MHz

The Bureau organized and provided technical assistance for the 2nd meeting of the Black Sea, Caspian Sea and Central Asia Group on frequency coordination matters in the UHF band in March 2017. The administrations of Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Russian Federation, Turkey and Uzbekistan participated in the meeting. The current situation and expected developments in utilization of UHF band were discussed. The Terms of Reference of the Group was adopted. Preliminary draft recommendations and criteria for seeking additional channels for DTT in the frequency band 470-694 MHz were established. However, no subsequent meetings have taken place afterwards.

## 7.3 Treatment of cases of harmful interference

### 7.3.1 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 7.3.1‑1 summarizes statistical information regarding terrestrial systems and Table 7.3.1-2 with respect to cases affecting space services.

Table 7.3.1-1

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2016 | 2017 | 2018 | 2019 (till 30.06) |
| Cases submitted for BR information | 38 | 40 | 21 | 12 |
| Cases of assistance to administrations | 27 | 13 | 20 | 11 |

Table 7.4.3-2

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2016 | 2017 | 2018 | 2019  (till 30.06) |
| Cases submitted for BR information | 23 | 22 | 42 | 22 |
| Cases of assistance to administrations | 3 | 8 | 4 | 2 |

Annex 1 to this Report provides an in depth analysis describing the current situation as well as the actions and initiatives being taken by ITU together with the latest developments to contribute to the prevention and resolution of cases of harmful interference affecting space services.

### 7.3.2 Developments regarding specific cases of harmful interference

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

In November 2016, the Italian Administration informed the Bureau about the successful completion of the switch-off of the television transmissions on 61 frequencies that were causing interference, with the exception of those located in the Province of Marche, which had been affected by earthquakes. In January 2017, the switch-off was completed in the Province of Marche.

With respect to VHF 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 request of the RRB, the Bureau met several times with the Italian authorities and broadcasting operators and participated in multilateral meetings between Italy and its neighbouring administrations. Such meetings took place in May 2016, October 2017, June 2018 and July 2019. The meetings evaluated the situation and discussed possibilities to resolve the harmful interference caused by Italian VHF sound broadcasting stations to its neighbouring countries.

At the October 2017 multilateral meeting, the affected administrations presented priority lists of FM stations experiencing harmful interference. Based on these lists, in September 2018 BR produced a document indicating the status of FM stations causing harmful interference, those being interfered with, and the progress achieved. The Bureau periodically updates this document.

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.

As for T-DAB, the Administration of Italy committed to address the interference from a legal, regulatory, technical and operational standpoints. It put into operation a legal framework (2017 law) which forbids the operation of T-DAB stations on non-coordinated frequencies. However, three administrations have already complained about interference on their allotted T-DAB channels. Italy informs that these interference are caused from DAB stations authorized for “experimental tests” some years ago. Additionally, it stated that, after clearing the 700 MHz band, it would be in a position to eliminate all DAB interferences, hopefully in 2021 for the Adriatic region.

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

In addition, 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. These topics are in addition to the collaboration undertaken through ITU-D Question 9/2 that calls for the identification of study topics in ITU-R (and ITU-T), considered to be of particular interest to developing countries.

In response to requests from the BDT, experts from ITU-R and BR have participated in ITU seminars and workshops organized by ITU-D. Within the framework of Resolution ITU-R 11-5 (Further development of the spectrum management system for developing countries), BR has been involved with the design, testing and training associated with the software SMS4DC (Spectrum Management System for Developing Countries), with advice provided on the use of relevant ITU-R Recommendations. In addition, ITU-R Study Group 1 has continued to work closely with the ITU‑D Study Groups in pursuing studies on spectrum usage in accordance with WTDC Resolution 9.

In view of some of the needs of developing countries, the production of Handbooks has continued to be recognized as an important Study Group activity. In this respect, new or revised Handbooks have been developed on topics such as spectrum monitoring, radiowave propagation information for designing terrestrial point-to-point links, amateur and amateur-satellite services, migration to IMT‑2000 systems and use of radio spectrum for meteorology (weather, water and climate monitoring and prediction). It should be noted that Council 2013 revised Decision 571 extending the free online access to include the ITU-R Handbooks on radio-frequency spectrum management to the general public on a permanent basis. Considering the great success of this decision, and taking into account requests from Member States, the BR Director decided in January 2017 to extend this free access to all ITU-R Handbooks.

In addition, as reported in Sections 6 and 7 above, the 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. These actions are being carried out in close cooperation with the BDT and the ITU regional and area offices, and other relevant international organizations and national authorities.

In addition, the BR also participated in:

– Meetings and Workshops of Experts on WTDC Resolution 9 (Rev. Buenos Aires, 2017).

– BDT assistance program dealing with the development of regulations for maritime wireless communication for the Ministry of Communications and Information Technology (MCIT) of Indonesia.

### 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 2015, 2017 and 2019) with the organization of, and participation in, sessions related to spectrum management, with emphasis in 5G and new spectrum management trends.

In 2018 the GSR agenda did not include a session on spectrum-related topics. BR has coordinated with BDT the inclusion of the Spectrum management-related topics in the agenda of GSR-19 and sessions were successfully conducted at this edition.

### 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 is under review with the objective of aligning it to regulators way of classifying the mobile broadband technologies and include a new section on IMT frequencies national allocation and assignments, while considering KPIs on IMT National Spectrum Allocations and Assignments.

### 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.

In 2018, the BR participated in the meetings of Expert Group on Telecom-ICT Indicators (EGTI), and contributed in driving the discussions of the Ad-Hoc Group in the development of a new indicator on IMT National Spectrum Allocations and Assignments.

The BR made presentations during WTIS-15, WTIS-16 and WTIS-17. During WTIS-18, the BR participated in discussions relating to IMT National Spectrum Allocations and Assignments, which endorsed the recommendations from the EGTI.

### 8.1.4 Spectrum Management Training Programme (SMTP)

As in the past, the BR 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, pilot test (conducted in 2015). In 2016, improvements were integrated on the basis of feedbacks. In 2017 a comprehensive revision was made, which provided ITU the opportunity to establish working relationship with some regulators in Latin-America, interested in an edition of SMTP specifically oriented to their staff.

In 2018, BR and BDT took actions towards implementing special editions of SMTP. These actions are still in progress. In 2019 the BR plans to review and revise the material contained in the current SMTP.

## 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, internet of things, artificial intelligence, common patent policy and intellectual property rights and audiovisual 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 between the two Sectors.

– BR representatives attended the World Telecommunication Standardization Assembly 2016.

– BR also participated in the Kaleidoscope academic conference organized by ITU-T during ITU Telecom World.

– BR representative contributed to 8th ITU Green Standards Week 2018.

## 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 dealing with the use of spectrum (APT, ASMG, ATU, CEPT, CITEL and RCC) broadcasting organizations (ABU, ASBU, EBU and HFCC) or more generally with the use of radiocommunications services (e.g. ITSO, ESOA, GVF, GSMA) by organizing, promoting and participating in events to build capacity on the use of the RRs, including WRS and RRS.

The Bureau continues to participate in the activities of the Global Standards Collaboration (GSC). Involvement with 3GPP and IEEE has been maintained, as well as other regional standardization organisations, given their importance and relevance to the work of Study Group 5, in particular the activities on IMT-2020. Other notable areas of liaison with Study Group activities include those with the World Meteorological Organization, ISO and IEC (including CISPR), the World health Organization, Space Frequency Coordination Group and several other entities 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), 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 and ITU-R recommendations/reports. BR experts also participated in various meetings of these organizations.

# 9 The Study Group Department

## 9.1 Human resources

At the end of the study period, the full complement of the BR Study Group Department (SGD) comprises six counsellors, one capacity building officer and seven assistants, in addition to the Chief of Department and his personal assistant. Support for Study Group activities is also provided from BR/IAP (Informatics, Administration and Publications Department) as regards meeting logistics, document dispatch and editorial alignment prior to publication.

With this level of resources within SGD, occasional difficulties arise in providing the required level of support:

– for document processing during busy periods of “block” meetings, especially when concurrent meetings are being held both within and outside Geneva;

– at the professional level, especially for large Study Groups with many subordinate groups, Task Groups and frequent meetings.

## 9.2 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.

# 10 Financial situation

In the light of the financial situation within ITU over the study period, efforts have continually been made to implement the working methods of the Study Groups in the most efficient manner possible. Such measures have tended to address two principal areas – meetings and documentation. In this respect, the duration and frequency of meetings have been assessed in the light of foreseen work programmes, and paperless meetings have become the norm. Some associated new services such as webcast and captioning during meetings have resulted in some increased miscellaneous and internal expenses.

A financial statement concerning Study Group expenditure as of end September 2019 is given in the table below.

Study Groups expenditure

| Including Study Groups: 1, 3, 4, 5, 6, 7, and CPM | 2016-2017 (× 1 000 CHF) | 2018-2019 (× 1 000 CHF) | Total from 2015 to September 2019 (× 1 000 CHF) |
| --- | --- | --- | --- |
| Staff costs | 310 | 628 | 938 |
| Other staff costs | - | 16 | 16 |
| Travel on duty | - | 4 | 4 |
| Contractual services | 33 | 110 | 143 |
| Rental and maintenance of premises and equipment | 76 | 40 | 116 |
| Materials and Supplies | 26 | 7 | 33 |
| Public and internal services | 22 | - | 22 |
| Miscellaneous | - | 2 | 2 |
| **Total** | **467** | **807** | **1 274** |

Annex 1

Cases of Harmful Interference to Space Services

# 1 Implementation of Resolution 186 (Rev. Dubai, 2018)

On 1 September 2018, the Radiocommunication Bureau released the operational version of the on-line application “Satellite Interference Reporting and Resolution System” (SIRRS) to facilitate the reporting and exchange of information between Administrations and the Bureau concerning cases of harmful interference affecting space services (see [CR/435](https://www.itu.int/md/R00-CR-CIR-0435/en) of 28 August 2018). The Bureau previously released a beta-version for testing by administrations (see [CR/428](https://www.itu.int/md/R00-CR-CIR-0428/en) of 13 March 2018).

224 individual users from 84 Administrations have so far been registered in SIRRS. Since the release of the operational version on 1 September 2018 until 30 June 2019, 38 cases of harmful interference were reported through SIRRS.

The Bureau hopes that the SIRRS application may allow administrations to report more easily cases of interference affecting space services under Article **15** of the Radio Regulations (see in particular No. **15.27**) and intends to continuously improve the SIRRS application, taking into account feedbacks from administrations and the latest developments in ITU-R Study Groups on Recommendations and Reports associated to space monitoring and interference reporting.

Administrations that have not been registered in the SIRRS system yet are requested to do so following the procedure indicated at the following website:

<https://www.itu.int/en/ITU-R/space/SIRRS/Pages/default.aspx>

# 2 Cases of Harmful Interference affecting Space Services reported to the Bureau

Statistics on reports of harmful interference submitted to the Bureau from 2011 to 2018 are shown in the diagram below:

The total bandwidth of geostationary satellite networks affected by harmful interference seems to be increasing. However, percentage of spectrum for which no harmful interference was reported has been stable (99.94 % ± 0.02% in the last 4 years (2015-2018)) because the total geostationary capacity recorded in MIFR has also increased.

From 01.01.2015 until 30.06.2019 the Bureau received reports concerning 152 cases and provided assistance when so requested by the affected Administration(s).

Summaries of some notable cases of harmful interference are found below:

## 2.1 Fixed-Satellite Service, Broadcasting-Satellite Service and associated Space Operations Functions in the frequency bands 6/4 GHz and 14-17-18/10-12 GHz

Harmful interference was caused due to lack of coordination, unauthorized use, unnecessary emissions as defined in No. **15.1** of the Radio Regulations (typically a high-power unmodulated carrier) and technical/operational failures.

## 2.2 Radio Navigation Satellite Service (RNSS) in the frequency bands 1 575.42 ± 15.345 MHz and 1 227.60 ± 11 MHz

Interfering carriers in the frequency bands 1 575.42 ± 15.345 MHz (L1 signal) as well as 1 227.60 ± 11 MHz (L2 signal) with a nature of interference described in Article **15.1** of the Radio Regulations affected international communications either in the form of lost messages or total unavailability of the service. Affected receivers were on board of aircrafts and maritime vessels near airports and over international waters.

The following possible interference sources were identified:

### 2.2.1 Use of transmitting devices without the required authorization or license

The Bureau draws special attention to No. **15.28** of the Radio Regulations requiring “absolute international protection” of transmissions used for safety and regularity of flights, and to Article 45 of the ITU Constitution “All stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference…”.

The Bureau wishes to inform Administrations of these cases while encouraging to take all possible measures at national level, including adequate legislation and enforcement mechanisms that prevent harmful interference cases originated by transmitting stations not in conformity with Article **18** of the Radio Regulations, which could operate in derogation of the abovementioned provisions of the ITU Constitution and Radio Regulations.

### 2.2.2 Military exercises or operations near zones of conflict:

While recognizing that “Member States retain their entire freedom with regard to military radio installations” (see § 202 in Article 48 of Constitution), these installations must, so far as possible, take measures to prevent harmful interference (see § 203 in Article 48 of Constitution).

Member States are invited, when assessing the interference risks associated with conflict zones or planning military exercises, to consider that the use of satellite-based systems can potentially be impacted beyond that zone, and further enhanced civil-military coordination is required.

## 2.3 Mobile-Satellite Service in the frequency bands 1 626.5-1 660.5 MHz, 1 980‑2 010 MHz and 2 670-2 690 MHz

**2.3.1** One GSO satellite network experienced harmful interference in several occasions in the frequency band 1 626.5-1 660.5 MHz associated to the uplink user terminal, as well as its space operations functions uplink in 6 GHz.

**2.3.2** Two GSO satellite networks have experienced harmful interference affecting their uplinks in the frequency band 2 670-2 690 MHz since 2016. Measurements and analysis provided by the affected administration conclude that interference is the result of the aggregation of LTE signals radiated from a large number of terrestrial LTE base stations. Annex 9 to Document [4C/472](https://www.itu.int/md/R15-WP4C-C-0472/en) refer to this case of interference.

**2.3.3** One non-GSO satellite network in medium earth orbit has experienced harmful interference in its uplink in the 1 980-2 010 MHz band (this sharing situation is studied under WRC-19 agenda item 9.1, issue 9.1.1). Based on the results of static and dynamic theoretical analysis, which were confirmed by operational measurements, the affected Administration indicated that the origin of the harmful interference is the aggregation of transmissions from terrestrial IMT base stations to user equipment. Document [5D/1265](https://www.itu.int/md/R15-WP5D-C-1265/en) refer to this case of interference.

## 2.4 Earth Exploration-Satellite Service (passive) in 1 400-1 427 MHz band

Non-GSO satellite networks carrying passive sensors observing the 1 400-1 427 MHz band have been affected by harmful interference originating from:

1. Unwanted emissions from radars and other radio devices operating in adjacent bands and exceeding levels contained in Resolution **750 (Rev.WRC-15)**.

2. Unauthorized use of CCTV wireless devices making illegal use of the passive band in contradiction with No. 5.340 of the Radio Regulations.

3. Intermediate Frequency Radiation from BSS receivers due to poor shielding of cables and connectors (further information on this case may be found in Section 2.3.3 of the Chairman’s Report of ITU-R Working Party 7C, see Document [7C/379](https://www.itu.int/dms_ties/itu-r/md/15/wp7c/c/R15-WP7C-C-0379!!MSW-E.docx)).

## 2.5 Radio Astronomy Service in the frequency band 1 610.6-1 613.8 MHz

Several Administrations reported experiencing harmful interference into their Radio Astronomy stations in the frequency band 1 610.6-1 613.8 MHz due to unwanted emissions originating from the downlink of a non-GSO satellite network in the mobile satellite service operating in the upper adjacent band.

The case was carefully considered by the Radio Regulations Board at its 74th, 75th, 76th and 77th meetings. The Board noted with satisfaction the continued dialogue and cooperation amongst the administrations involved on this matter. The Board also noted with concern the divergence in the conclusions of both parties on the interference situation caused by the new generation of the abovementioned non-GSO satellite network to radio astronomy stations and urged the administrations to continue these efforts and coordinate their interference measurements to provide viable and convergent results.

# 3 Extension of the International Monitoring System

During this 4-year period, ITU signed Cooperation Agreements for the use of Space Monitoring facilities with the 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**).

# 4 ITU Satellite Symposia

ITU organized meetings bringing together regulators, satellite operators, space agencies and the satellite industry in Geneva (Switzerland) in 2016, San Carlos de Bariloche (Argentina) in 2017, Geneva (Switzerland) in 2018 and San Carlos de Bariloche (Argentina) in 2019 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.

# 5 ITU-R Recommendations and Reports

ITU-R Working Party 7C developed Recommendation ITU-R RS.2106-0 – *Detection and Resolution of radio frequency interference to Earth exploration-satellite service (passive) sensors*, which scope is:

“Administrations operating EESS passive sensors which encounter instances of harmful radio frequency interference (RFI) should use the information in this Recommendation and its RFI reporting form in recording and reporting the RFI instance to the administration with jurisdiction over the transmitting stations which are causing the interference. The attached RFI reporting form should be provided in addition to the form in Appendix **10** of the Radio Regulations and is intended for use by administrations to report additional detailed information on interference to EESS passive sensors.”

In addition to the information in Chapter 5.1 on “Monitoring of spacecraft emissions” of the ITU-R Handbook on Spectrum Monitoring (Edition 2011) and Report ITU-R SM.2182-2 on “Measurement facilities available for the measurement of emissions from both GSO and non-GSO space stations” (approved in June 2019), ITU-R Working Party 1C developed Report ITU-R SM.2424-0 to provide “Measurement techniques and new technologies for satellite monitoring” (approved in June 2018). The purpose of this Report is “to provide a comprehensive description of the necessary functions of satellite monitoring stations, and related technical requirements for new monitoring solutions, as systematic and intuitive guidance for administrations that wish to establish satellite monitoring capabilities”.

In addition to the information in Report ITU-R SM.2181-0 on the “Use of Appendix **10** of the Radio Regulations to convey information related to emissions from both GSO and non-GSO space stations including geolocation information” (approved in 2010), ITU-R Working Party 1C is currently developing new guidelines on the procedure to follow in accordance with Article **15**, and the parameters and supplementary information to Appendix **10** that can be submitted to the Bureau when dealing with cases of harmful interference affecting Space Services in different interference scenarios.

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