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| **Council 2021 Virtual consultation of councillors, 8-18 June 2021** |  |
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| **Agenda item: PL 2.5** | **Document C21/27-E** |
| **22 February 2021** |
| **Original: English** |
| **Report by the Secretary-General** | |
| REPORT ON THE RADIOCOMMUNICATION ASSEMBLY 2019 (RA-19) AND THE WORLD RADIOCOMMUNICATION CONFERENCE 2019 (WRC-19) | |

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| Summary  Further to Resolution 809 of the WRC-15 (Geneva, 2015), and in accordance with Council Resolution 1380 (Modified 2017), the World Radiocommunication Conference 2019 was held in Sharm el-Sheikh (Egypt) from 28 October to 22 November 2019. Preceding the WRC-19, the Radiocommunication Assembly was also held in Sharm el-Sheikh from 21 to 25 October 2019.  This document was originally prepared as C20/27 for submission to the 2020 session of the Council. The first VCC reviewed the document and proposed that the next physical meeting of the Council take note of the report.  Action required  The Council is invited to **take note** of this report.  \_\_\_\_\_\_\_\_\_\_\_\_  References  [*Resolution 809 (WRC-15)*](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000C0027PDFE.pdf)[*Council Resolution 1380 (Modified 2017)*](https://www.itu.int/md/S17-CL-C-0141/en)*,* [*C20/27*](https://www.itu.int/md/S20-CL-C-0027/en) |

**1 Introduction**

1.1 Further to Resolution 809 of the WRC-15 (Geneva, 2015), and in accordance with Council Resolution 1380 (Modified 2017), the World Radiocommunication Conference 2019 (WRC-19) was held in Sharm el-Sheikh, Egypt from 28 October to 22 November 2019 preceded by the Radiocommunication Assembly from 21 to 25 October 2019.

1.2 The RA-19, which was chaired by Mr Sergey Pastukh of the Russian Federation was attended by 521 participants, which include 473 delegates representing 91 ITU Member States. Charting future directions in radiocommunication systems and information and communication technologies, RA-19 set the future work programmes for the ITU-R and approved a range of ITU-R Recommendations and Resolutions that will have a global impact on future radiocommunication technologies.

1.3 A total of 3,420 participants representing 163 Member States and 129 observer organizations attended WRC-19.

1.4 At the first Plenary Meeting, Mr Amr Badawi (Egypt) was elected as Chair of the WRC-19. Six Vice-Chairs were elected as follows:

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| Mr K. J. Wee (Rep. of Korea) | Ms G. Koh (United States) |
| Mr T. Al Awadhi (United Arab Emirates) | Mr A. Kühn (Germany) |
| Mr P. Zimri (South Africa) | Mr S. Pastukh (Russian Federation) |

1.5 The following committees were established (see also WRC-19 structure in [Document WRC‑19/21R1](https://www.itu.int/md/R16-WRC19-C-0021/en)):

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| Committee 1  (Steering) | (composed of the Chair and Vice-Chairs of the Conference and of the Chairs and Vice-Chairs of the other committees) |
| Committee 2 (Credentials) | **Chair**: Mr T. Kim (Kazakhstan)  **Vice-Chairs:**  Mr T. Chee (New Zealand); Mr A. Majeed (Iraq);  Mr S. Ritchie (Ireland); Mr H. Bude (Uruguay);  Mr H. Kanor (Ghana) |
| Committee 3 (Budget Control) | **Chair**: Mr D. Obam (Kenya)  **Vice-Chairs**: Mr C. Hose (Australia); Mr M. Abdelhaseeb (Egypt);  Mr A. Calinciuc (Romania); Mr N. Lopez Guerrero (Peru);  Mr A. Kydyrmyshev (Kyrgyzstan); Mr A. Kisaka (Tanzania) |
| Committee 4 (Specific agenda items) | **Chair**: Mr J. Arias (Mexico)  **Vice-Chairs**: Mr H. Seong (Korea (Rep. of));  Mr M. Aljnoobi (Saudi Arabia); Mr G. Osinga (Netherlands);  Mr G. Abdullayev (Azerbaijan);  Ms S. Banyenza (Tanzania); Ms A. Sanders (United States) |
| Committee 5 (Specific agenda items) | **Chair**: Mr N. Kawai (Japan)  **Vice-Chairs**: Mr P.N. Phuong (Viet Nam); Mr A.Belkhadir (Morocco);  Mr E. Fournier (France); Mr T. Bakaus (Brazil);  Mr M. Strelets (Russian Federation);  Mr S. Boubacar Coulibaly (Mali) |
| Committee 6  (Specific agenda items) | **Chair**: Mr M. Webber (Germany)  **Vice-Chairs:**  Mr Y. Xie (China); Mr K.Smail (Algeria);  Ms C. Cook (Canada); Mr D. Dusmatov (Uzbekistan);  Mr V. H. Ottou (Cameroon); Mr A. Kholod (Switzerland) |
| Committee 7  (Editorial) | **Chair**: Mr C. Rissone (France)  **Vice-Chairs:** Mr G. Yayi (Benin); Mr D. Cherkesov (Russian Federation); Ms R. Gharsallaoui (Tunisia); Ms C. Lyons (United Kingdom);  Ms I. Martinez Ponte (Spain); Mr Z. Zhao (China) |
| Ad Hoc Group of the Plenary | **Chair:** Ms C. Cook (Canada) |

1.6 WRC-19 was a fully paperless conference. In order to facilitate the handling of the 579 documents submitted to the conference containing 2598 proposals, the Proposals Management System was further enhanced in advance of WRC-19, after its successful use in previous ITU conferences.

1.7 The Conference Proposals Interface was also further developed in order to assist Member States in creating and submitting their proposals for the work of the conference. This system was extensively used by the membership during the period leading up to WRC-19.

1.8 Other electronic tools used during the conference were: the WRC-19 SharePoint, the WRC-19 Smartphone Applications (on both iOS and Android platforms), and the Sync Application.

1.9 In line with ITU Information/Document Access Policy, input documents were made accessible to the public in advance of the conference. The Provisional Final Acts of WRC-19 are also available for public access as they are considered the main output of the conference.

1.10 The Plenary sessions, as well as those of Committees 4, 5, and 6 were webcasted and captioned during the conference, and the corresponding files (archives) are available on the WRC-19 website.

1.11 Full information on WRC-19, including the Provisional Final Acts as well as all documents, photos, and videos can be found at: <https://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/default.aspx>

**2 Main results of WRC-19**

2.1 WRC-19 addressed over 36 topics related to frequency allocation and frequency sharing for the efficient use of spectrum and orbital resources. The following are WRC-19 key outcomes:

**Mobile and fixed broadband communications**

2.2 Satisfying IMT-2020/5G requirements in high capacity spectrum, the WRC-19 identified a total of 17.25 GHz of additional spectrum for IMT in frequencies between 24 GHz and 71 GHz, 86% of which was harmonized on a global basis. The additional (millimetre wave) frequency bands identified for IMT globally are the 24.25-27.5 GHz, 37-43.5 GHz and 66-71 GHz bands, with regional and country identifications made in the 45.5-47 GHz and 47.2-48.2 GHz bands.

2.3 To protect systems in the Earth exploration-satellite service (passive) in 23.6 – 24 GHz, WRC-19 updated Resolution 750 (Rev. WRC-19) to specify limits of unwanted emission power levels from IMT systems in the 24.25-27.5 GHz band. The WRC-19 established a two-step approach whereby the limit on unwanted emission power levels become even more stringent for IMT systems deployed after 1 September 2027, the timeframe when it is anticipated that a greater number of IMT systems would be in service in that frequency range.

2.4 WRC-19 changed the regulatory conditions for wireless access systems, including radio local area networks (WAS/RLANs) in the band 5 150 -5 250 MHz. This decision allows for the use of Wi-Fi devices in trains and cars, which was very much sought by the automotive and railway industries. It also permits a limited deployment of outdoor WAS/RLANs, with due protection of space services.

2.5 WRC-19 identified various frequency bands for high altitude platform stations (HAPS) on a global basis and along with other bands in Region 2, with total of 5.25 GHz spectrum. This will facilitate the development and implementation of HAPS and will enable affordable broadband connectivity and telecommunication services in underserved communities and in rural and remote areas, including mountainous and desert zones, thus connecting the unconnected. HAPS can also be used for disaster recovery communications.

2.6 WRC-19 identified various bands between 275 and 450 GHz for the land mobile and fixed services, with conditions necessary to protect the Earth‑exploration satellite service (EESS) (passive) applications in some of these bands. The identification enables future high data rate fixed and mobile systems with data rates more than 100 Gbit/s. The protection of passive services needs further studies.

**Amateur radio service**

2.7 WRC-19 made allocations to the amateur service on a secondary basis in the frequency band 50-52 MHz in Region 1, with the conditions to provide protection to the incumbent services. In some R1 countries the allocation to the amateur service is on a primary basis in the entire band 50-54 MHz or its parts. Through this action, WRC-19 completed harmonization of spectrum throughout the three Regions, since in Regions 2 and 3 the allocation existed before WRC-19. This will enhance radio amateur’s capacity to communicate in this frequency band.

**Radiocommunications for Transportation Systems**

2.8 WRC-19 adopted a new Resolution on Railway radiocommunication systems between train and trackside (RSTT)**.** It invites ITU-R to continue the development of the ITU-R Recommendations/Report for spectrum harmonization of RSTT. Countries are encouraged, when planning for their RSTT, to consider these study results. This decision contributes to global and regional harmonization of RSTT applications, enabling economies of scale and interoperability.

2.9 WRC-19 adopted a new WRC Recommendation on Intelligent Transport Systems (ITS). It recommends administrations to consider the harmonized frequency bands, as described in the relevant Recommendations (e.g. ITU-R M.2121), when planning and deploying evolving ITS applications. This decision contributes to global and regional harmonization of ITS applications, enabling economies of scale and interoperability.

**Enhanced Maritime Communications Systems and Services**

2.10 NAVDAT (Navigation Data) is a digital system to broadcast maritime safety information, including navigation and meteorological warnings. WRC-19 authorized the usage of NAVDAT in certain medium and high frequency bands in the maritime mobile service, which will provide a variety of safety related information to ships using digital technologies.

2.11 WRC-19 adopted the regulatory provisions necessary for adding Iridium as a second satellite provider to the Global Maritime Distress and Safety System (GMDSS). Specifically, WRC-19 upgraded the allocation to the maritime-mobile satellite service in the downlink and entered this band in RR Appendix 15 for GMDSS. Additionally, regulatory provisions were reinforced to protect radio astronomy in the lower adjacent band and the mobile-satellite service in the same band and adjacent upper band. Introduction of this second GMDSS satellite provider, which is a non-geostationary orbit (non-GSO) system, is very beneficial for the maritime community. It allows the GMDSS to cover the entire globe, including polar areas, and reinforces competition in the area of maritime communications.

2.12 WRC-19 regulated the usage of maritime frequency channels for AMRDs by segregating these channels into safety-related and non-safety related groups and limited access to them accordingly. By regulating the operation of AMRDs, the WRC-19 further enhanced safety of navigation at sea.

2.13 To enable the satellite component of the VHF Data Exchange System (VDES), WRC-19 made secondary allocations to the maritime mobile-satellite service. WRC-19, by enabling the satellite component of VDES, extended the VDES service beyond the coastal areas reached by the terrestrial component, which was already approved by WRC-15, to global coverage, and allows for the implementation of complete VDES concept. This decision enhances VHF communications and improves maritime safety on a global basis.

**Global Aeronautical Distress and Safety Systems**

2.14 WRC-19 was asked to consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS). Based on the results of ITU-R studies, WRC-19 did not make any regulatory changes in the Radio Regulations to accommodate GADSS since it represents an evolving performance-based system that is difficult to describe in the specific regulatory terms.

**Satellite Services**

2.15 WRC-19 adopted a new regulatory framework, including the bringing into use and a milestone-based approach for the deployment of non-GSO satellite constellations in specific frequency bands and services. The new milestone-based regulatory framework will enable mega constellations of satellites - hundreds to thousands of spacecrafts in low-Earth orbit - to rapidly come to fruition ensuring the operation of as many systems as possible. The approach will help ensure that the Master International Frequency Register is aligned with the actual deployment of non-GSO satellite systems. In making this decision, the WRC-19 struck a balance between the prevention of spectrum warehousing, the proper functioning of coordination, notification and registration mechanisms, and the operational requirements related to the deployment of non-GSO systems.

2.16 WRC-19 opened up new orbital slots for broadcasting satellites, providing developing countries with the opportunity to regain access to spectrum orbit resources thanks to a priority mechanism especially set for them.

2.17 WRC-19 defined the regulatory, operational and technical conditions under which frequency bands in the 30/20 GHz frequency range can be used by earth stations in motion (ESIM) communicating with geostationary-satellite orbit (GSO) space stations in the fixed-satellite service in all Regions. This decision will enable the connection of people on ships (maritime ESIM), aircraft (aeronautical ESIM) and land vehicles (land ESIM) and ensure their safety, security and comfort while in motion. It will also increase the use and further develop ESIMs while protecting other GSO networks and non-GSO systems as well as terrestrial services.

**Science Services**

2.18 WRC-19 accorded protections to EESS as well as meteorological and other passive services in adjacent bands, such as the space research service (SRS) to ensure that space‑based monitoring of the Earth and its atmosphere remain unhindered.

2.19 WRC-19 adopted measures to ensure that satellite services supporting meteorology and climatology, which aim to safeguard human life and assess the state of natural resources, will be protected from harmful radio‑frequency interference, as will systems used by radio astronomers for deep space exploration.

2.20 WRC-19 adopted additional measures to ensure that radio astronomy stations will be protected from any harmful radio interference from other space stations or satellite systems in orbit.

**Palestine**

2.21 WRC-19 adopted measures to ensure the continuous assistance and support for the timely implementation of new technologies, including 4G and 5G networks and services, in Palestine.

**Agenda for WRC-23 and preliminary agenda for WRC-27**

2.22 WRC-19 adopted new Resolutions containing the agenda for WRC-23 and the preliminary agenda for WRC-27. The WRC-23 agenda contains 19 specific agenda items on technology development and new spectrum requirements for users in the terrestrial, aeronautical, maritime, satellite or science services. The WRC-23 agenda contains also the usual standing agenda items and will further consider the preliminary agenda for WRC-27. The WRC-23 agenda will be presented in a separate document to Council 2020.

**Gender Declaration**

2.23 WRC-19 declared the commitment of the sector to gender equality and balance. It identified specific actions for the ITU-R to accelerate efforts to ensure that all its policies, work programmes, information dissemination activities, publications, study groups, seminars, courses, assemblies, and conferences reflect the commitment to gender equality, and promote gender balance. Further, it declared that ITU Member States and Sector Members should encourage the adoption of proven measures to increase globally the number of women pursuing academic degrees at all levels in STEM fields, particularly those related to ICTs. The WRC-19 also declared that Member States should consider and adopt a Resolution at the 2023 Radiocommunication Assembly on gender equality, equity, and parity in the ITU-R.

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