World Radio Conferences (WRC): WRC-15 main outcomes WRC-19 Agenda Topics

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World Radio Conferences, WRC

WRC performs a complete and detailed review of the Radio Regulations RR (RR), and its Rules of Procedure (RoP)

WRC updates RR & RoP considering technological developments on Spectrum Radio and sector realities and challenges, to respond early and appropriately to these changes.

WRC have the authority to modify the RR by addenda, modifications or deletions they deem pertinent. These modifications are made by consensus, and only if necessary, would vote (one vote per administration).

Purpose of ITU WRC

1. Create regulatory certainty for a multi-trillion dollars activity that provides radiocommunications-based services to billions of people in all countries worldwide, playing a increasingly important role in the development of our societies
2. Strike the right balance between the spectrum requirements of all radiocommunication services
3. Creating certainty requires consensus in order to achieve stable results on a sustainable use of orbit/spectrum resources
4. Reaching consensus requires time, efforts and patience.
5. This is the price to pay for developing and maintaining a sustainable ecosystem for radiocommunications and avoid massive disruptions.

WRC Duties

1. Consider any radiocommunication matter of worldwide character

2. Develop instructions to the Radio Regulations Board and the Radiocommunication Bureau, and review their activities

3. Determine issues considered by Radiocommunication Assembly and Study Groups as part of the preparatory work for WRC future

4 . Set agenda of next WRC, and subsequent draft.

WRC Calendar

WRCs performs every 4 years; normally is held at Geneva, Switzerland, with a typical duration of 4 weeks

Last WRC: Geneva, Switzerland 2-27 November 2015 (WRC-15)

Next WRC:

- Sharm el-Sheikh (Egypt) 28/10 – 22/11 2019 (WRC-19)

- Geneva, Switzerland (tbc) 2023 (WRC-23)

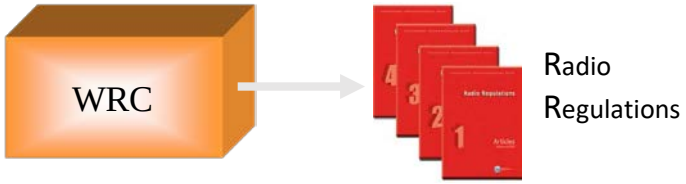
Inter WRC preparatory meetings (CPM) are held, typically two:

1st : the week after the WRC; 2nd : ~ 6 months before next WRC.

Regional conferences are held, usually one for each regional ICT Organization, 6 to 12 months before each WRC.

The WRC Purposes

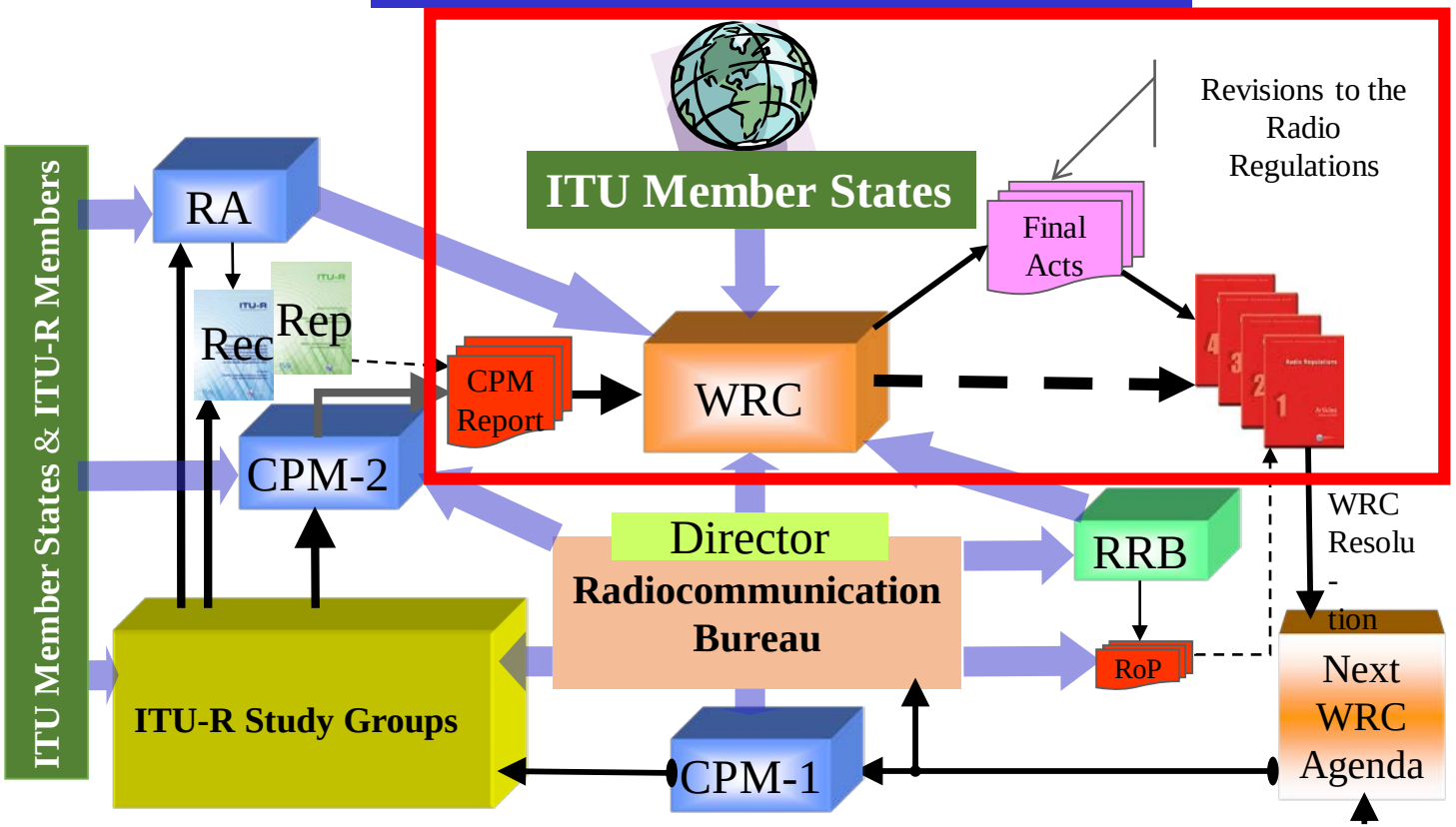
- ✓ **Updates the Radio Regulations (CS* 89)**
  (treaty status)
  - **Spectrum Allocation**
  - **Coordination and Notification procedures**
  - **Administrative and operational procedures**



- ✓ **Adopts Resolutions**
- ✓ **Held every 4 years (CS* 90)**
- ✓ **Additional provisions in CV* and GR***

*** Constitution (CS), Convention (CV) and General Rules (GR) of Conferences, Assemblies and Meetings of the ITU are available in ITU Collection of Basic Texts (www.itu.int/pub/S-CONF-PLEN)**

The WRC Cycle



RRB: Radio Regulations Board
RA: Radiocommunication Assembly
WRC: World Radiocommunication Conference
CPM: Conference Preparatory Meeting
Rec: ITU-R Recommendation
RoP: Rules of Procedure

Overview of the preparations

(WRC-15 Docs)

Agenda: draft in WRC Res & final in Council Res

APT (Doc. 32)

ASMG (Doc. 25, also 43, 144, 189)

ATU (Doc. 28)

CEPT (Doc. 9)

CITEL (Doc. 7)

RCC (Doc. 8, also 146, 270)

Regional preparation
Resolution 72 (Rev.WRC-07)

Proposals

Coordinated common proposals

Informal Group
(Structure & Chairmanship)

Proposals

Member States

RA

RA Report
(Doc. 216)

CPM Report
(Doc. 3)

Director's Report
(Doc. 4 & Doc. 5)

WRC

Conference Secretariat
(BR & GS)

Final Acts

Radio Regulations
(CS89)

Some statistics on WRC-15

Took place from 2 to 27 November 2015 in Geneva

- **3275 Participants**
  (2780 from MS & 495 from OE)
- **162 Member States**
- **130 Observers**

- **678 Documents**
  submitted with MS proposals
- **2888 MS Proposals**
  ~2/3 of common proposals

WRC-15 numbers

- 4 weeks; preceded from the ITU Radio Assembly RA-15 (1 week); followed by WRC-19 CPM-1 (2 days)
- Around 3300 participants from 162 Member States,
- Around 500 participants representing 130 other entities, including industry, also attended the conference as observers
- 667 Documents submitted before WRC-15 which include 2700 proposals
- WRC-15 addressed over 40 topics related to frequency allocation and frequency sharing for the efficient use of spectrum and orbital resources.

WRC-15 Structure

- Committee 1: *Steering Committee*
- Committee 2: *Credentials Committee*
- Committee 3: *Budget Control Committee*
- **Committee 4, 5 and 6: *Specified Agenda Items Committees***
- Committee 7: *Editorial Committee*

Committee 4 (mainly terrestrial issues)

- **Working Group 4A (Aeronautical and Radiolocation)**
  1. Sub-Working Group to deal with Agenda item 1.5 (SWG 4A1 a.i. 1.5)
  2. Sub-Working Group to deal with Agenda item 1.17 (SWG 4A2 a.i. 1.17)
  3. Sub-Working Group to deal with Agenda item 1.18 (SWG 4A3 a.i. 1.18)
  4. Sub-Working Group to deal with Agenda item on Global Flight Tracking (GFT) (SWG 4A4 - GFT)
- **Working Group 4B (Maritime and Amateur)**
  1. Sub-Working Group to deal with Agenda item 1.4 (SWG 4B1 a.i. 1.4)
  2. Sub-Working Group to deal with Agenda item 1.16 (SWG 4B2 a.i. 1.16)
  3. Agenda item 1.15 (to consider spectrum demands for on-board communication stations in the maritime mobile service in accordance with Resolution 358 (WRC 12) will be treated directly at the working group level.
- **Working Group 4C (Mobile and PPDR)**
  1. Sub-Working Group to deal with agenda item 1.1 (SWG 4C1 a.i. 1.1)
  2. Sub-Working Group to deal with agenda item 1.2 (SWG 4C2 a.i. 1.2)
  3. Sub-Working Group to deal with agenda items 1.3 and 9.1; 9.1.7 (SWG 4C3 a.i. 1.3, issue 9.1.7)

Committee 5 (mainly satellite issues)

- **Working Group 5A (Space Science)**
  1. Plenary to deal with Agenda items 1.13, 5 (Resolution (Rev.WRC-03) 74) and relevant parts of 9.2
  2. Sub-Working Group to deal with Agenda item 1.11 (SWG 5A1 a.i. 1.11)
  3. Sub-Working Group to deal with Agenda item 1.12 (SWG 5A2 a.i. 1.12)
  4. Sub-Working Group to deal with Agenda item 1.14 (SWG 5A3 a.i. 1.14)
- **Working Group 5B (Satellite Allocation)**
  1. Sub-Working Group to deal with agenda item 1.6 (SWG 5B1 a.i. 1.6)
  2. Sub-Working Group to deal with agenda item 1.7 (SWG 5B2 a.i. 1.7)
  3. Sub-Working Group to deal with agenda item 1.9.1 (SWG 5B3 a.i. 1.9.1)
  4. Sub-Working Group to deal with agenda item 1.9.2 (SWG 5B4 a.i. 1.9.2)
  5. Sub-Working Group to deal with agenda item 1.10 (SWG 5B5 a.i. 1.10)
- **Working Group 5C (Satellite Regulatory Issues)**
  1. Sub-Working Group to deal with agenda item 1.8 (SWG 5C1 a.i. 1.8)
  2. Sub-Working Group to deal with agenda item 7 and related parts of agenda items 9.2 and 9.3 (SWG 5C2 a.i. 7)
  3. Sub-Working Group to deal with agenda item 9.1.2 (SWG 5C3 a.i. 9.1.2)
  4. Sub-Working Group to deal with agenda item 9.2 (SWG 5C4 a.i. 9.2)

Committee 6

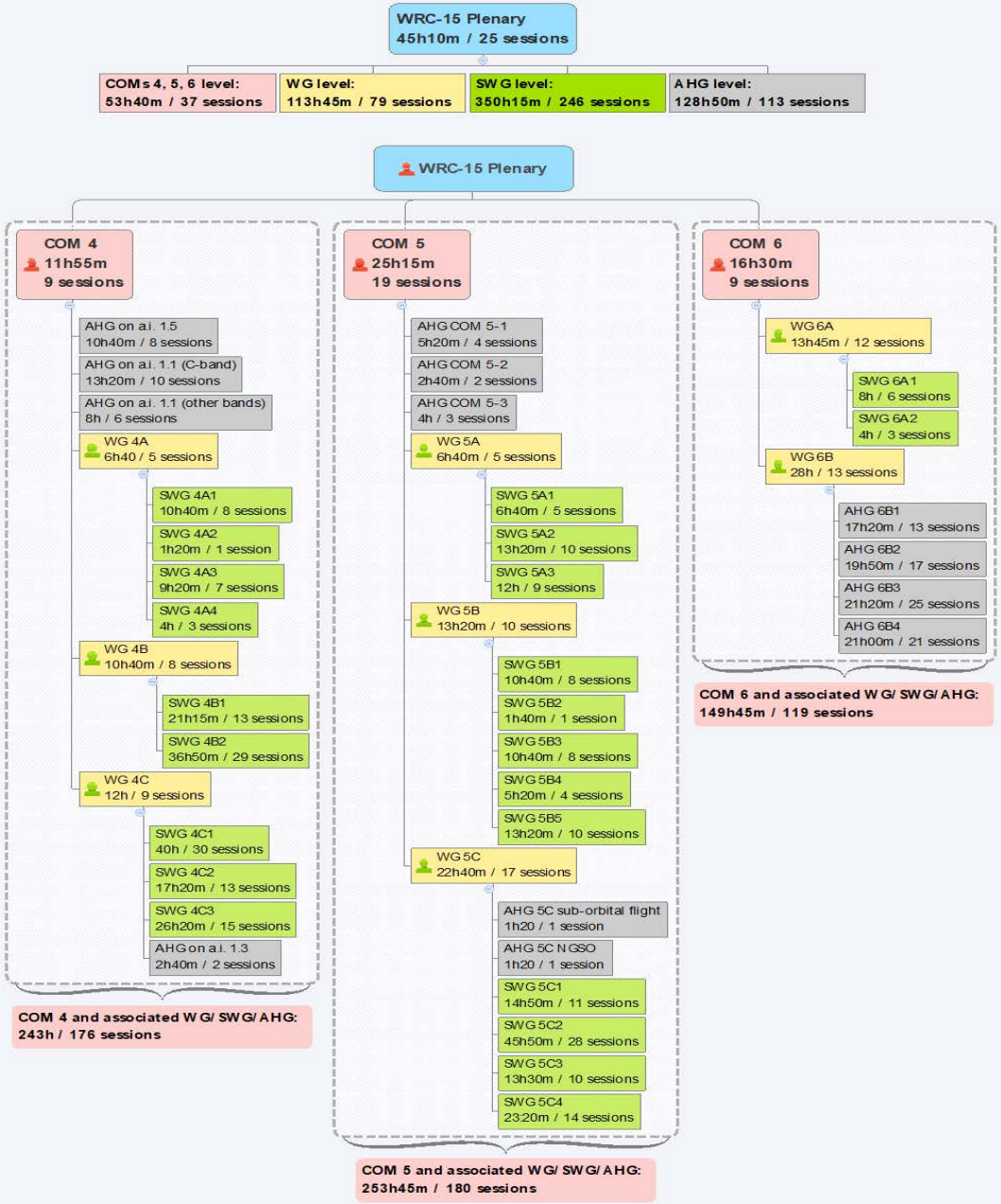
- **Working Group 6A (WG 6A General Issues)**
  1. Sub-Working Group 6A1 on WRC-15 agenda items 2 and 4 (SWG 6A1 a.i. 2, 4 (IbR & Res. 95))
  2. Sub-Working Group 6A2 on WRC-15 agenda item 9.2*, Issues not related to satellite (SWG 6A2 a.i. 9.2.NSat)
- **Working Group 6B (WG 6B Next WRC)**

  Agenda of future conferences, a.i. 6, 10
  1. Ad-Hoc Group (AHG) 6B1
  2. Ad-Hoc Group (AHG) 6B2
  3. Ad-Hoc Group (AHG) 6B3
  4. Ad-Hoc Group (AHG) 6B4

- Note: Contributions for WRC-23 agenda considered separately

WRC-15 Board

Chairman of the Conference:	**Mr Festus Yusufu Narai Daudu (Nigeria)**
Vice-Chairmen of the Conference:	Mr A. Jamieson (New Zealand) Mr Y. Al-Bulushi (Oman) Mr D. Obam (Kenya) Mrs D. Tomimura (Brazil) Mr A. Kühn (Germany) Mr N. Nikiforov (Russian Federation)
Committee 1: **(Steering)**	(Composed of the Chairman and Vice-Chairmen of the Conference and of the Chairmen and Vice-Chairmen of the Committees.)
Committee 2: **(Credentials)**	Chairman: Mr N. Meaney (Australia)
Committee 3: **(Budget Control)**	Chairman: Mr A. Kadirov (Uzbekistan)
Committee 4: **Specified agenda items (a.i.)** **1.1 , 1.2, 1.3, 1.4, 1.5 (see Note), 1.15, 1.16, 1.17, 1.18, 3*, 5*, 9*, 9.1*, 9.2*, Global flight tracking**	Chairman: Mr M. Fenton (United Kingdom)
Committee 5: **Specified agenda items** **1.6 (1.6.1, 1.6.2), 1.7, 1.8, 1.9 (1.9.1, 1.9.2), 1.10, 1.11, 1.12, 1.13, 1.14, 3*, 5*, 7, 9*, 9.1*, 9.2*, 9.3**	Chairman: Mr K. Al Awadhi (United Arab Emirates)
Committee 6: **Specified agenda items** **2, 3*, 4, 5*, 6, 8, 9*, 9.1*, 9.2*, 10**	Chairman: Mrs A. Allison (USA)
Committee 7: **(Editorial)**	Chairman: Mr C. Rissone (France)


WRC-15 Plenary
45h10m / 25 sessions
COMs 4, 5, 6 level:
53h40m / 37 sessions
WG level:
113h45m / 79 sessions
SWG level:
350h15m / 246 sessions
AHG level:
128h50m / 113 sessions
WRC-15 Plenary
COM 4
11h55m
9 sessions
AHG on a.i. 1.5
10h40m / 8 sessions
AHG on a.i. 1.1 (C-band)
13h20m / 10 sessions
AHG on a.i. 1.1 (other bands)
8h / 6 sessions
WG 4A
6h40 / 5 sessions
SWG 4A1
10h40m / 8 sessions
SWG 4A2
1h20m / 1 session
SWG 4A3
9h20m / 7 sessions
SWG 4A4
4h / 3 sessions
WG 4B
10h40m / 8 sessions
SWG 4B1
21h15m / 13 sessions
SWG 4B2
36h50m / 29 sessions
WG 4C
12h / 9 sessions
SWG 4C1
40h / 30 sessions
SWG 4C2
17h20m / 13 sessions
SWG 4C3
26h20m / 15 sessions
AHG on a.i. 1.3
2h40m / 2 sessions
COM 4 and associated WG/ SWG/ AHG:
243h / 176 sessions
COM 5
25h15m
19 sessions
AHG COM 5-1
5h20m / 4 sessions
AHG COM 5-2
2h40m / 2 sessions
AHG COM 5-3
4h / 3 sessions
WG 5A
6h40m / 5 sessions
SWG 5A1
6h40m / 5 sessions
SWG 5A2
13h20m / 10 sessions
SWG 5A3
12h / 9 sessions
WG 5B
13h20m / 10 sessions
SWG 5B1
10h40m / 8 sessions
SWG 5B2
1h40m / 1 session
SWG 5B3
10h40m / 8 sessions
SWG 5B4
5h20m / 4 sessions
SWG 5B5
13h20m / 10 sessions
WG 5C
22h40m / 17 sessions
AHG 5C sub-orbital flight
1h20 / 1 session
AHG 5C NGSO
1h20 / 1 session
SWG 5C1
14h50m / 11 sessions
SWG 5C2
45h50m / 28 sessions
SWG 5C3
13h30m / 10 sessions
SWG 5C4
23:20m / 14 sessions
COM 5 and associated WG/ SWG/ AHG:
253h45m / 180 sessions
COM 6
16h30m
9 sessions
WG 6A
13h45m / 12 sessions
SWG 6A1
8h / 6 sessions
SWG 6A2
4h / 3 sessions
WG 6B
28h / 13 sessions
AHG 6B1
17h20m / 13 sessions
AHG 6B2
19h50m / 17 sessions
AHG 6B3
21h20m / 25 sessions
AHG 6B4
21h00m / 21 sessions
COM 6 and associated WG/ SWG/ AHG:
149h45m / 119 sessions

Results and implications of World Radiocommunication Conference, 2015

Radiocommunication Bureau
International Telecommunication Union

Challenges

- Everybody is in favor of spectrum harmonization
- But
- Everybody wants it to be his own way
- The success of mobile broadband and its ubiquitous nature represents a threat of disruption to other services if IMT is identified in the same band, even though technical solutions may exist to share it between countries
- The main success of WRC-15 was to continue global harmonization for IMT **and to s**ecure future access to spectrum by other services

Main WRC-15 key achievements

1. Providing spectrum for mobile broadband (IMT) on a global basis
2. Providing frequencies for Global Flight Tracking
3. Making new allocations to the FSS, MMSS and EEESS
4. Authorizing frequency bands and establishing regulatory conditions for unmanned aircraft systems
5. Providing required spectrum for WAIC as well as for
6. automotive and maritime transports
7. Improving the satellite frequency assignments regulatory procedures

These results have demonstrated once again the **ITU ability** to **keep up with the pace of technological advancements** and to **timely respond to the urgent needs of the Membership**

WRC-15 MAIN OUTCOMES

- **Amateur radio:**

- New allocation in 5351.5 - 5366.5 kHz, to maintain stable communications over various distances, especially to attend disaster situations and for relief operations.

- **- Emergency communications and disaster relief**
- Identification of 694-894 MHz to facilitate mobile broadband communications for robust and reliable mission critical emergency services in public protection and disaster relief (PPDR), such as police, fire, ambulances and disaster response teams.

- - **Search and rescue**
- Reinforce protection to Search and Rescue beacons in 406-406.1 MHz to uplink search and rescue satellites, as the Cospas-Sarsat system: as 12/2013, it provided assistance in rescuing over 37,000 persons in over 10,300 incidents worldwide.

- - **Coordinated Universal Time (UTC)**
- Further studies regarding current and potential future reference time-scales, including modification of UTC and suppressing "*leap second*". Report will be considered by WRC-23. Until then, UTC shall continue to be applied and as maintained by the International Bureau of Weights and Measures (BIPM).

WRC-15 MAIN OUTCOMES

- **- Global flight tracking for civil aviation (GFDT)**
- 1087.7-1092.3 MHz allocated to aeronautical mobile-satellite service (Earth-to-space) for reception by space stations of Automatic Dependent Surveillance-Broadcast (ADS-B) from aircraft transmitters. This will facilitate reporting the position of aircraft equipped with ADS-B anywhere in the world, including oceanic, polar and other remote areas.

- **- Unmanned aircraft and wireless avionics systems**
- Opened the way to ICAO to develop worldwide standards for unmanned aircraft systems (UAS), and identified regulatory conditions that may apply internationally. It also was agreed on spectrum for wireless avionics intra-communications (WAIC) to replace the heavy and expensive wiring used in aircraft

- - **Enhanced maritime communications systems**
- New allocations in 161.9375-161.9625 MHz and 161.9875-162.0125 MHz to maritime mobile-satellite service. Also enabled new Automatic applications of Identification System (AIS) and other ones to improve maritime radiocommunication. New applications using AIS technology, to improve the safety of navigation. Studies will continue on the compatibility between maritime mobile-satellite service (MMSS) in the downlink in the band 161.7875-161.9375 MHz and incumbent services in same and adjacent bands.

WRC-15 MAIN OUTCOMES

- **- High-Altitude Platform Stations (HAPS)**
- Facilitate access to broadband applications delivered by HAPS. To study possible use of Bands: global level: 38-39.5 GHz; regional level: in Region 2, 21.4-22 GHz and 24.25-27.5 GHz

- **- Wireless Access Systems including radio local area networks (WAS/LAN)**
- To study the Band 5 150 MHz and 5 925 MHz for possible use by such systems

- **- Road Safety**
- Frequencies for short-range high-resolution automotive radar allocated in 79 GHz Band. It provides a globally harmonized framework for automotive radar to prevent collisions and improve vehicular safety by reducing accidents.

- **- Intelligent Transportations Systems Applications (ITS) :**
- Studies to consider possible global or regional harmonized bands to implement the evolving ITS under existing mobile-service allocations,

- - **Railway Communications:**
- Facilitate global or regional harmonized bands to implement radiocommunication railway systems between train and trackside, within mobile-service allocation

WRC-15 MAIN OUTCOMES

- **- Operation of broadband satellite systems: Earth Stations in Motion**
- Facilitate global deployment of Earth Stations In Motion (ESIM) in the Bands 19.7-20.2 and 29.5-30.0 GHz in the fixed-satellite service (FSS), allowing satellite systems to provide global broadband connectivity for the transportation community. Earth stations on-board moving platforms: ships, trains, airplanes, can communicate with high power multiple spot beam satellites, at rates of 10-50 Mbits/s.

- **- Non-GEO Satellite Systems**
- Study of technical and operational issues and regulatory provisions for new Non-GEO satellite orbit systems in Bands: 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz, allocated to the fixed-satellite service
- To study use for Non-GEO FSS of Bands: 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space)
- To study accommodation requirements in the space operation service for Non-GEO satellites with short duration missions

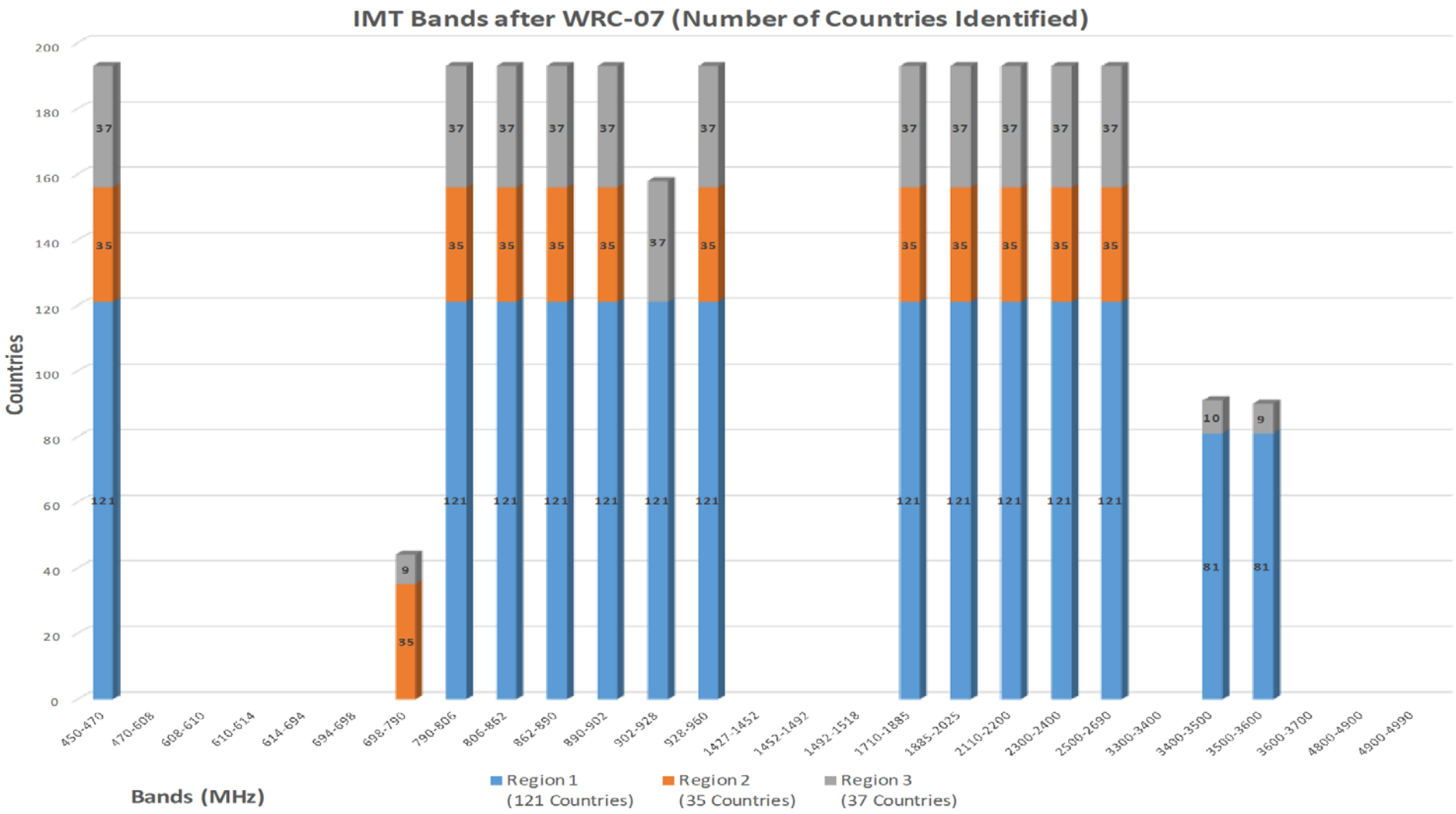
WRC-15 MAIN OUTCOMES

- **- GEO FSS**
- To determine possible new primary allocations to the FSS 37.5-39.5 GHz (Earth-to-space, limited to FSS feeder links only) for both GSO and non-GSO orbit use
- - possible allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth-to-space)

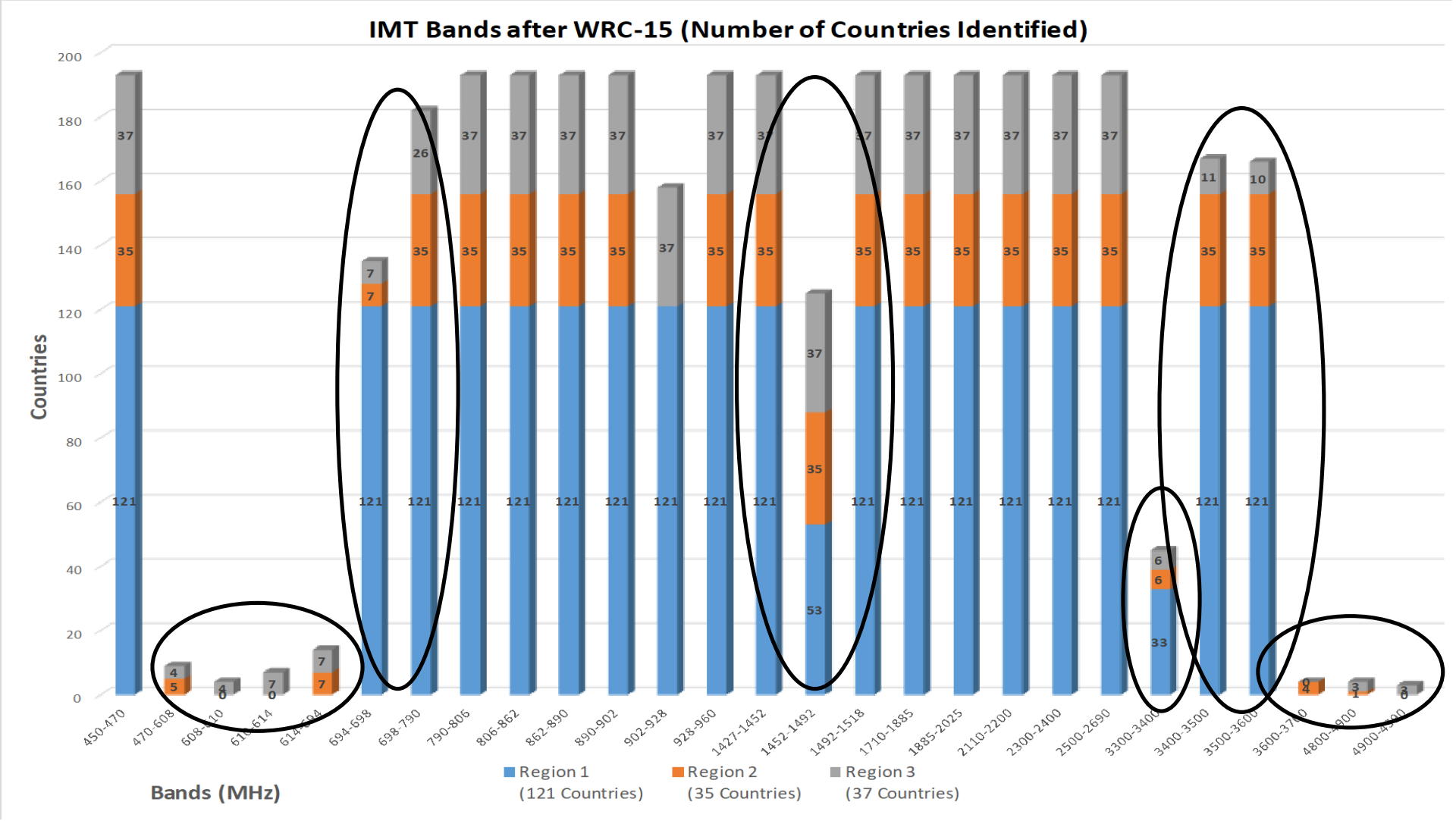
- **- Procedures for Satellite Networks Filings:**
- - Elimination of the Advance Publication Information (API) by Administrations for frequency assignments to satellite networks and systems, and Transitional measures - - Modern electronic means of communication for administrative correspondence related to advance publication, coordination and notification of satellite networks including Appendices 30, 30A and 30B, earth stations and radio astronomy stations, -
- - Electronic submission and publication of satellite network filings

- **Earth observation satellites for environmental monitoring**
- New allocations in 7-8 GHz to uplink large amounts of data of future earth-exploration satellite services (EESS). Allocations in the 9-10 GHz range for modern broadband sensing technologies and space-borne radars on active sensing EESS.

IMT Harmonization



IMT Harmonization



Mobile Broadband

(agenda items 1.1, 1.2)

Spectrum for mobile broadband

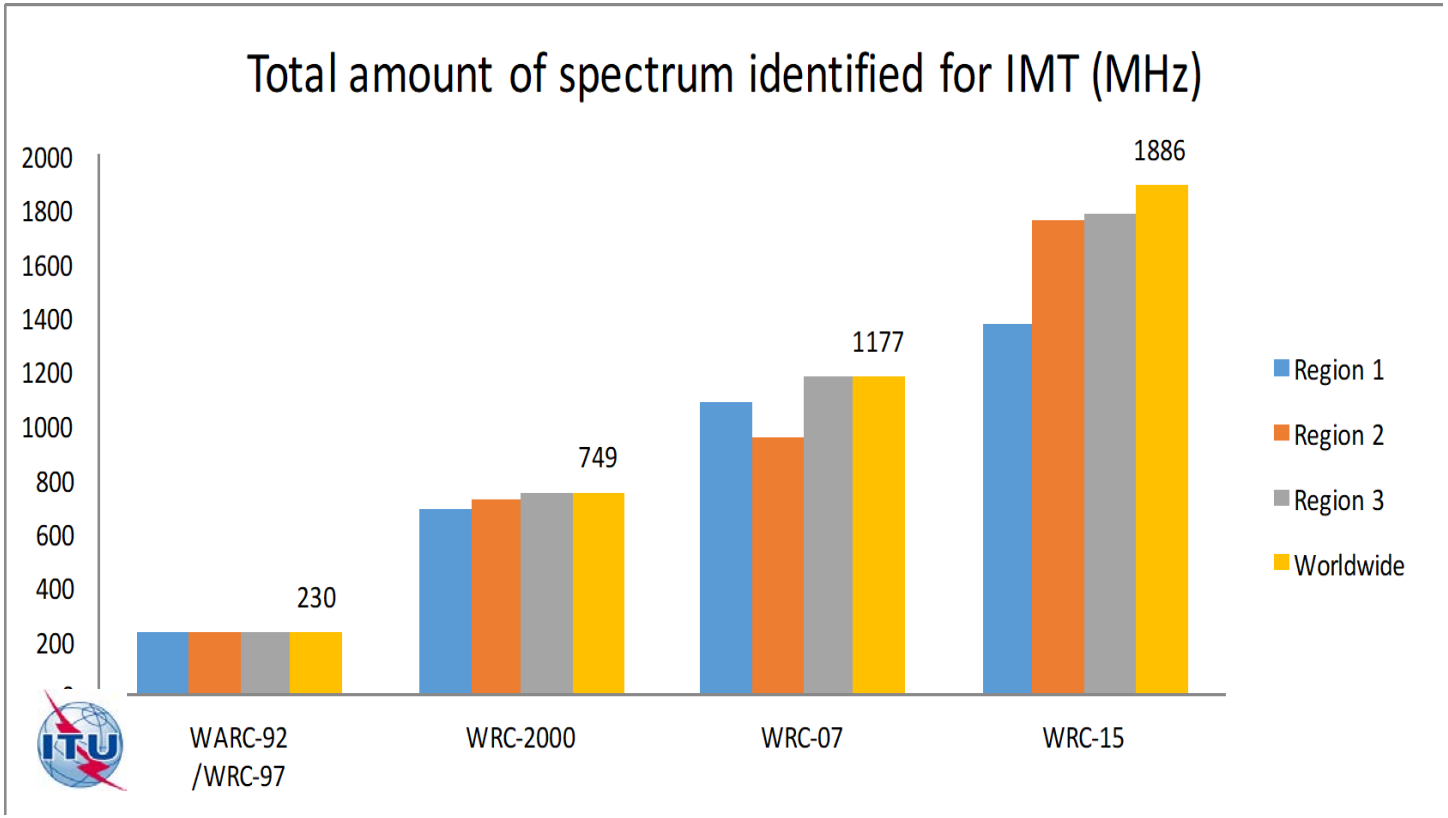
agenda items 1.1 and 1.2

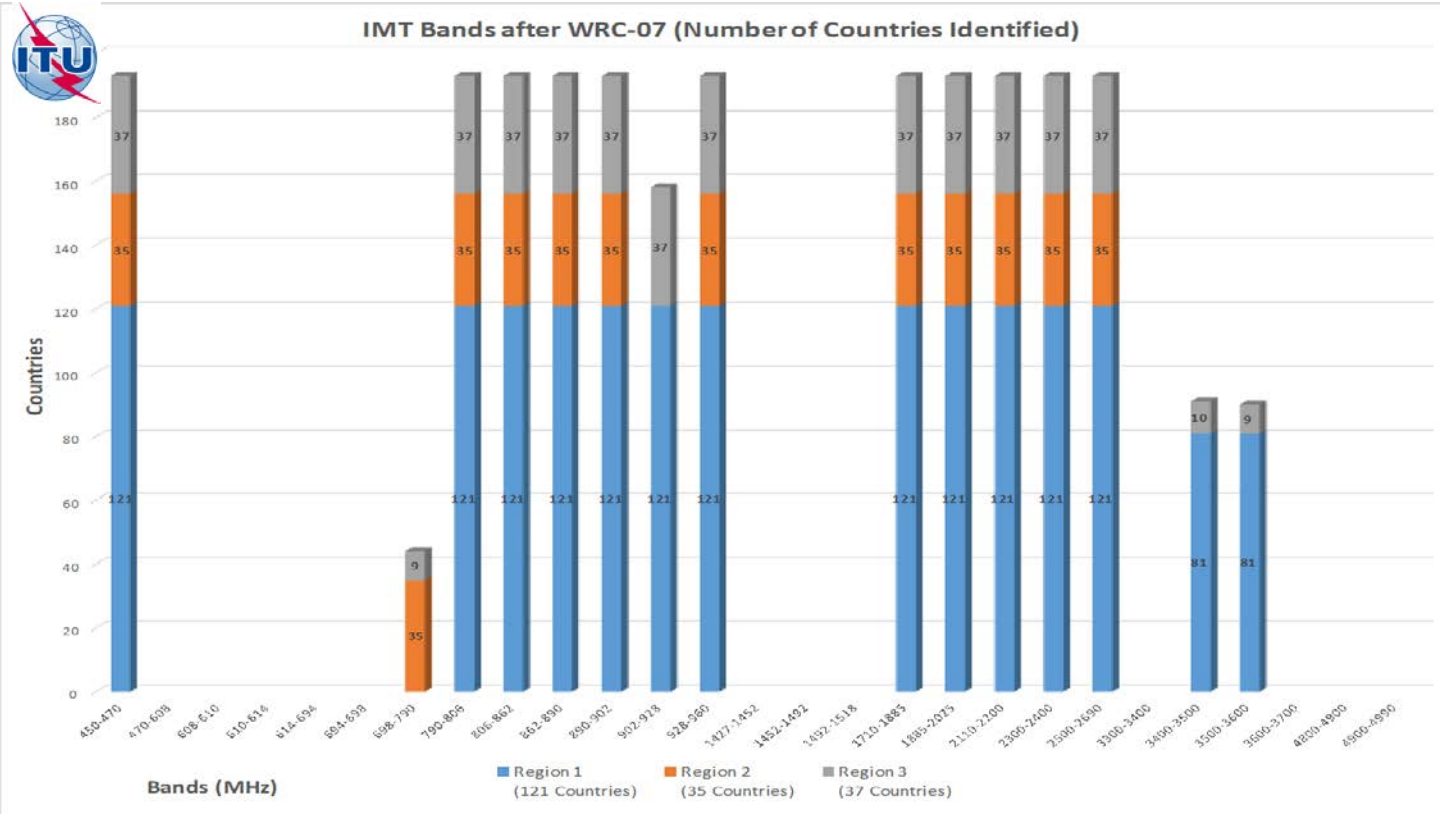
- **Background**
  - There is a need to satisfy rapidly growing traffic requirements for IMT (estimated IMT additional spectrum by 2020: from 159 to 1075 MHz depending on Region and user density)
  - Bands considered: 470 MHz - 6 425 MHz. Harmonized bands were highly desirable to facilitate global roaming and economies of scale
  - As for 700 MHz band in R1, WRC-15 had to specify conditions for mobile service in 694-790 MHz already allocated by WRC-12
- **WRC-15 results**
  - Allocations to mobile service and/or identifications for IMT in: 470-694/698 MHz, 694 – 790 MHz (Region 1),1427-1518 MHz, 3300-3400 MHz, 3400-3700 MHz, 4800 – 4990 MHz
  - Allocations are subject to various conditions, e.g. non-interference basis, pfd limits, 9.21 -> to secure protection of incumbent services
  - Action “Identification for IMT” was for the first time associated with regulatory/technical conditions imposed on this application in MS

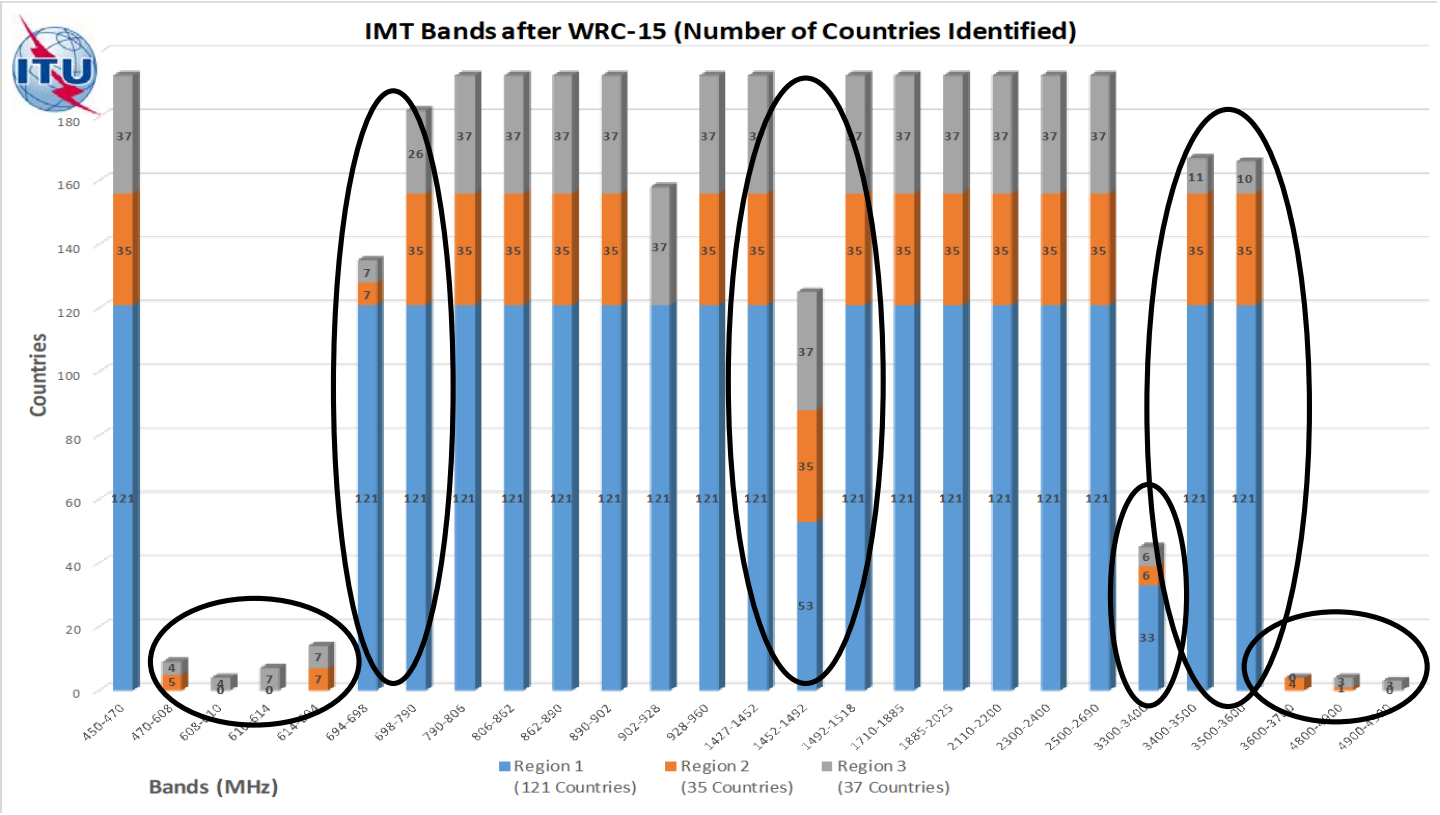
WRC-15 results for specific bands

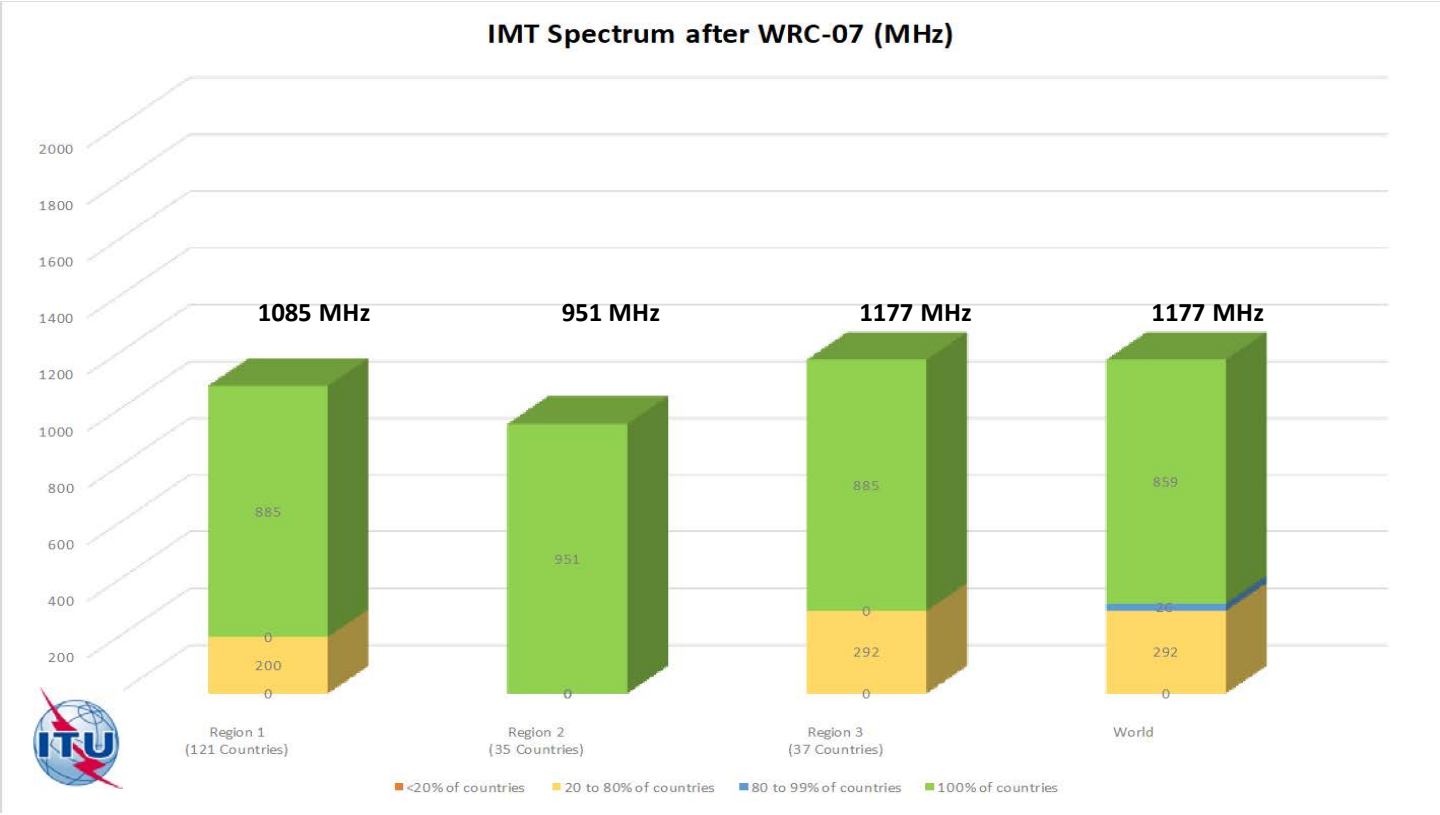
agenda items 1.1 and 1.2

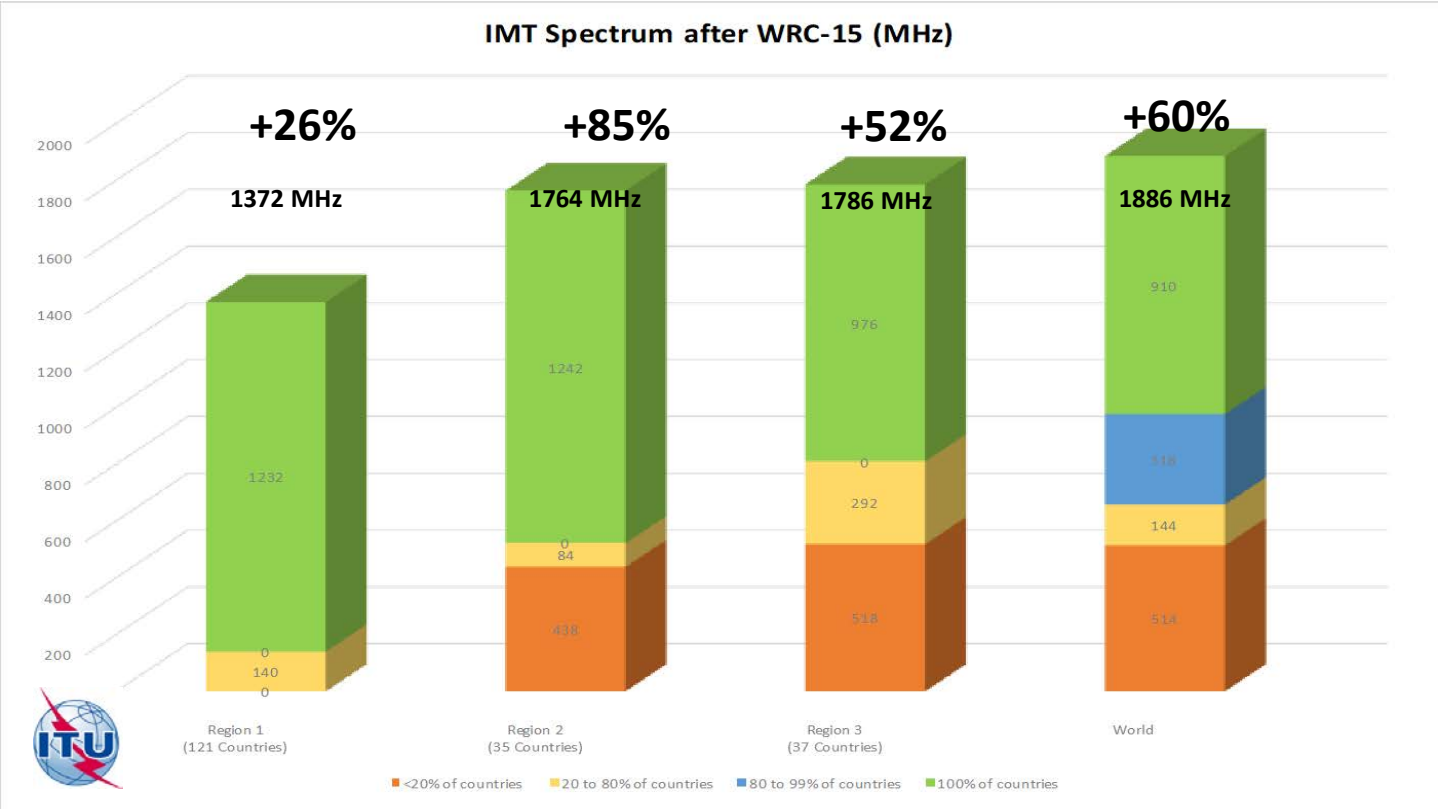
- **470–698 MHz**: IMT identification of parts of this band for 14 Regions 2, 3 countries (9.21, non-interference basis). For R1: consideration at WRC-23
- **1 427 – 1 518 MHz**: IMT identification in R2 and 3. Also in R1, except 1452–1492 MHz that identified only in 54 R1 countries (9.21 for R.1, 3)
- **3 300 – 3 400 MHz**: allocation to, or upgrade of MS in 36 countries worldwide. IMT identification in 33 R1, 6 R2 and 6 R3 countries
- **3 400 – 3 600 MHz**: upgrade of MS and identification for entire R.1, 2 and for 11 R3 countries (subject to 9.17, 9.18, 9.21 and pfd limit)
- **3 600 – 3 700 MHz**: IMT identification in 4 Region 2 countries subject to coordination under 9.17, 9.18, 9.21 and a pfd limit
- **4800–4990 MHz** IMT identification in 1 Region 2 and 3 Region 3 countries
- **694 – 790 MHz in Region 1**: allocation to MS and identification for IMT. **In force from 28.11.2015**. Provides harmonized worldwide allocation of this band. Ensures compatibility with broadcasting and ARNS (Res. 224, 760). Accommodates applications ancillary to broadcasting in 470 – 694 MHz

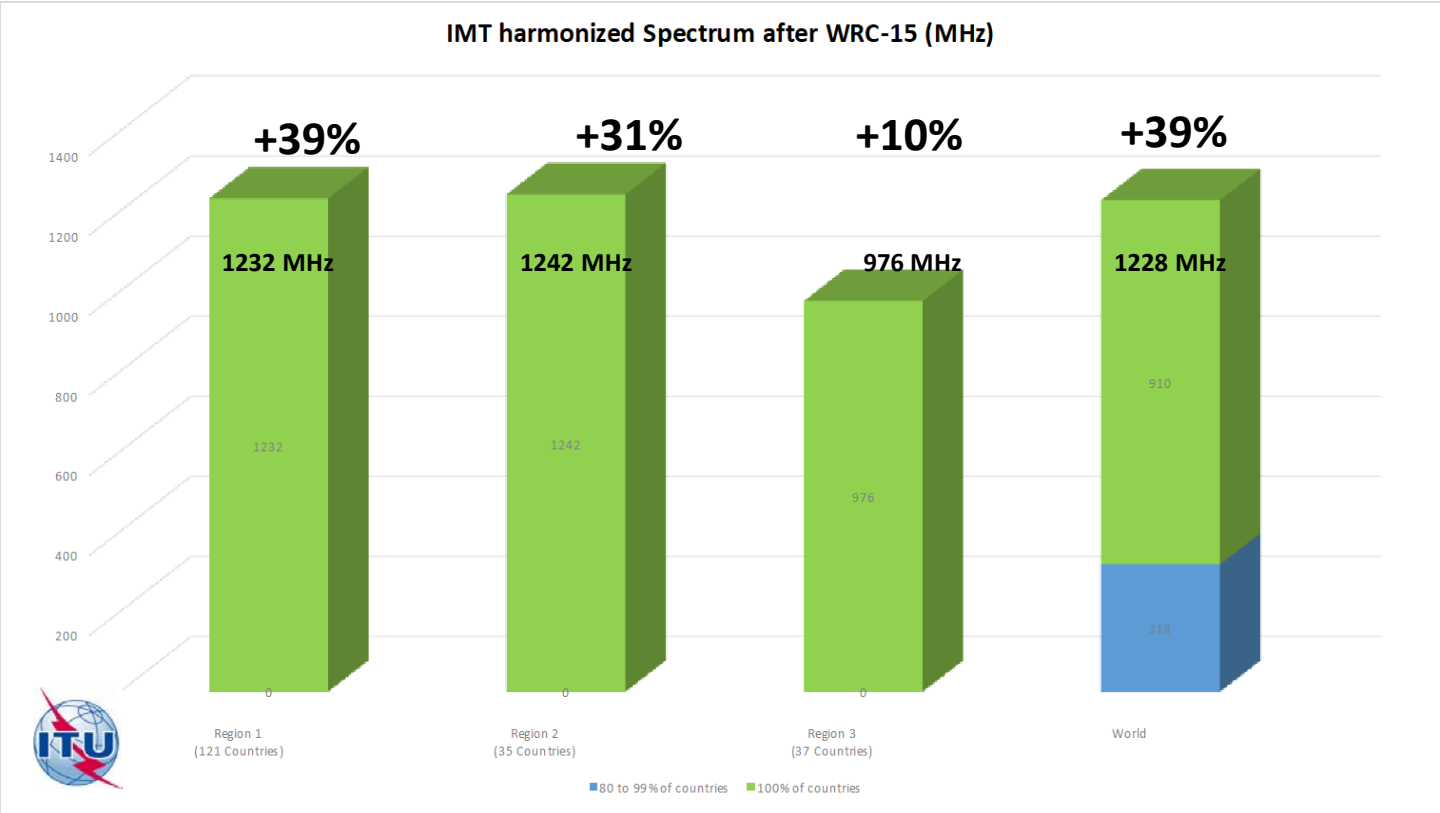

Total amount of spectrum identified for IMT (MHz)
2000
1800
1600
1400
1200
1000
800
600
400
200
230
749
1177
1886
WARC-92 /WRC-97
WRC-2000
WRC-07
WRC-15
Region 1
Region 2
Region 3
Worldwide


IMT Bands after WRC-07 (Number of Countries Identified)
Countries
Bands (MHz)
Region 1 (121 Countries)
Region 2 (35 Countries)
Region 3 (37 Countries)


IMT Bands after WRC-15 (Number of Countries Identified)
Countries
Bands (MHz)
Region 1 (121 Countries)
Region 2 (35 Countries)
Region 3 (37 Countries)


IMT Spectrum after WRC-07 (MHz)
2000
1800
1600
1400
1200
1000
800
600
400
200
1085 MHz
951 MHz
1177 MHz
1177 MHz
885
0
200
0
951
0
885
0
292
0
859
20
292
0
Region 1
(121 Countries)
Region 2
(35 Countries)
Region 3
(37 Countries)
World
<20% of countries
20 to 80% of countries
80 to 99% of countries
100% of countries


IMT Spectrum after WRC-15 (MHz)
+26%
+85%
+52%
+60%
1372 MHz
1764 MHz
1786 MHz
1886 MHz
2000
1800
1600
1400
1200
1000
800
600
400
200
1232
0
140
0
1242
0
84
438
976
0
292
518
910
318
144
514
Region 1
(121 Countries)
Region 2
(35 Countries)
Region 3
(37 Countries)
World
<20% of countries
20 to 80% of countries
80 to 99% of countries
100% of countries


IMT harmonized Spectrum after WRC-15 (MHz)
+39%
+31%
+10%
+39%
1400
1200
1000
800
600
400
200
0
1232 MHz
1242 MHz
976 MHz
1228 MHz
1232
1242
976
910
318
Region 1
(121 Countries)
Region 2
(35 Countries)
Region 3
(37 Countries)
World
80 to 99% of countries
100% of countries

Importance of WRC-15 decisions

agenda items 1.1 and 1.2

- Satisfy growing IMT broadband spectrum requirements:
  - 60% increase in IMT bands after WRC-15
  - total IMT spectrum of 1886 MHz
- Provide harmonization of IMT bands:
  - 39% increase in globally harmonized spectrum after WRC-15 318 MHz of harmonized bands in more than 80% of countries:
- Secures future of other services through coordination procedures, technical restrictions, in some cases operation on a non-interference basis

Public Protection and Disaster Relief (PPDR)

(agenda items 1.3, 9.1.1 and 9.1.7)

Public protection and disaster relief (1)

agenda items 1.3, 9.1.1 and 9.1.7

- **Background:** there were requirements to
  - identify harmonized PPDR bands to benefit from economies of scale, interoperability, cross-border equipment circulation
  - review Res. 647 on emergency and disaster relief communication
  - ensure better protection of 406 – 406.1 MHz (Cospas-Sarsat)
- **WRC-15 results**
  - **Revision of Resolution 646** -> resulted in harmonization of PPDR bands and at the same time providing flexibility for administrations
  - encouragement to use harmonized bands, especially for broadband:
    - 694 – 894 MHz – on a global basis
    - 380-470 MHz – in Region 1
    - 406.1-430 MHz, 440-470 MHz and 4 940-4 990 MHz – in Region 3
  - administrations to use Rec. ITU-R M.2015 for national planning
  - PPDR applications must not cause unacceptable interference to services to which these ranges are already allocated

Public protection and disaster relief (2)

agenda items 9.1.1 and 9.1.7

- **Revision of Resolution 647** on emergency and disaster relief radio communications. Reinforcement of main ideas of this Resolution:
  - reiterates the importance of available emergency frequencies
  - BR to continue to maintain database on contact information of administrations and frequency bands (optional) relevant to disaster relief www.itu.int/ITU-R/go/res647
  - administrations encouraged to submit information to the database
- **Protection of 406-406.1 MHz** (MSS reception of Cospas-Sarsat) via review Res. **205** to reinforce protection from out-of-band emissions:
  - request not to assign frequencies to FS and MS in adjacent bands
  - BR to organize monitoring programs on impact from systems in 405.9-406 MHz, 406.1-406.2 MHz (in addition to the current program in the band)
  - administrations to take into account frequency drift of radiosondes above 405 MHz to avoid transmitting in the 406-406.1 MHz.

Amateur and maritime mobile service

(agenda items 1.4, 1.15 and 1.16)

Allocation to the amateur service

agenda item 1.4

- **Background**
  - there was a need for spectrum around 5 MHz in addition to existing allocations at 3.5 MHz and 7 MHz to provide flexibility of HF operations in varying propagation conditions
- **WRC-15 results**
  - secondary allocation to amateur service in 5 351.5-5 366.5 kHz subject to power limitations in No.5.133B:
    - maximum e.i.r.p. ≤ 15W on a global basis
    - maximum e.i.r.p. ≤ 20W and ≤ 25W in some Region 2 countries listed in No.5.133B
- **Implications**
  - contributes to flexibility and reliability of amateur communications in HF band -> facilitating emergency and disaster relief operations

Spectrum for on-board communications

agenda item 1.15

- **Background**
  - There was a problem of congestion in on-board UHF communications since only 6 frequencies around 460 MHz were available for this purpose
- **WRC-15 results**
  - no new spectrum was allocated, but measures were adopted for more efficient usage of existing frequencies (in modified No. **5.287**):
    - Introduction of new channeling arrangements of 6.25 kHz and 12.5 kHz through Rec. ITU-R M. 1174-3, while retaining 25 kHz channeling for analogue systems
    - Recommendation to use new digital technologies, e.g. digital coded squelch
- **Implications**
  - provides more channels for on-board communications with the same amount of spectrum available, removes congestion

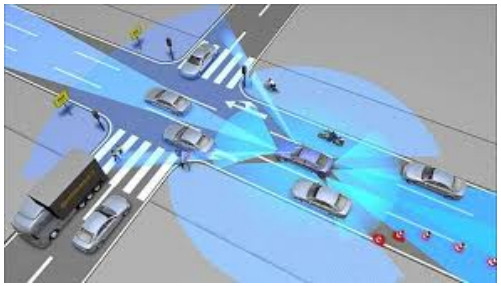
Automatic Identification Systems (AIS) in maritime communications

agenda item 1.16

- **Background**
  - Development of new Automatic Identification System (AIS) applications, aimed at improving maritime communications and safety of navigation, required additional frequency resource
- **WRC-15 results**
  - Enabling application-specific messages in AP18 chan. 2027, 2028; protection AIS by prohibiting chan. 2078, 2019, 2079, 2020 for ships
  - Identification of bands for terrestrial VHF Data Exchange System (VDES): 157.200–157.325/161.800–161.925 MHz in R1, 3 and 157.200–157.275 MHz /161.800 – 161.875 in some R 2 countries
  - secondary allocation to uplink maritime mobile-satellite service in 161.9375–161.9625 MHz/161.9875–162.0125 MHz for satellite component of VDES; downlink will be considered at WRC-19
  - VDES regional solution: identification of AP18 channels 80, 21, 81, 22, 82, 23 and 83 for digital systems in Regions 1 and 3

Aeronautical services and automotive applications

(agenda items 1.5, 1.17, 1.18 and Global Flight Tracking)



Use of fixed-satellite service for unmanned aircraft systems (UAS)

agenda item 1.5

- **Background**
  - rapid UAS development, future integration in conventional air traffic
  - reliable terrestrial and satellite links are critical for controlling UAS
  - WRC-12 made allocation to terrestrial component in 5 GHz, but satellite component still required frequencies due to limited AMSS spectrum and lack of operational AMSS systems
  - possible solution: to use FSS links for UAS, taking into account increasing requirement to utilize existing capacity of GSO FSS
- **Specific issues**
  - need for ensuring reliability of UAS links, given interference in FSS
  - need for protection of terrestrial services earth station on aircraft changes interfere situation
  - need for taking decision in the absence of available ICAO standards

Use of fixed-satellite service for unmanned aircraft systems (2)

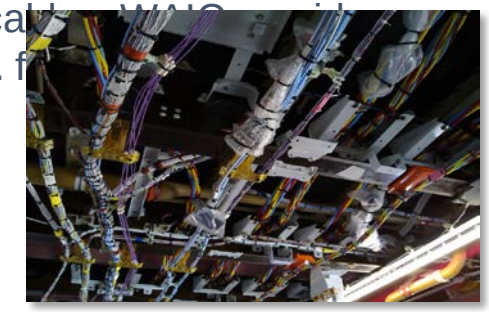
agenda item 1.5

- **WRC-15 results**
  - approval of No. 5.484B and Res. 155 [COM4/5] allowing the use of FSS assignments for UAS
  - Designation of 8 bands for such usage. Total spectrum:
    Ku band: 970 MHz globally, 1050 MHz regionally,
    Ka band: 1000 MHz globally
  - FSS can be used only after development of related ICAO aeronautical standards and recommended practices (SARPs);
  - measures to avoid impact on terrestrial services and other FSS
  - requirement to UA ES to operate in existing interference environment
  - instructions to the Bureau: to identify a new class of stations for UAS, to examine Res. 155 to identify actions by administrations, not to process filings until all conditions are met, liaise with ICAO
- **Implications**
  - paves the way for commercial utilization of UAS after 2023

Spectrum for wireless avionics intra-communications (WAIC)

agenda item 1.17

- **Background**
  - about 30% of electrical wires are candidates for wireless substitute
  - example A380: wire count 100 000; length 470 km; weight 5 700 kg
  - need for spectrum for WAIC to replace cab WAIC provide safety-related data in single aircraft (e.g. f



- **WRC-15 results**
  - allocation of 4 200-4 400 MHz to AM(R)S reserved for WAIC
  - approval of Res. 424 [COM4/1]: conditions for WAIC, including a non-interference basis vs. aeronautical radio altimeters, obligation to comply with ICAO SARPs
- **Implications**
  - this technology would make new generation of aircraft more reliable, light, less fuel consuming and environmentally friendly

Global Flight Tracking (GFT)

agenda item GFT

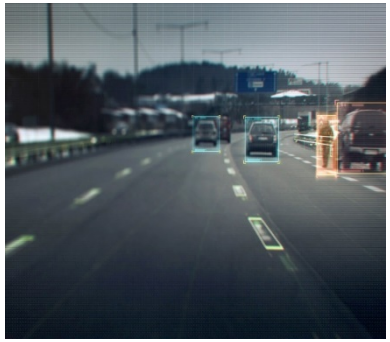
- **Background**
  - need for continuous aircraft surveillance; satellite tracking could complement terrestrial tracking, e.g. radars, HF communications, etc.
  - the issue was urgent, following disappearance of MH370. PP-14 adopted Resolution 185 and established additional AI on GFT
  - By WRC-15 terrestrial automatic dependent surveillance-broadcast (ADS-B) was available that could be extended to satellite reception
- **WRC-15 results**
  - primary allocation of 1087.7-1092.3 MHz for satellite reception ADS-B messages (5.328AA)
  - allocation conditions are in Resolution 425: no claiming protection from ARNS, ability operate i existing interference environment, compliance with ICAO standards

- **Implications:** improves aircraft tracking through utilization of an existing technology; especially important for polar, oceanic, remote areas

Spectrum for automotive applications

agenda item 1.18

- **Background**
  - significant growth in the use of automotive radar systems that are critical for improving global road safety
  - increasing variety of applications e.g. adaptive cruise control, collision avoidance, blind spot detection, lane change assist, etc.
  - requirements for additional spectrum for such applications
- **WRC-15 results**
  - worldwide primary allocation to the radiolocation service in the band 77.5-78 GHz
  - allocation is limited to short-range ground-based radar, including automotive radars. Parameters are in Recommendation ITU-R M.2057-0



- **Implications**:
  - provides harmonized and contiguous band 76 – 81 GHz for radio location service including automotive applications. Allows radars to move from the 24 GHz band, which had some compatibility problems

Fixed satellite service (FSS)

(agenda items 1.6, 1.7, 1.8)

Allocations to the fixed-satellite service in 10 – 17 GHz

agenda item 1.6

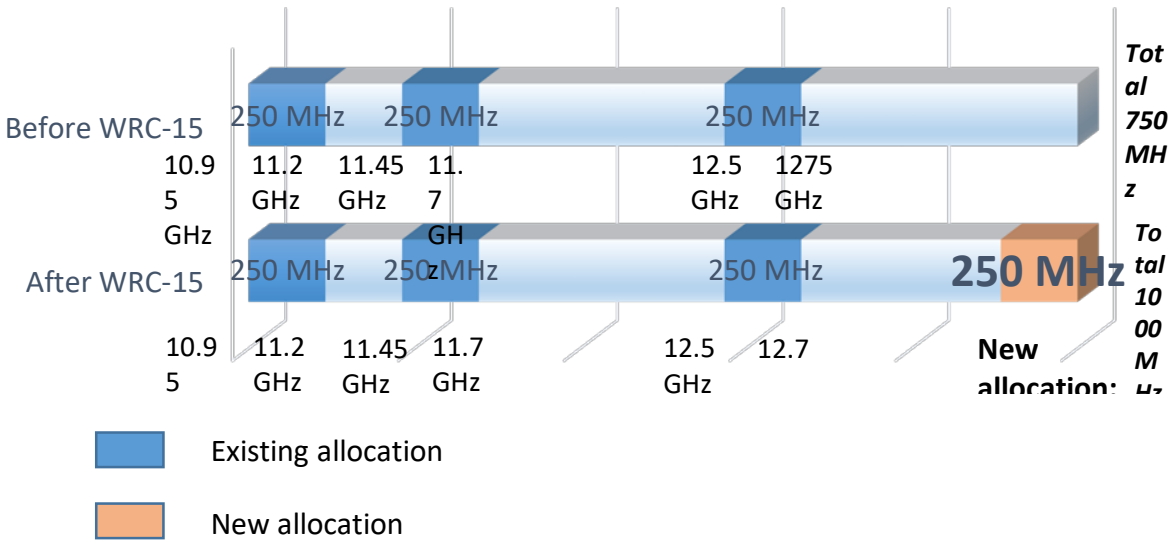
- **Background**
  - Before WRC-15, for unplanned FSS in the Ku band:
    - *Region 1: 750 MHz of spectrum both for uplink and downlink*
    - *Region 2: 1000 MHz of spectrum for downlink, only 800 MHz for uplink*
    - *Region 3: 1050 MHz of spectrum for do uplink*

- **Results of WRC-15**
  - New allocations for the FSS
  - in the space-to-Earth direction (Downlink
    - *13.4-13.65 GHz in Region 1*
  - in the Earth-to-space direction (Uplink)
    - *14.5-14.75 GHz, limited to 30 countries in Regions 1 and 2*
    - *14.5-14.8 GHz, limited to 9 countries in Region 3*
- **Better balance between uplink/downlink and between Regions**
    - *1000MHz (UP/Down) in **Region 1**; 1050MHz (UP), 1000MHz (Down) in **Region 2**; 1050MHz (UP/Down) in **Region 3***

Ku-band frequency allocation for unplanned FSS Downlink (R1)

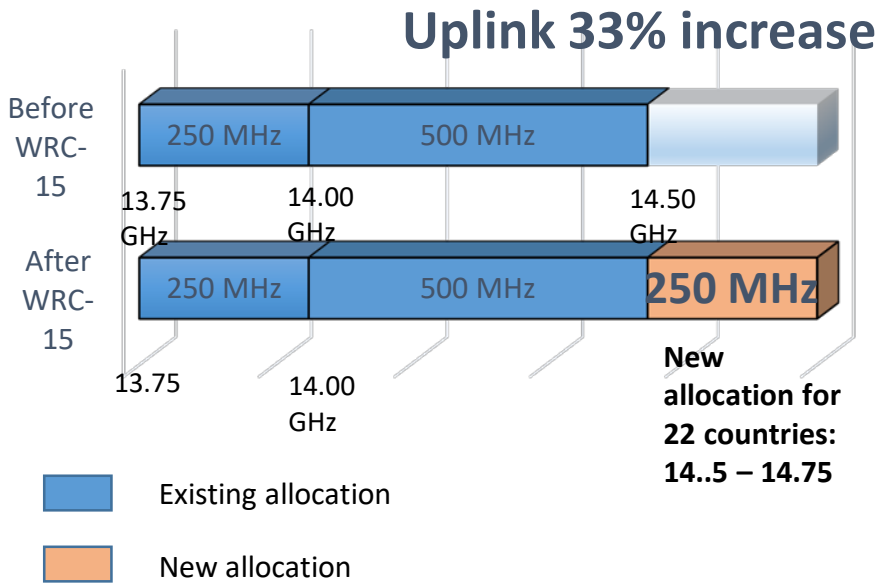
agenda item 1.6

Downlink 33% increase



Ku-band frequency allocation for unplanned FSS uplink (R1)

agenda item 1.6



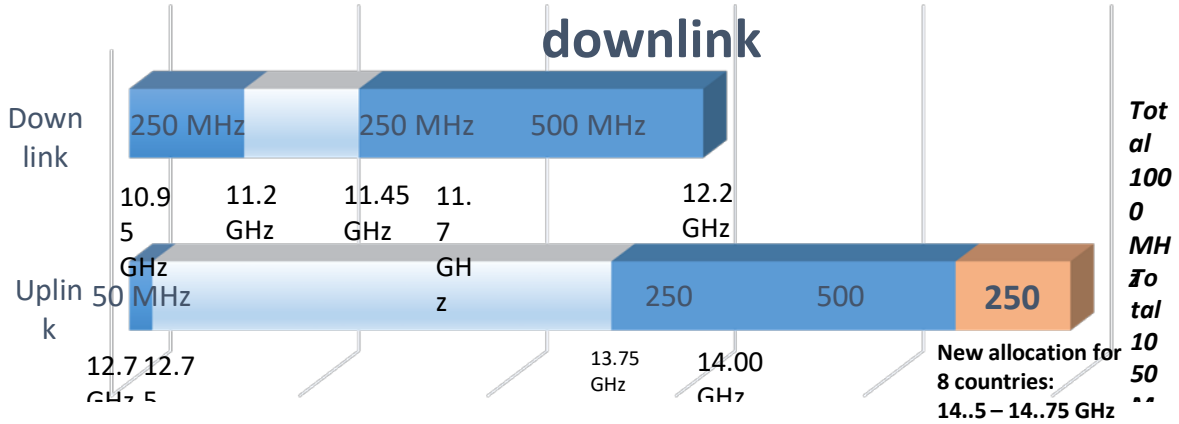
Total 750 MHz

Total 1000 MHz

Ku-band frequency allocation for unplanned FSS (Region 2)

agenda item 1.6

Improved balance between uplink and downlink



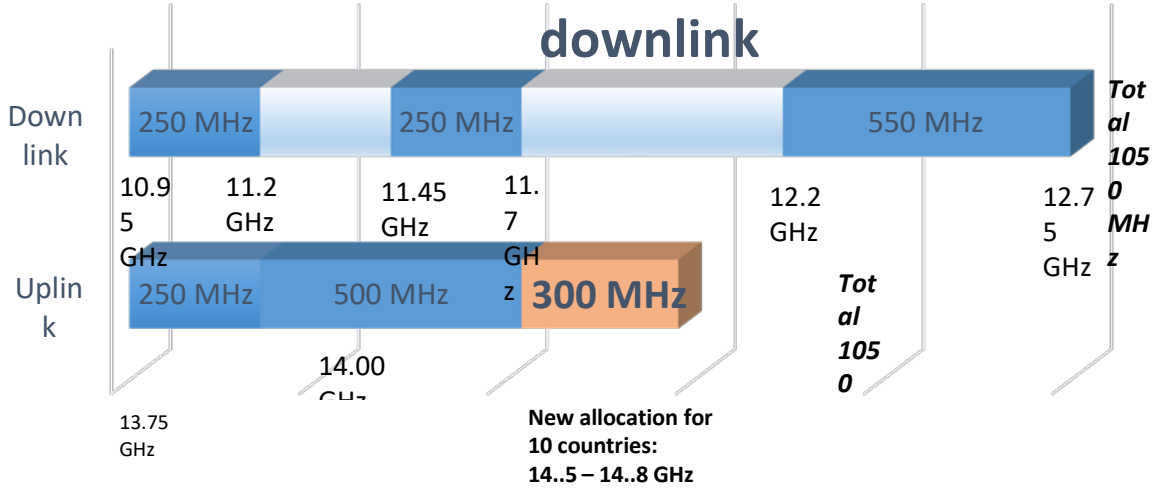
Existing allocation

New allocation

Ku-band Frequency allocation for unplanned FSS (Region 3)

agenda item 1.6

Improved balance between uplink and downlink



Existing allocation

New allocation

Allocations to FSS in 10 – 17 GHz

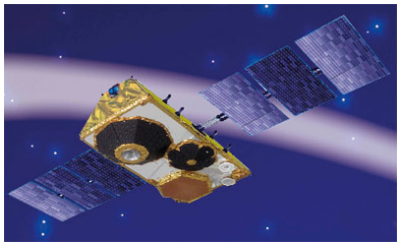
agenda item 1.6

- **Conditions of utilization (to protect incumbent services)**
  - Downlink: 13.4 – 13.65 GHz
    - *Limited to GSO*
    - *power flux density limits specified in No.**21.16***
    - *Coordination procedures under Nos.**9.7** and **9.21***
  - Uplink: 14.5-14.8 GHz in Region 3, 14.5-14.75 GHz in Regions 1 and 2
    - *Limited to GSO*
    - *Limited to specific countries, subject to several limitations, e.g.:*
    - minimum earth station antenna diameter, power spectral density limits, power flux density limits towards the coast, power flux density limits towards the geostationary-satellite orbit, minimum separation distance of earth stations from the borders of other countries.
    - *Coordination procedures under No.**9.7** and Article 7 of **AP30A***
- **Implications**
  - Increased and balanced allocations will facilitate development of various applications e.g. VSAT, video distribution, broadband networks, internet service, satellite news gathering, backhaul link etc.

Use of the band 5 091-5 150 MHz by FSS

agenda item 1.7

- **Background**
  - 5 091-5 150 MHz was allocated to FSS (uplink) for feeder links of MSS non-GSO systems on a primary basis up to 1.1.2018 with the conditions:
    - *it becomes secondary to ARNS after 1 Jan 2018*
    - *no new assignments shall be made to earth stations providing these feeder-links after 1 Jan 2016.*



- **Results of WRC-15**
  - From 28.11.2015 this allocation is primary without any time limitation.
  - Subject to Resolution **114 (Rev.WRC-15)**
  - New coordination requirement for FSS earth stations within 450 km from the territory of an administration operating ARNS ground stations
- **Implications**
  - The long term availability of the spectrum for feeder links of non-GSO systems in MSS with sufficient protection to existing ARNS stations

Earth stations located on board vessels (ESVs)

agenda item 1.8

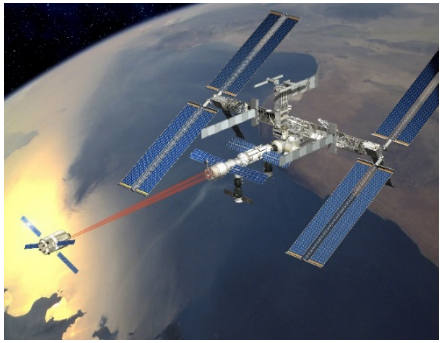
- ***Background***
  - **5.457A** and Res. **902 (WRC-03)** provide technical, regulatory and operational conditions under which ESVs may communicate with space stations of FSS in bands 5 925-6 425 MHz and 14-14.5 GHz
- **Results of WRC-15**
  - Possibility to use smaller (1.2m) antenna for ESVs transmitting in the frequency band 5 925-6 425 MHz
  - Resolution **902 (WRC-03)** continues to apply

	Before WRC-15		After WRC-15		
Frequency band	5 925-6 425 MHz	14-14.5 GHz	5 925-6 425 MHz		14-14.5 GHz
Minimum diameter of ESV antenna	2.4 m	0.6 m	2.4 m	1.2 m	0.6 m
Minimum distance from the low-water mark as officially recognized by the coastal State beyond which ESVs can operate without the prior agreement of any administration	300 km	125 km	300 km	330 km	125 km

- **Implications**
  - Increased use and further development of ESVs in the frequency band 5 925-6 425 MHz with sufficient protection to the terrestrial services

Maritime-mobile satellite and science services

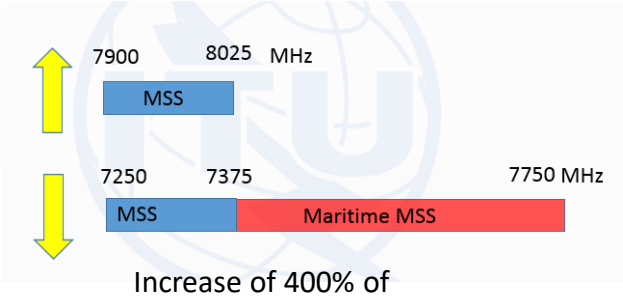
(agenda items 1.9.2, 1.11, 1.12, 1.13 and 1.14)



7375-7750 / 8025-8400 MHz for maritime-mobile satellite

agenda item 1.9.2

- **Background**
  - spectrum shortfall for current and future applications in 7/8GHz
- **Results of WRC-15**
  - New allocation to MMSS in 7 375 – 7 750 MHz in the space-to-Earth direction
  - No allocation for uplink in 8025-8400 MHz (traffic demand in uplink is much less and sharing with incumbent services is difficult)



Increase of 400% of spectrum in the downlink!

- **Conditions of utilization**
  - Limited to GSO
  - Earth stations in MMSS shall not claim protection, nor constrain use of fixed and mobile stations, except aeronautical mobile. **5.43A** does not apply.
- **Implications**
  - Additional bandwidth for downlink data transmissions of the next-generation satellites in the MMSS

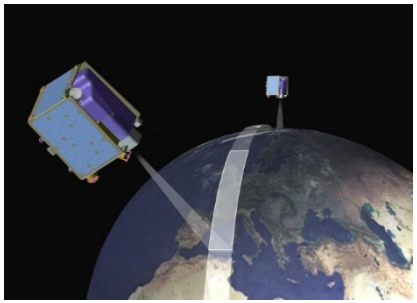
Earth exploration-satellite service (EESS) in 7-8 GHz

agenda item 1.11

- **Background**
  - The need for uplink large amounts of data for operations plans and dynamic spacecraft software modifications, which might not be accommodated by heavily used 2 025-2 110 MHz and 2 200-2 290 MHz TT&C bands
- **Results of WRC-15**
  - New primary EESS up link allocation limited to tracking, telemetry and command (TT&C) in the 7 190-7 250MHz band (34% increase)
  - Provision to protect existing and future stations in the fixed, mobile and space research services from the new allocation
- **Implications**
  - In combination with existing EESS downlink allocation in 8 025-8 400 MHz this new allocation will lead to simplified on-board architecture and operational concepts for future missions of EESS

Earth exploration-satellite service (active) in 8-9 GHz

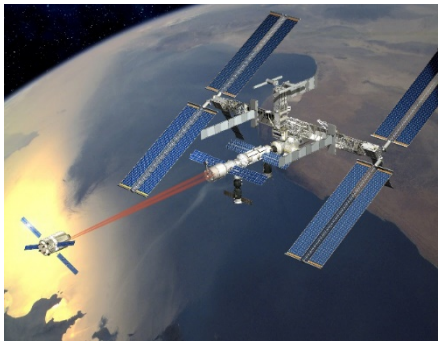
agenda item 1.12



- **Background**
  - EESS (active) bandwidth in 8-9 GHz was 600MHz. Growing demand for higher resolution to satisfy global environmental monitoring raised the need to increase the bandwidth up to 1200 MHz in total.
- **Results of WRC-15**
  - New primary EESS(active) allocations totally of 600 MHz in the 9 200-9300MHz, 9 900-10 000MHz and 10.-10.4GHz bands (100% increase)
  - Provision to protect existing and future fixed and mobile stations
- **Implications**
  - Development of modern broadband sensing technologies and space-borne radars on active sensing EESS that provides high quality measurements in all weather conditions with enhanced applications for disaster relief and humanitarian aid, large-area coastal surveillance

5 km distance limitation in space research service

agenda item 1.13



- **Background**
  - Use of 410-420MHz band for Extra Vehicular Activities was limited to communication within 5 km of an orbiting, manned space vehicle. Rendezvous and docking maneuvers required the use of the band over larger distances.
- **Results of WRC-15**
  - Removal of the 5 km distance limitation in No. **5.268**
- **Implications**
  - Facilitation rendezvous and docking maneuvers which leads to safety of human life in a manned vehicle

Reference time scale

agenda item 1.14

- **Background**
  - The Coordinated Universal Time (UTC) adjusts atomic time and ephemeris time based on Earth rotation time by the insertion or deletion of leap seconds. Digital systems are highly dependent on keeping very precise time synchronization and thus can be disrupted when a leap second is introduced**.**

- **Results of WRC-15**
  - The current implementation of UTC to insert leap seconds will continue until WRC-23 where the issue will be discussed again.
- **Implications**
  - Further studies by the International Bureau of Weights and Measures (BIPM) and ITU on various aspects of the current and potential future international reference time scale

Satellite regulatory procedures

(agenda item 7)

Satellite regulatory procedures

agenda item 7

- **Background**

  Articles **9**, **11** and **13** provide the regulatory procedures for advance publication, coordination, notification and recording of frequency assignments pertaining to satellite networks

- **Results of WRC-15:** various improvements of the procedures, e.g..
  - *Mod. **11.49** to reduce regulatory period of suspension day-by-day when the information of suspension is received beyond 6 month after suspension*
  - *Sup. Requirement for submission of Advance Publication Information for networks subject to coordination*
  - *New Res. **40 (WRC-15)** to increase transparency when one space station is used to bring into use assignments to GSO networks at different orbital locations within a short period of time*
  - *Mod. **13.6** to include reason for BR' query and specify period for BR to inform administration of its conclusion in response to administrations' replies*

- **Implications**
  - Facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit.

Reduction of the coordination arc

agenda item 9.1.2

- **Background**
  - Appendix **5** provides technical conditions for identification of administrations to coordinate with under Article **9**.
- **Results of WRC-15**
  - Reduction of coordination arc in App. **5** from 8 to 7 degrees in C band and from 7 to 6 degrees in the Ku band
  - New Res. **762** with pfd for uplink in C band and up/downlinks for Ku band outside coordination arc to consider no potential for harmful interference
  - These pfd criteria in the Resolution shall be used in No. **11.32A** examination. A new footnote was added to No. **11.32A**
- **Implications**
  - The reduction of the coordination arc and new Resolution **762 (WRC-15)** will facilitate the rational and efficient use of, as well as the access to, radio frequencies and associated geostationary-satellite orbit.

Earth Stations in Motion (ESIM)

- **Background**
  - **5.526** provides conditions for ESIM communications with GSO FSS space stations in 19.7-20.2 GHz and 29.5-30 GHz in Region 2 as well as 20.1-20.2 GHz and 29.9-30 GHz in Regions 1 and 3.

- **Results of WRC-15**
  - New **5.527A** and new Res. **156** to set conditions for ESIM communication with GSO FSS space stations in 19.7-20.2, 29.5-30.0 GHz in all Regions
  - This Res. extends the possibility offered for ESIM by **5.526** in the bands 19.7-20.2 GHz and 29.5-30 GHz in Region 2 and in bands 20.1-20.2 GHz and 29.9-30 GHz in Regions 1 and 3.
- **Implications**
  - Increased use and further development of ESIM in the frequency bands 19.7-20.2 and 29.5-30.0 GHz in all Regions with sufficient protection to other GSO satellite networks and terrestrial services

General issues

(agenda items 2, 4, 5, 8, 9.1 and 9.2)

Incorporation by reference (IbR) of ITU-R Recommendations

agenda item 2 (see Res. 27 (Rev.WRC-12) and Res. 28 (Rev.WRC-03)*)

*revised at WRC-15

- Most of ITU-R Recommendations incorporated by reference in the RR were updated to the version in force (incl. use of -0 for 1st version)
- **Rec. ITU-R TF.460-6 on UTC still Incorporated** by Reference but now via Res. 655 (WRC-15)
- **IbR of Rec. ITU-R M.1638-0 not updated** since further studies are required to take into account in particular the new radar characteristics of M.1638-1
  (see Res. 764 (WRC-15))
- New IbR of **Rec. ITU-R RS.2066-0** and **RS 2065-0** (to protect RAS and SRS as a result of AI 1.12 new EESS (active) allocations in 9.2-9.3 & 9.9-10 GHz)

Review of W(A)RC Res. & Rec.

agenda item 4 (see Res. 95 (Rev.WRC-07))

- Suppression of 6 “outdated or obsolete” Resolutions
- Modification of 26 Resolutions and 2 Recommendations to basically take into account results of requested activities and update outdated references.

Report from RA-15

agenda item 5 (see Nos. 135 and 136 of the ITU Convention)

- **New 880 km predetermined coordination distance** in RR Appendix 7, Annex 7, Table 10 for receiving earth stations in the **SRS in 2.2-2.29 GHz**, in relation to aircraft stations in the **aeronautical mobile service**
- Information included in the Report was used to update relevant references in the RR to the revised or new ITU-R publications

RR Art. 5 Country footnotes

agenda item 8 (see Res. 26 (Rev.WRC-07))

- SUP of 17 footnotes and MOD of 86 footnotes towards **higher harmonization of spectrum use**,
  but including also more than 10 requests for additional or alternative national allocations

Updating & re-arrangement of the RR

agenda item 9.1, issue 9.1.4 (see former Res. 67 (WRC-12))

- Removal of unused reference to “Metric abbreviations for the bands” in RR No. **2.1**
- **Facilitate RR browsing** with introduction of relevant Chapter title in headers on each page of RR Vol. I

Definitions fixed service, fixed station, mobile station

agenda item 9.1, issue 9.1.6 (see former Res. 957 (WRC-12))

- **NOC to current definitions in RR Article 1**
  that provide enough flexibility

Difficulties or inconsistencies in the application of the RR

agenda item 9.2

- **New** RR Art. **1 def**initions of **MetAids land & mobile stations**
- New RR No. **4.24** (Art. **4**) to allow **SRS systems**, intended to operate in deep space, to **use SRS (deep space) allocations when spacecraft is near the Earth**
- **MOD** some RR App. **4 mandatory items** to identify **transmission system for VHF/UHF digital broadcasting outside GE06 Agreement**
- Endorsed RRB decisions on Russia's **CSDRN-M** (reinstatement) & Laos **LAOSAT-128.5E** (exceptional extension of regulatory period for BiU)
- Extension of regulatory period for BiU of Colombia's **SATCOL-1B**
- Continue use by KOR of **RAS in KOR** (around **129 & 172 GHz**) after 2015 on a non-interference, non-protection basis
- SUP of 10 RR Art. **5** footnotes (e.g. outdated cases) and MOD of 3 footnotes & 3 other provisions specifically under this AI
- Identification of editorial MODs of RR (e.g. language issues) to be included directly in next RR Edition

WRC-15 outcome & follow-up

WRC-15 Final Acts available at:
www.itu.int/pub/R-ACT-WRC.12-2015
(ITU CL-16/22 of 17 May 2016)

See relevant BR Circular Letters at:
www.itu.int/md/R00-CR-CIR/en

...

... WRC-15 decisions included in the Minutes of Plenary meetings

...

See also the additional slides attached to this presentation on the results and implications of WRC-15

Radio Regulations (2016 Ed.)

www.itu.int/pub/R-REG-RR/en

Radio Regulations

The Radio Regulations contains the complete texts as adopted by the World Radiocommunication Conference (Geneva, 1995) (WRC-95) and subsequently revised and adopted by World Radiocommunication Conferences, including all Appendices, Resolutions, Recommendations and ITU-R Recommendations incorporated by reference.

Related links

- World Radiocommunication Conferences

2016 ***New!*** Publication Notice with Order Form

The Radio Regulations, edition of 2016, contains the complete texts of the Radio Regulations as adopted by the World Radiocommunication Conference (Geneva, 1995) (WRC-95), subsequently revised and approved by the World Radiocommunication Conference (Geneva, 1997) (WRC-97), the World Radiocommunication Conference (Istanbul, 2000) (WRC-2000), the World Radiocommunication Conference (Geneva, 2003) (WRC-03), the World Radiocommunication Conference (Geneva, 2007) (WRC-07), the World Radiocommunication Conference (Geneva, 2012) (WRC-12) and the World Radiocommunication Conference (Geneva, 2015) (WRC-15), including all Appendices, Resolutions, Recommendations and ITU-R Recommendations incorporated by reference. Available: end-October 2016

Available in

Other editions: 2012 Edition of 2008 Edition of 2004 Edition of 2001 Edition of 1998

WRC-15 new Resolutions

WRC-15 No.	RR No.	WRC-15 No.	RR No.	WRC-15 No.	RR No.
COM4/1	424	COM5/8	556	COM6/14	767
COM4/2	425			COM6/15	958
COM4/3	759	COM6/1	764	COM6/16	809
COM4/4	760	COM6/2	810	COM6/17	158
COM4/5	155	COM6/3	361	COM6/18	159
COM4/6	235	COM6/4	656	COM6/19	659
COM4/7	761	COM6/5	657	COM6/20	238
		COM6/6	658	COM6/21	160
COM5/1	655	COM6/7	765	COM6/22	239
COM5/2	156	COM6/8	766	COM6/23	161
COM5/3	31	COM6/9	557	COM6/24	162
COM5/4	40	COM6/10	362	COM6/25	99
COM5/5	762	COM6/11	426		
COM5/6	157	COM6/12	236	PLEN/1	163
COM5/7	763	COM6/13	237	PLEN/2	164

WRC-15 new RR Art. 5 footnotes

WRC-15 No.	RR No.	WRC-15 No.	RR No.	WRC-15 No.	RR No.
5.A14	5.133B	5.C11	5.429D	5.B112	5.474D
5.A116	5.228AA	5.R3d	5.429E	5.A15	5.484B
5.A911	5.265	5.R3e	5.429F	5.A161	5.499A
5.idR2a	5.295	5.IMT	5.431B	5.X161	5.499B
5.idR3	5.296A	5.IMT2	5.434	5.B161	5.499C
5.allocateR2	5.308	5.A117	5.436	5.B161A	5.499D
5.idR2B	5.308A	5.B117	5.437	5.C161	5.499E
5.A25	5.328AA	5.A11	5.441A	5.A16	5.509B
5.R1a *	5.341A	5.R3f	5.441B	5.B16	5.509C
5.R2a	5.341B	5.A111	5.460A	5.D16	5.509D
5.R3g	5.341C	5.B111	5.460B	5.E16	5.509E
5.R1b *	5.346	5.A192	5.461AA	5.F16	5.509F
5.R3h	5.346A	5.B192	5.461AB	5.C16	5.509G
5.R1a **	5.429A	5.A112	5.474A	5.5X	5.527A
5.R1b **	5.429B	5.C112	5.474B	5.A118	5.559B
5.B11	5.429C	5.D112	5.474C	* ~1.4/1.5 GHz	** 3.3-3.4 GHz

ITUWRC
SHARM EL-SHEIKH2019

28 October – 22 November
Sharm El-Sheikh, Egypt

Agenda for the 2019 World Radiocommunication Conference

WRC-19 Process

WRC-15	CPM-1	UIT-R	APT	CPM-2	RA	WRC-19
• Defines the agenda for WRC-19	• Allocates the work of the agenda items to relevant study groups, defines chapter rapporteur and the structure of the CPM report	• Conducts studies for 4 years and prepares draft CPM text	• Attempts to consolidate Regional positions	• Consolidates the CPM text that includes the methods to solve each agenda item	• The Radio Assembly appoints the chairmans and vice charmans of the study groups, revises the structure of the study groups, approves or revises ITU-R resolutions.	• Modifies the Radio Regulations (e.g. allocation/identification of frequency bands)

WRC-19 standing agenda items

1. List of specific agenda items from 1.1 to 1.16 (see next slide)
2. Incorporated by reference in the RR of revised ITU-R Recommendations
3. Consequential RR changes & amendments as decided by the WRC
4. Review of Resolutions and Recommendations of previous WRCs
5. Review of the Report from the Radiocommunication Assembly
6. Identify items requiring urgent action by ITU-R SGs for the next WRC
7. Review the RR procedures related to coordination-notification-registration of satellite network frequency assignments, to facilitate rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;
8. Consider deletion of country names in footnotes of RR Art. 5 TFA
9. Consider and approve the BR Director's Report on:

9.1 ITU-R activities (see 2nd next slide); 9.2 Difficulties/Inconsistencies in RR; 9.3 Res.80

10. Agenda Next WRC ([in 2023]) & preliminary agenda subsequent WRC

Topics on the WRC-19 Agenda

17 specific & 6 standing items, Res.809 (WRC-15)

1.13
1.14
1.15
1.16

Fix. & Mob. BB Apps (24.25 < IMT < 86 GHz, HAPS, Apps.Id>275 GHz, WAS/RLAN @ 5 GHz)

Maritime (GMDSS modernization (+Sat.), use of radio devices, VDES Sat component)

1.8
1.9.1
1.9.2

1.1

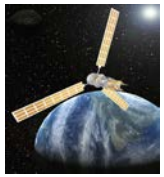
Amateur in R1 @ 50-54 MHz (4WW allocation)

WRC 2019

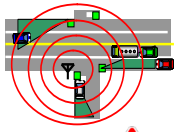
Aeronautical (GADSS needs)

1.10

Satellite issues (BSS/FSS @12 GHz, ESIM, regul. for N-GSO FSS @ 37.5 to 51.4 GHz)



1.4, 1.5, 1.6



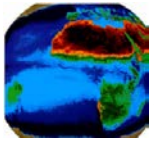
1.11
1.12

New Transport systems (harmonized bands for railways, ITS)

Regulatory issues (Sat. regulations, harmonization of spectrum use, etc.)

7
8

1.2
1.3
1.7



Earth resources & Climate monitoring Weather forecast, DCS improvement, TT&C for N-GSO Sat. of short duration

➢ See additional information in the slides attached to this presentation

Note: WRC-19 agenda item numbers indicated in italic

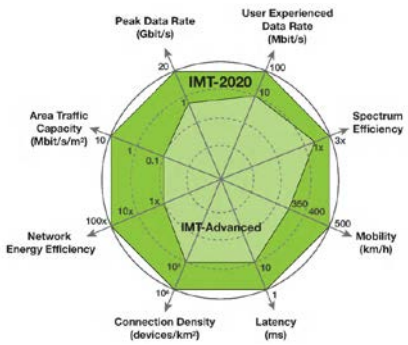
Broadband applications in the MS
(WRC-19 agenda items 1.13 and 1.16)

Consider **IMT identification** in the following bands, which **have allocations to the mobile service on a primary basis**:

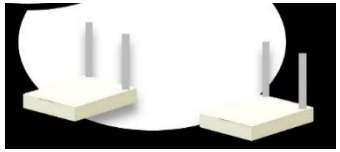
- **24.25 – 27.5 GHz**
- **37 – 40.5 GHz**
- **42.5 – 43.5 GHz**
- **45.5 – 47 GHz**
- **47.2 – 50.2 GHz**
- **50.4 – 52.6 GHz**
- **66 – 76 GHz**
- **81 – 86 GHz**

And also in the following bands which **may require additional allocations** to the MS on a primary basis**:**

- **31.8 – 33.4 GHz**
- **40.5 – 42.5 GHz**
- **47 - 47.2 GHz**

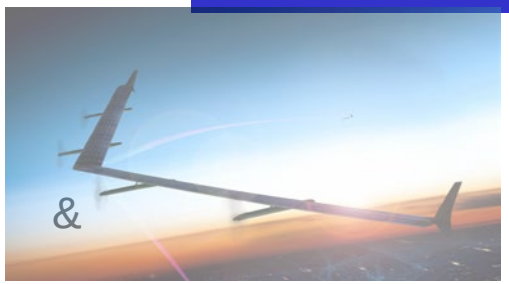


► **Res. 238 (WRC-15)**



Appropriate regulatory actions, incl. additional MS allocations, for **WAS/RLAN** are being studied in the bands between **5 150-5 925 MHz** ► **Res. 239 (WRC-15)**

Other LMS & FS Systems & Apps.
(WRC-19 agenda items 1.14 and 1.15)



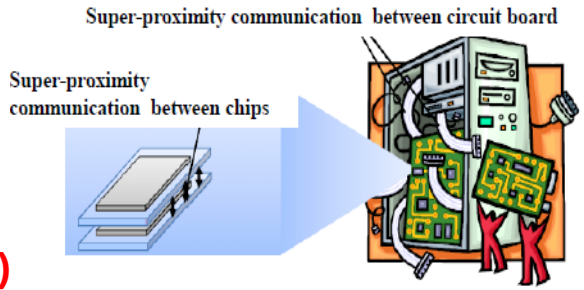
&

Studies for considering **appropriate regulatory actions for HAPS***, within existing FS alloc. at 47.2-47.5, 47.9-48.2 31.0-31.3**/27.9-28.2** GHz (**outside Reg. 2, +5 ADMs @6.5/6.5 MHz) <u>or</u> study new bands: 38-39.5 GHz & 21.4-22*** & 24.25-27.5*** GHz (*high-altitude platform stations (HAPS); *** in Region 2)

► **Res. 160 (WRC-15)**

Studies towards an **identification** for use by administrations for **LMS and FS applications** operating in the frequency range **275-450 GHz**

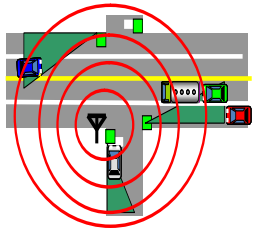
► **Res. 767 (WRC-15)**



New transport systems in the MS
(WRC-19 agenda items 1.11 & 1.12)

Studies to take necessary actions, as appropriate, to facilitate **global or regional harmonized bands to support railway radiocommunication systems** between train & trackside <u>within existing MS allocations</u>

► **Res. 236 (WRC-15)**



Studies to consider possible **global or regional harmonized bands**, to the maximum extent possible, for **implementation of evolving ITS***
<u>within existing MS allocations</u>

► **Res. 237 (WRC-15)**

* Intelligent Transport systems (ITS)

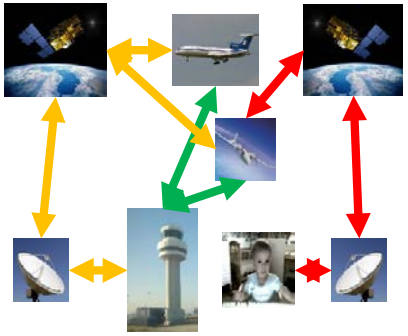
Maritime issues
(WRC-19 agenda items 1.8, 1.9.1 & 1.9.2)

Studies to consider possible **regulatory actions** to **support GMDSS** (Global Maritime Distress and Safety Systems) **modernization** and the introduction of **additional satellite systems** into the GMDSS ► **Res. 359 (Rev.WRC-15)**

Studies to consider **regulatory actions within** the band **156-162.05 MHz for autonomous maritime radio devices** to protect the GMDSS and AIS (Automatic Identification System) ► **Res. 362 (WRC-15)**

Studies to consider RR MODs, including **new MMSS (E-s & s-E)** allocations, preferably **within 156.0125-157.4375 MHz & 160.6125-162.0375 MHz** of RR App. 18, to **enable a new VDES** (VHF data exchange system) **satellite component** ► **Res. 360 (Rev.WRC-15)**

Aeronautical and Amateur issues
(WRC-19 agenda items 1.10 & 1.1)

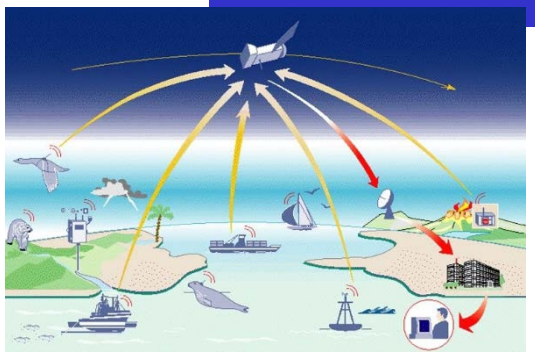


Studies to consider **spectrum needs & regulatory provisions** for **introduction and use of the GADSS** (Global Aeronautical Distress and Safety System)

► **Res. 426 (WRC-15)**

Studies for consideration of an allocation of the band **50-54 MHz to the amateur service in Region 1** (towards a worldwide allocation for harmonized weak signal communications) ► **Res. 658 (WRC-15)**

Science issues
(WRC-19 agenda items 1.2, 1.3 and 1.7)



Studies to consider **in-band power limits** for earth stations in **MetSat & EESS** @ **401-403 MHz** for DCS* and in the **MSS** @ **399.9-400.05 MHz**

► **Res. 765 (WRC-15)**

Studies to consider possible upgrading of the **2ndary MetSat (s-E)** allocation **to 1mary** status & a possible **1mary EESS (s-E)** allocation @ **460-470 MHz** for DCS

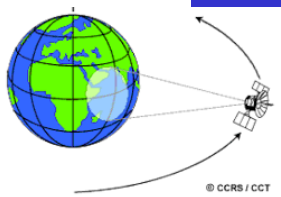
► **Res. 766 (WRC-15)**

Study spectrum needs for **TT&C in the SOS** for non-GSO satellites with <u>short duration missions</u> & consider, if necessary, new SOS allocations

► **Res. 659 (WRC-15)**

* Data Collection Systems (DCS) are used to monitor and predict climate change, monitor oceans, weather and water resources, weather forecasting and assisting in protecting biodiversity, improving maritime security

Satellite issues
(WRC-19 agenda items 1.4, 1.5, 1.6 & 7)

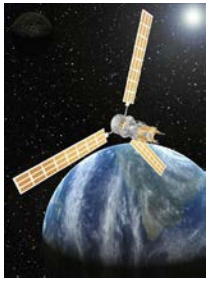


Consider results of studies on review, and possible revision if necessary, of RR App. **30** Annex 7 **limitations**, **incl. orbital position limitations**

► **Res. 557 (WRC-15)**

Studies to consider the **use of the bands 17.7-19.7 GHz (s-E) and 27.5 29.5 GHz (E-s)** by **earth stations in motion** communicating with GSO space stations **in the FSS** and take appropriate action

► **Res. 158 (WRC-15)**



Studies on development of a **regulatory framework for non-GSO FSS systems** that may operate in the bands **37.5-39.5 GHz (s-E), 39.5-42.5 GHz (s-E), 47.2-50.2 GHz (E-s) and 50.4-51.4 GHz (E-s)**

► **Res. 159 (WRC-15)**

Satellite Regulatory issues

► **Res. 86 (Rev.WRC-07)**

Satellite regulatory issues
(WRC-19 agenda item 7 – part 1)

✓ **Thirteen (13) issues identified under AI 7:**

A. **Bringing into use of frequency assignments to all non-GSO systems**, and consideration of a milestone-based approach for the deployment of non-GSO systems in specific frequency bands and services

B. **Application of coordination arc in the Ka-band**, to determine coordination requirements between the FSS and other satellite services

C. **Issues for which** consensus was achieved in ITU-R and a **single method** has been identified

D. **Ident.** specific **sat. networks & systems** to coordinate with, under RR Nos. **9.12**, **9.12A** and **9.13**

E. **Resolution** related to **RR Appendix 30B**

F. **Measures to facilitate entering new assignments** into the RR **App 30B List**

Satellite regulatory issues
(WRC-19 agenda item 7 – part 2)

G. **Updating ref. sit.** for Regions 1 and 3 networks under RR Appendices 30 and 30A when provisionally recorded assignments are converted into definitive recorded assignments

H. **Modifications to RR Appendix 4 data items to be provided for non-geostationary satellite systems**

I. **Modified regulatory procedure for non-GSO satellite systems with short-duration missions**

J. **Pfd limit** in Section 1, Annex 1 of RR Appendix 30

K. **Difficulties for Part B examinations** under § 4.1.12 or 4.2.16 of RR **Appendices 30 and 30A** <u>and</u> § 6.21 c) of RR **Appendix 30B**

Review of RR Art. 5 Country footnotes
(WRC-19 agenda item 8)

- Consider/take appropriate action on requests from ADMs to **delete their country footnotes** or to have their **country name deleted from footnotes**, if no longer required, taking into account Resolution **26 (Rev.WRC-07)**
- Last two **WRCs adopted a similar approach**:
  (see WRC-15 Doc. 142 (Rev.1) at: www.itu.int/md/R15-WRC15-C-0142)
  - ✓ **ADD of FN** or **MOD of FN** addressed by Res. **26 (Rev. WRC-07)** **were considered under the relevant WRC agenda item**, as appropriate, and had to be re-submitted under that relevant AI. (would be better to submit them directly under the relevant AI)
  - ✓ Other **ADD of FN** were **not considered**!
  - ✓ Other **MOD of FN** to add ADM's name **were accepted**, until the end of the 1st week and treated under AI 8, under certain circumstances on a purely exceptional basis & if justified, **subject to the express condition of no objections** from affected countries
  - ✓ **SUP of FN** or **MOD of FN** to sup. ADM's name **were accepted**, until end of the 2nd week, and considered under AI 8

WRC-23 preliminary items & Resp. Groups

5 preliminary agenda items, Res. 810 (WRC-15)

		Responsible ITU-R Groups
2.1	Res. 361 – Spectrum for GMDSS modernization & implementation of e-navigation (WRC-15)	WP 5B
2.2	Res. 656 – Possible new allocations for EESS (active) for spaceborne radar sounders @ 45 MHz (WRC-15)	WP 7C
2.3	Res. 657 – Spectrum needs & designation of radio services for space weather sensors (WRC-15)	WP 7C
2.4	Res. 161 – Possible new allocations for FSS @ 37.5-39.5 GHz (WRC-15)	WP 4A
2.5	Res. 235 – Spectrum use and needs of existing services @ 470-960 MHz in Region 1 and possible regulatory actions @ 470-694 MHz in Region 1 (WRC-15)	none

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- Renovated International Convention Centre- one of the largest in region
- Over 30 meeting rooms and designated areas with different capacities.
- State-of-the art IT infrastructure.
- "**The Capital"** and **"The Summit"** rooms of 3500 and 900 participants, plus a variety of different meeting rooms for 100-500 participants
- Rooms, IT and security fully meets ITU requirements to major events
- Information concerning venue, **including reservation of hotels** (ITU designated hotels), is at https://www.itu.int/md/R15-2NDWRC19PREPWORK-C-0017/en

WRC-19 Official hotels' list

#	Hotel	Rate per SGL(USD)	Rate per DBL (USD)	Meal plan
1	Grand Rotana	160	180	Bed & Breakfast
2	Maritime Jolie Ville Golf	110	125	Bed & Breakfast
3	Maritime Jolie Ville Casino Sport	110	125	Bed & Breakfast
4	Maritime Jolie Ville Casino Palm	95	105	Bed & Breakfast
5	Concorde Elsalam Front	110	125	Bed & Breakfast
6	Concorde Elsalam sport	95	105	Bed & Breakfast

Overlapping frequency bands (GHz) between some WRC-19 agenda items

AI1.6 – NGSO FSS Res. 159 (WRC-15)	AI1.13 – IMT Res. 238 (WRC-15)	AI1.14 – HAPS Res. 160 (WRC-15)	AI9.1 (9.1.9) – FSS Res. 162 (WRC-15)
	24.25-27.5	24.25-27.5 (Reg. 2)	
37.5-39.5 (s-E*)	37-40.5	38-39.5 (globally)	
39.5-42.5 (s-E*)	40.5-42.5		
47.2-50.2 (E-s*)	47.2-50.2		
50.4-51.4 (E-s*)	50.4-52.6		51.4-52.4 (E-s*)
* E-s: Earth-to-space; s-E: space-to-Earth.			

Studies to **address mutual compatibility & sharing feasibility** among the **services/applications** for which **allocation/identification is envisaged** under the corresponding Res. relating to the AI in the overlapping bands

Other ITU-R Studies to be reported to for WRC-19
(WRC-19 agenda item 9.1)

9.1.1	Res. 212 – (Rev.WRC-15)	Terrestrial & Satellite components of IMT co-existence & compatibility @1885-2025 & 2110-2200 MHz
9.1.2	Res. 761 – (WRC-15)	IMT and BSS sound @ 1452-1492 MHz in Regions 1 and 3
9.1.3	Res. 157 – (WRC-15)	Technical/Operational/Regulatory studies for new N-GSO Sat. in "C-Band" allocated to FSS
9.1.4	Res. 763 – (WRC-15)	Stations on board sub-orbital vehicles
9.1.5	Res. 764 – (WRC-15)	IbR* of Rec. ITU-R M.1638-1 & M.1849-1 (MS(RLAN)@5GHz & new radar characteristics)
9.1.6	Res. 958 – (WRC-15)	1) Urgent studies on Wireless Power Transmission (WPT) for electric vehicles
9.1.7	Res. 958 – (WRC-15)	2) Managing unauthorized operations of Earth Station terminals
9.1.8	Res. 958 – (WRC-15)	3) Narrowband & BB machine-type communication infrastructures
9.1.9	Res. 162 – (WRC-15)	FSS needs @ 51.4-52.4 GHz

* Incorporation by Reference

Main Steps towards WRC-19

WRC-15: WRC-19 Agenda - Resolution 809 (WRC-15)

1st Session of Conference Preparatory Meeting: CPM19-1

30 Nov – 1 Dec. 2015; **Results @CA/226 of 23/12/2015**

C-16: WRC-19 agenda & dates in **Res. 1380** with **MOD** venue @ C-17

Text of Res. 1380 (C-17) at www.itu.int/md/S17-CL-C-0141, see also the WRC-19 booklet

CL No. 17/52 of 18 Dec. 2017 confirmed RA-19 & WRC-19 venue in Sharm el-Sheikh (Egypt)

2nd Session of Conference Preparatory Meeting: CPM19-2

Planned dates at CICG in Geneva from 18 to 28 February 2019

Final meetings of regional groups

Member States' proposals to WRC-19

RA-19: **21 to 25 Oct. 2019 ;** WRC-19: **28 Oct. to 22 Nov. 2019**

Overview of the ITU-R Calendar towards WRC-19

Year	January – March	April – June	July – September	October – December
2015	CPM15-2	Last meetings of the Responsible Groups	WS on WRC-15	RA-15, WRC-15, **CPM19-1**
2016	WP 5D (1st)	WPs 7B & 7C (1st) WP 4C+WP 4A (1st) WPs 5A, 5B & 5C (1st) TG 5/1 (1st) WPs 1A & 1B (1st) WP 5D (2nd)	WP 4C+WP 4A (2nd) CPM-19 Steering	WP 5D (3rd) WPs 7B & 7C (2nd) WPs 5A, 5B & 5C (2nd) WPs 1A & 1B (2nd)
2017	WP 5D (4th)	WPs 7B & 7C (3rd) WP 4C+WP 4A (3rd) TG 5/1 (2nd) WPs 5A, 5B & 5C (3rd) WPs 1A & 1B (3rd) WP 5D (5th)	TG 5/1 (3rd)	WP 5D (6th) WP 4C+WP 4A (4th) WPs 7B & 7C (4th) WPs 5A, 5B & 5C (4th) WS on WRC-19 WPs 1A & 1B (4th)
2018	TG 5/1 (4th) WP 5D (7th) WP 4C+WP 4A (5th) RAG (25th)	TG 5/1 (5th) WPs 7B & 7C (5th) WPs 5A, 5B & 5C (5th) WPs 1A & 1B (5th) [WP 5D (8th)] [WP 4C+WP 4A (6th)]	[TG 5/1 (6th)]	[WPs 7B & 7C (6th)] [WP 5D (9th)] [WPs 5A, 5B & 5C (6th)] CPM-19 Manag^nt Team [WS on WRC-19] [WP 1B (6th)]
2019	**CPM19-2**	[Last meetings of the Responsible Groups] [WS on WRC-19]		**RA-19**, **WRC-19**, **CPM 23-1**

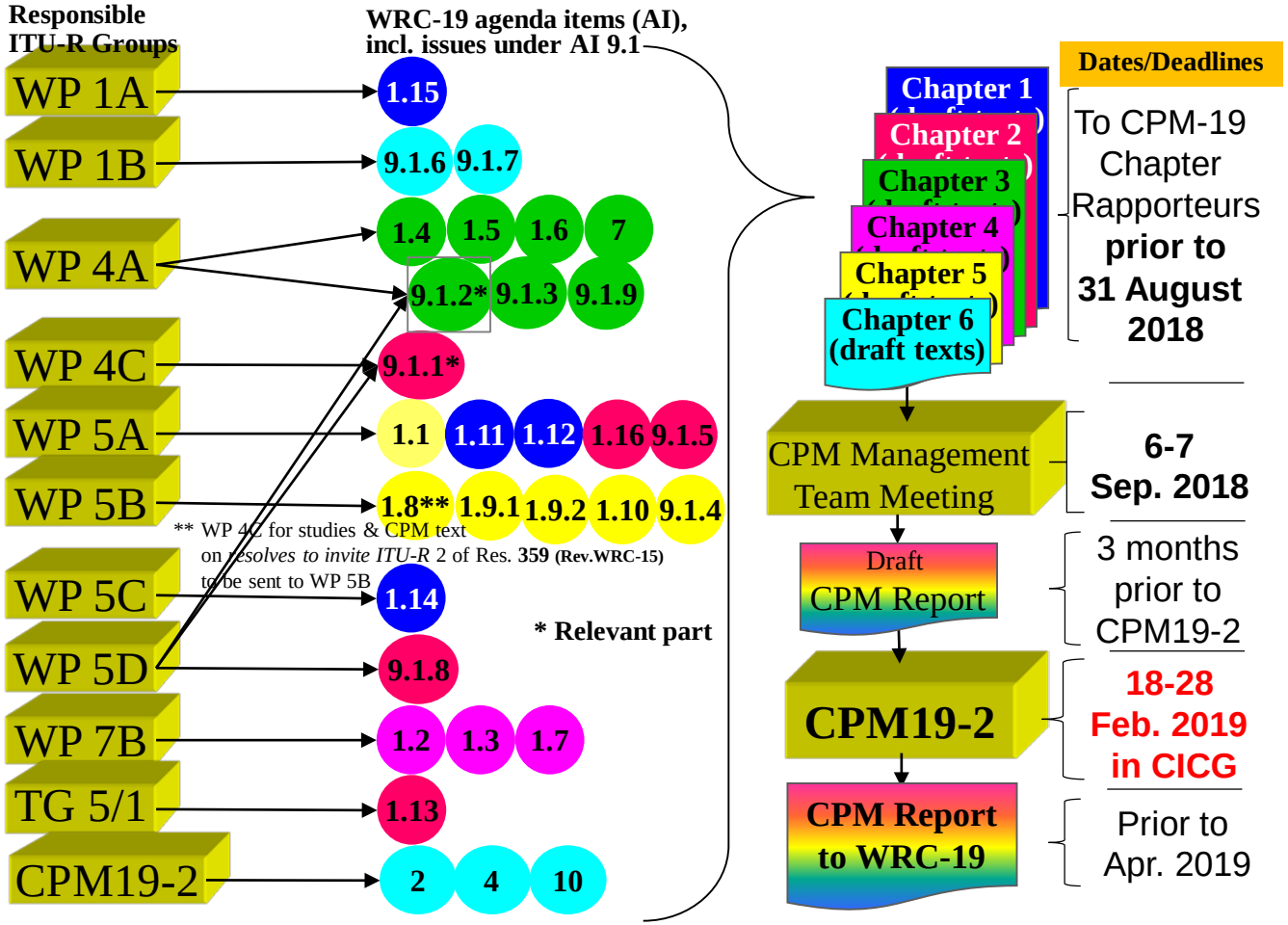
[…] = planned meetings

WS on WRC-19 = ITU Inter-regional Workshop on WRC-19 Preparation

Up-to-date information on ITU-R meetings at: www.itu.int/en/events/Pages/Calendar-Events.aspx?sector=ITU-R

Information on CPM19-2 Preparation (e.g. dates, deadlines) at: www.itu.int/md/R00-CA-CIR-0226

Summary of CPM Report Preparation



Responsible Groups activities

⇒ **Examine contributions from the membership**

⇒ **Development of draft CPM texts**

- **Carry out technical studies**
- **Development of necessary ITU-R Recommendations and Reports**
- **Propose method(s) of satisfying the WRC-15 Agenda Items**
- **Prepare preliminary draft examples of regulatory texts**

⇒ **Ensure necessary coordination with the concerned groups (contributing/interested working parties)**

Structure of the draft CPM texts for an agenda item in a given chapter

Chapter N
Agenda Item 1.XY

[Relevant WRC Resolutions if any]

N/1.XY/1 Executive Summary

N/1.XY/2 Background

N/1.XY/3 Summary and Analysis of the results of ITU-R studies, including a list of relevant ITU-R Recommendations

N/1.XY/4 Method(s) to satisfy the Agenda Item**

N/1.XY/5 Regulatory and procedural considerations**

** Not applicable to issues under agenda item 9.1, instead: **N/9.1.X/4 Conclusions**

Second Session of the CPM (CPM19-2)

(see Res. ITU-R 2-7, Web page at: www.itu.int/ITU-R/go/rcpm)

Geneva, CICG & ITU HQ, 18 – 28 February 2019

⇒ Prepare consolidated CPM Report to WRC-19, using:

- ✓ Draft CPM Report in Doc. CPM19-2/1
  (Now available in all six ITU languages!)
- ✓ Contributions from ITU-R membership deadlines for submission:
  - ➢ 18 December 2018 if translation is required
  - ➢ 4 February 2019, 1600 hours UTC in all cases
- ✓ BR Director's reports on agenda items 2 and 4

⇒ Consider also the preliminary draft of the BR Director's Report to WRC-19

⇒ CPM19-2 meeting structure should be based on the structure of the draft CPM Report

Regional preparation for WRCs

- ✓ Resolution 80 (Rev. Marrakesh, 2002)

  "World radiocommunication conference process"

  Administrations of ITU membership encouraged to:

  - **Plan WRC preparations** on the basis of 2 consecutive WRCs
  - **Harmonize** regional common **proposals** for WRC
  - Formally/informally **collaborate** with a view to **resolving differences** on WRC agenda items (a.i.)
  - **Indicate** for proposed WRC a.i., the **possible financial implications** on the BR (ITU-R studies and BR implementation)

- ✓ Resolution 72 (Rev. WRC-07)

  "World and regional preparations for world radiocommunication conferences"

  - *resolves* to **invite the regional groups to continue** their **preparations for WRCs**, including the possible convening of joint meetings of regional groups formally and informally

WRC Regional Preparation

Pursuant to Resolution 72 (Rev. WRC-07)

See details @ www.itu.int/go/wrc-19-regional

Regional preparation for WRC-19

YOU ARE HERE HOME > ITU-R > CONFERENCES AND MEETINGS > WRC > WRC-19 > REGIONAL PREPARATION FOR WRC-19

SHARE

Asia-Pacific Telecommunity (APT)

Arab Spectrum Management Group (ASMG)

African Telecommunications Union (ATU)

European Conference of Postal and Telecommunications Administrations (CEPT)

Inter-American Telecommunication Commission (CITEL)

Regional Commonwealth in the Field of Communications (RCC)

- Resolution 72 (Rev. WRC-07)

Asia-Pacific Telecommunity (APT)

Arab Spectrum Management Group (ASMG)

African Telecommunications Union (ATU)

European Conference of Postal and Telecommunications Administrations (CEPT)

Inter-American Telecommunication Commission (CITEL)

Regional Commonwealth in the Field of Communications (RCC)

Informal Group (Chairman: Mr. T. Al Awadhi, tariq.alawadhi@tra.gov.ae)

ITU Inter-Regional Workshops on WRC-19 Prep.

1st Workshop on 21-22 Nov. 2017

- Scheduled halfway through the preparatory cycle
- ⇨ Presentation and review of the on-going preparatory studies of the ITU-R responsible groups for CPM-19
- ⇨ Presentation of the organization, preliminary views, draft priorities and positions of the regional groups

(Website at: www.itu.int/go/ITU-R/wrc-19-irwsp-17, incl. Webcast archives and Input Documents)

2nd Workshop 20-22 November 2018
Webpage

- Scheduled few months prior to CPM19-2
- ⇨ Presentation of the Draft CPM Report to WRC-19 (explanation of the draft Methods to satisfy the WRC-19 agenda items)
- ⇨ Presentation and review of the regional groups' draft views, positions and common proposals

(Website at: www.itu.int/go/ITU-R/wrc-19-irwsp-18, incl. Webcast archives and Input Documents)

3rd Workshop 4-6 Sep. 2019

- To be scheduled few months prior to WRC-19
- ⇨ Presentation of the CPM & Dir. Reports to WRC-19
- ⇨ Presentation and review of the regional groups' draft views, positions and common proposals

WRC-19 Webpage and Invitation letters

www.itu.int/go/wrc-19

World Radiocommunication Conference 2019 (WRC-19), Sharm el-Sheikh, 28 October to 22 November 2019

YOU ARE HERE HOME > ITU-R > CONFERENCES AND MEETINGS > WRC > WRC-19

About the World Radiocommunication Conference

World radiocommunication conferences (WRC) are held every three to four years. It is the job of WRC to review, and, if necessary, revise the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits. **More >**

Preparatory Process

- Conference Preparatory Meeting (CPM) for WRC-19
- ITU Inter-regional Workshops on WRC-19 Preparation
- Regional preparation for WRC-19
- Informal Group (Chairman: Mr. T. Al Awadhi, tariq.alawadhi@tra.gov.ae)

Invitation letters

Invitation Letters and Credentials | Contacts

CL-18/48 - Letter send of behalf of the Government of Egypt *(16-11-2018)*

CL-18/49 - Invitation letter to WRC-19 to ITU Member States *(16-11-2018)*

DM-18/1005 - Invitation letter to WRC-19 to the State of Palestine *(16-11-2018)*

DM-18/1006 - Invitation letter to WRC-19 to Observers *(16-11-2018)*

BR Administrative Circular (CA): coming soon

Credentials: coming soon

Agenda and References

CPM-19

www.itu.int/ITU-R/go/rcpm

Chairman

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(see details at www.itu.int/go/ITU-R/cvc/CPM**)**

First Session of CPM-19

Scope defined in Resolution ITU-R 2-7

- ✓ **Geneva, 30 November - 1 December 2015**
  (269 participants, 63 MS, 25 SM, 13 contributions)
  ⇒ **results published in CA/226, of 23 Dec. 2015**
  (see at http://www.itu.int/md/R00-CA-CIR-0226/en)

- ➢ **Define framework of preparatory studies with Structure of the draft CPM Report (see the proposed detailed structure at: http://www.itu.int/oth/R0A0A00000A/en) and six Chapter Rapporteurs**

- ➢ **Identify responsible ITU-R Groups**
  for each WRC-19 agenda item (AI) and issue
  ⇒ **9 existing Working Parties and**
  ⇒ **Proposed new TG 5/1 for AI 1.13 (ToR in Annex 9 of CA/226)**
  + 3 existing WPs for the WRC-23 preliminary agenda items
  and concerned (contributing / interested) ITU-R groups
  (see Annexes 7 and 8 to CA/226, Add. 1 Corr.2)

Preparation of WRC-19 agenda item 8

- Consider/take appropriate action on requests from ADMs to **delete their country footnotes** or to have their **country name deleted from footnotes**, if no longer required, taking into account Resolution **26 (Rev.WRC-07)**
- At least last two **WRCs adopted a similar approach**: see WRC-15 Doc. 142 (Rev.1) at: www.itu.int/md/R15-WRC15-C-0142

✓ **ADD/MOD of FN** covered by Res. **26**(Rev. WRC-07) ***further resolves 1*** **were considered under the relevant WRC agenda item**, as appropriate, and had to be re-submitted under that relevant AI (would be better to submit them directly under the relevant AI)

✓ Other **ADD of FN** were **not considered**!

✓ Other **MOD of FN** to add ADM's name **were accepted**, until the end of the 1st week and treated under AI 8, under certain circumstances on a purely exceptional basis & if justified, **subject to the express condition of no objections** from affected countries

✓ **SUP of FN** or **MOD of FN** to sup. ADM's name **were accepted**, until end of the 2nd week, and considered under AI 8

Draft CPM Report – ToC

(see Annex 6 to CA/226)

Chapters of the draft CPM Report	WRC-19 Agenda items
1. Land mobile and fixed services	**1.11, 1.12, 1.14, 1.15**
2. Broadband applications in the mobile service	**1.13, 1.16, 9.1 (9.1.1, 9.1.5, 9.1.8)**
3. Satellite services	**1.4, 1.5, 1.6, 7, 9.1 (9.1.2, 9.1.3, 9.1.9)**
4. Science services	**1.2, 1.3, 1.7**
5. Maritime, aeronautical and amateur services	**1.1, 1.8, 1.9.1, 1.9.2, 1.10, 9.1 (9.1.4)**
6. General issues	**2, 4, 9.1 (9.1.6, 9.1.7), 10**

CPM Chapter Rapporteurs

Chapters	Rapporteurs
1. Land mobile and fixed services	**Ms K. ZHU (CHN),** Email: Zhukeer@miit.gov.cn
2. Broadband applications in the mobile service	**Mr J. ARIAS FRANCO (MEX),** Email: jose.arias@ift.org.mx
3. Satellite services	**Mr N. VARLAMOV (RUS),** Email: vnv73@mail.ru
4. Science services	**Mr V. MEENS (F),** Email: vincent.meens@cnes.fr
5. Maritime, aeronautical and amateur services	**Mr W. EL SAYED (EGY),** Email: wsayed@ntra.gov.eg
6. General issues	**Mr P.N. NGIGE (KEN),** Email: ngige@cck.go.ke

(see details at www.itu.int/en/ITU-R/study-groups/rcpm/Pages/cpm-19-chp-rapporteurs.aspx)

AI with Overlapping frequency bands ** Organization of the studies

to address mutual compatibility & sharing feasibility among the services/applications under AI-Resolutions with overlapping freq. bands

1.6 – NGSO FSS Res. 159 (WRC-15) (studies by WP 4A)	1.13 – IMT Res. 238 (WRC-15) (studies by TG 5/1)	1.14 – HAPS Res. 160 (WRC-15) (studies by WP 5C)	9.1 (9.1.9) – FSS Res. 162 (WRC-15) (studies by WP 4A)
	24.25-27.5	24.25-27.5 (Reg. 2)	
37.5-39.5 (s-E*)	37-40.5	38-39.5 (globally)	
39.5-42.5 (s-E*)	40.5-42.5		
47.2-50.2 (E-s*)	47.2-50.2		
50.4-51.4 (E-s*)	50.4-52.6		51.4-52.4 (E-s*)

Studies*** by WP 5C

Studies*** by TG 5/1

Studies*** by WP 4A

* E-s: Earth-to-space; s-E: space-to-Earth.

** Frequency bands in GHz

*** Other studies to **address mutual compatibility & sharing feasibility** among the **services/applications** for which **allocation/identification is envisaged** under the corresponding Res. relating to the AI in the overlapping bands

WRC-23 preliminary items & Resp. Groups

5 preliminary agenda items, Res. 810 (WRC-15)

		Responsible ITU-R Groups
2.1	Res. 361 – Spectrum for GMDSS modernization & implementation of e-navigation (WRC-15)	WP 5B
2.2	Res. 656 – Possible new allocations for EESS (active) for spaceborne radar sounders @ 45 MHz (WRC-15)	WP 7C
2.3	Res. 657 – Spectrum needs & designation of radio services for space weather sensors (WRC-15)	WP 7C
2.4	Res. 161 – Possible new allocations for FSS @ 37.5-39.5 GHz (WRC-15)	WP 4A
2.5	Res. 235 – Spectrum use and needs of existing services @ 470-960 MHz in Region 1 and possible regulatory actions @ 470-694 MHz in Region 1 (WRC-15)	none

- Res. 804 (Rev.WRC-12) Principles for establishing WRC agendas & template for submission of related proposals

Responsible ITU-R Groups activities

⇒ **Examine contributions from the membership** **(Member States, Sector members, Associates, Academia)**

⇒ **Ensure necessary coordination with the concerned groups** **(contributing/interested working parties)**

⇒ **Carry out technical studies** **(incl. compatibility & sharing)** **& develop necessary draft ITU-R Rec. & Reports** **for consideration by the relevant ITU-R Study Group(s)**

⇒ **Develop draft CPM texts** **(see also next slide)**, including:

- Background; Summary & Analysis of study results
- Proposed **method(s)** to **satisfy** the **agenda items**
- **with** associated examples of **regulatory texts**

to be **sent to CPM Chp. Rap.** on time for **CPM19-2**

⇒ **Finalize the technical studies prior to RA-19**

CPM-19 Management Team

Organised in accordance with Res. ITU-R 2-7 and composed of:

- CPM-19 Chairman, Vice-Chairmen and Chapter Rapporteurs

- Chairmen of Study Groups and Responsible Groups

⇒ Consolidate the draft CPM texts/chapters into the draft CPM Report to WRC-19 (input to CPM19-2)

See also **CA/226 Add.1** on **Preparation** of the **Draft CPM Report** to **WRC-19**

Second Session of CPM-19

- **Based on the draft CPM Report (available in six official ITU languages a minimum of 3 months before CPM19-2)**
- **Consider contributions from ITU Member States & ITU-R Sector Members**
- **Consider also a preliminary draft version of the BR Director's Report to WRC-19**

⇒ To finalize the CPM Report to WRC-19 (incl. draft solutions (methods) to satisfy the agenda items

ITU-R Preparatory Studies for WRC-19

www.itu.int/go/rcpm-wrc-19-studies

Resolution 809 (WRC-15) contains the WRC-19 agenda.

WRC-19 agenda Item (Chapter)	Issue	WRC Resolution (*)	Responsible Group(s)	Information from Responsible Group(s) TIES
1		-	-	-
1.1 (5)		Res. 658 (WRC-15)	WP 5A	Doc. 5A/650 Sections 3.3 & 4 and Annexes 4 (c), 5 (b) & 14
1.2 (4)		Res. 765 (WRC-15)	WP 7B	Doc. 7B/238 Section 3.3.1 and Annexes 1 (c), 2 (b), & 16
1.3 (4)		Res. 766 (WRC-15)	WP 7B	Doc. 7B/238 Section 3.3.2 and Annexes 3 (c), 4 (b), & 17
1.4 (3)		Res. 557 (WRC-15)	WP 4A	Doc. 4A/519 Section 4.1.1 and Annexes 9, 26 (b) & 27 (c)
1.5 (3)		Res. 158 (WRC-15)	WP 4A	Doc. 4A/519 Section 4.1.2 and Annexes 10, 11, 12, 13, 21, 22, 28 (b) & 29 (c)
1.6 (3)		Res. 159 (WRC-15)	WP 4A	Doc. 4A/519 Section 4.1.3 and Annexes 1, 14, 15, 16, 23, 30 (b) & 31 (c)
1.7 (4)		Res. 659 (WRC-15)	WP 7B	Doc. 7B/238 Section 3.1.3 and Annexes 5 (c), 6 (b), & 15; Doc. 7/73; Doc. 7/72
1.8 (5)		Res. 359 (Rev.WRC-15)	WP 5B (1)	Doc. 5B/411 Sections 2.4, 2.7, 8.2.5.2 & 8.3.1.2 and Annexes 1 (c) & 2 (b) Doc. 4C/261 Sections 3.2.2 & 4.2 and Annexes 12, 13 & 14 (c)
1.9 / 1.9.1 (5)		Res. 362 (WRC-15)	WP 5B	Doc. 5B/411 Sections 2.7 & 8.3.1.3 and Annexes 3 (c), 4 (b) & 23 Doc. 5B/195 Annex 19
1.9 / 1.9.2 (5)		Res. 360 (Rev. WRC-15)	WP 5B	Doc. 5B/411 Sections 2.4, 2.7 & 8.3.1.4 and Annexes 5 (c), 6 (b) & 26
1.10 (5)		Res. 426 (WRC-15)	WP 5B	Doc. 5B/411 Sections 2.7 & 8.2.1.1 and Annex 7 (c) & 20
1.11 (1)		Res. 236 (WRC-15)	WP 5A	Doc. 5A/650 Sections 3.4 & 4 and Annexes 6 (c), 7 (b), 17 & 18 Doc. 5/81

RA-15 > some key study topics > RA-19

- **In response to updated ITU-R Resolutions (www.itu.int/pub/R-RES) related to, e.g.:**
  – Harmonization of **Short-range devices (SRDs) –** Res. ITU-R 54-2
  – **Disaster prediction, detection, mitigation & relief –** Res. ITU-R 55-2 **(now incl. 53-1)**
  – Implementation and use of **Cognitive radio systems (CRS) –** Res. ITU-R 58-2
  – Terrestrial **Electronic News Gathering (ENG)** systems **–** Res. ITU-R 59-2
- **Res. ITU-R 64** – Guidelines for the management of **unauthorized operation of earth station terminals** (referred to in WRC-15 Res. 958 (i.e. AI 9.1, issue 9.1.7))
- **Res. ITU-R 65** – Principles for the process of **future development of IMT for 2020 and beyond** (see also Circular Letter 5/LCCE/59 of 22 March 2016)
  Res. ITU-R 56-2 – **Naming for IMT (incl.** IMT-2000, IMT-Advanced & **IMT-2020)**
- **Res. ITU-R 66** – **Studies related** to wireless systems and applications for the **development of the Internet of Things (IoT)**
- **Res. ITU-R 67** – Telecommunication/ICT **accessibility for persons with disabilities and persons with specific needs**
- **Res. ITU-R 68** – Improving the dissemination of knowledge concerning the **applicable regulatory procedures for small satellites, incl. nano- & pico-satellites**
- **Res. ITU-R 69** – Development and deployment of **international public telecommunications via satellite in developing countries**

RA-15 > ITU-R Study Groups > RA-19

- **Rev. Working Methods - streamline & clarify procedures (Res. ITU-R 1-7)**
- **Unchanged basic Structure of Study Groups (see Res. ITU-R 4-7)**
- **Updated Work Programme & Questions (see Res. ITU-R 5-7)**
- **ITU-R collaboration with:**
  - **ITU-T** (new possibility of **Intersector Rap. Groups (IRG), Res. ITU-R 6-2**)
  - **ITU-D** (substantial **areas of mutual interest** identified, **Res. ITU-R 7-3**, e.g.: **SM, BB & IMT, CRS, LSA, DSA**)
  - **Other relevant organizations,** incl. ISO, IEC **& CISPR (Res. ITU-R 9-5)**
- **Study Groups (SG) and sub-groups (e.g. Working Parties):**
  - List of **SG Chairmen and Vice-Chairmen** online
  - List of **sub-groups Chairmen and Vice-Chairmen** online
  - **Assignment of texts to the Sub-Groups on:**

Spectrum Management (SG 1, Doc. 1/1)
Radiowave Propagation (SG 3, Doc. 3/1)
Satellite Services (SG 4, Doc. 4/1)
Terrestrial Services (SG 5, Doc. 5/1)
Broadcasting Service (SG 6, Doc. 6/1)
Science Services (SG 7, Doc. 7/1)

ITU Inter-Regional Workshops on WRC-19 Preparation

Webpage

1st Workshop on 21-22 Nov. 2017

Webpage

- **To be scheduled halfway through the preparatory cycle**

⇨ **Presentation and review of the on-going preparatory studies of the ITU-R responsible groups for CPM-19**

⇨ **Presentation of the organization, preliminary views, draft priorities and positions of the regional groups**

2nd Workshop [21-23 November 2018]*

- **To be scheduled few months prior to CPM19-2**

⇨ **Presentation of the Draft CPM Report to WRC-19 (explanation of the draft Methods to satisfy the WRC-19 agenda items)**

⇨ **Presentation and review of the regional groups' draft views, positions and common proposals**

3rd Workshop [Q3 2019]*

- **To be scheduled few months prior to WRC-19**

⇨ **Presentation of the CPM & Dir. Reports to WRC-19**

⇨ **Presentation and review of the regional groups' draft views, positions and common proposals**

* Updated information on meeting dates to be provided later on at: www.itu.int/en/events/Pages/Calendar-Events.aspx?sector=ITU-R

1st ITU Inter-regional Workshop on WRC-19 Preparation

ITU | General Secretariat | Radiocommunication | Standardization | Development | ITU Telecom | Members' Zone | Join ITU

About | Events | Databases & e-Services | Publications | Space | Terrestrial | Study Groups | Regional Presence | Join ITU-R

1st ITU Inter-regional Workshop on WRC-19 Preparation - Geneva, Switzerland, 21-22 November 2017

Access to the information exchanged during the Workshop

YOU ARE HERE HOME > ITU-R > CONFERENCES AND MEETINGS > WRC > WRC-19 > IRWSP > 1ST ITU INTER-REGIONAL WORKSHOP ON WRC-19 PREPARATION - GENEVA, SWITZERLAND, 21-22 NOVEMBER 2017

The ITU Radiocommunication Bureau will organize the 1st ITU Inter-regional Workshop on WRC-19 Preparation in the ITU Headquarters in Geneva on 21 and 22 November 2017.
Using information from the ITU-R responsible groups on the on-going preparatory studies for WRC–19 (see at itu.int/go/rcpm-wrc-19-studies), as well as on up-to-date information regarding the Bureau and regional preparations for CPM19-2, RA-19 and WRC-19, round tables will provide participants with the opportunity to exchange views and have a better understanding of the most challenging WRC–19 agenda items and issues, with draft preliminary common views and/or positions of the concerned entities.

The World Radiocommunication Conference 2019 (WRC-19) Agenda and Relevant Resolutions can be downloaded from the WRC-19 web page at: http://www.itu.int/go/wrc-19.

- Regional preparation for WRC-19
- Conference Preparatory Meeting (CPM)
  ITU-R Preparatory Studies for WRC-19

Programme - Documents | Invitation Information | Contact - Posters

- Programme
- Input Documents
- Information Documents (INFO)
- Administrative Documents (ADM)
- List of Participants
- Webcast archives
- Captioning archives

Registration and Information

- Meeting sessions - ITU-R Meeting schedule
- Registration and Practical Information

New Conference Proposal Interface for WRC-19

www.itu.int/net4/Proposals/CPI/WRC19/Main

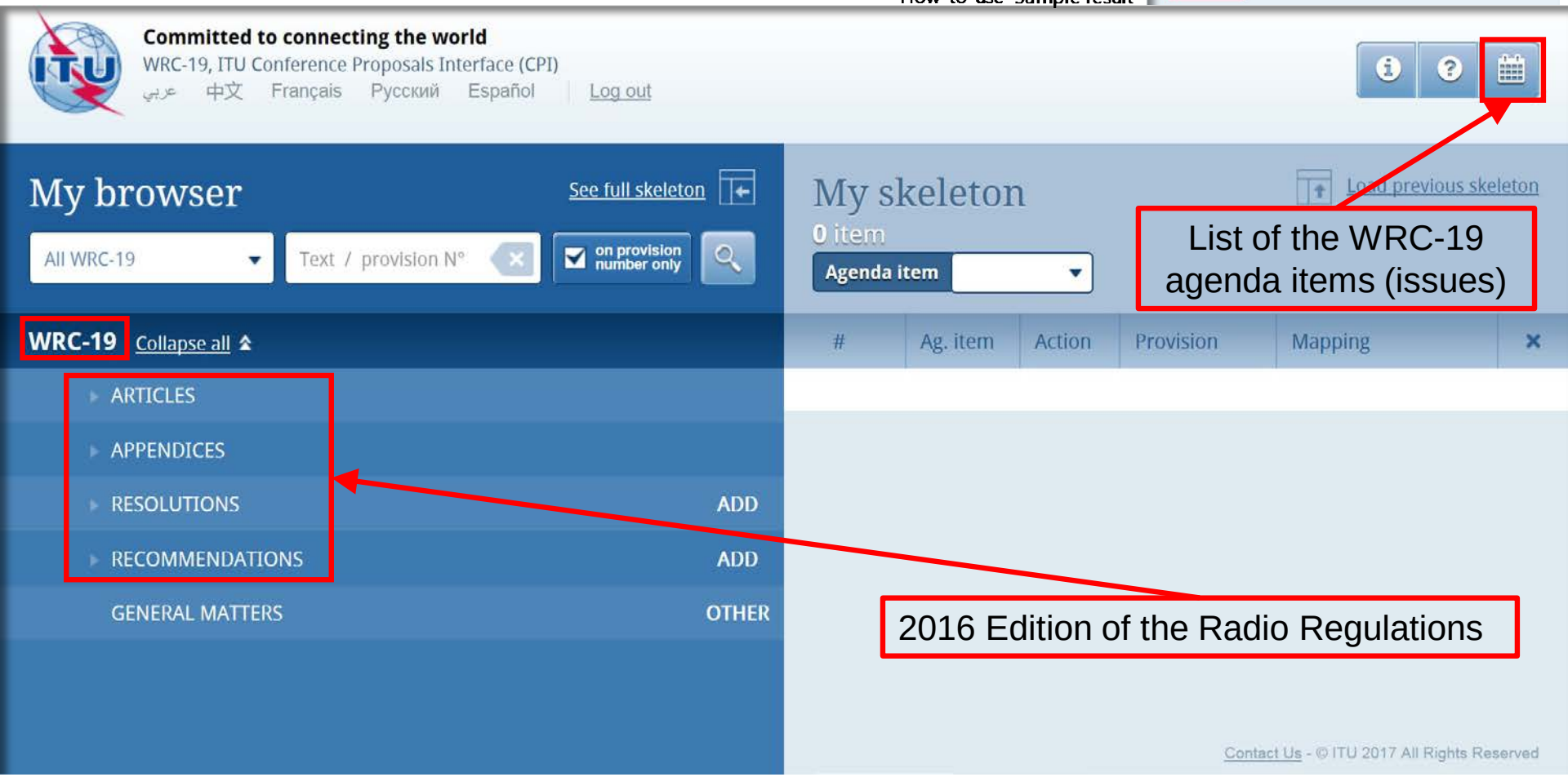
- Preliminary version to be used for preparation of draft documents with proposed actions (MOD, ADD, etc.) to RR-2016 texts

How-to-use Sample result

Username (TIES) :

Password :

Sign in (to access the screen below)



Radio service abbreviations (1/2)

Abbreviations	Radio services	RR definition
AMS	aeronautical mobile service	No. **1.32**
AM(R)S	aeronautical mobile (route) service	No. **1.33**
AMSS	aeronautical mobile-satellite service	No. **1.35**
AMS(R)S	aeronautical mobile-satellite (route) service	No. **1.36**
ARNS	aeronautical radionavigation service	No. **1.46**
ARNSS	aeronautical radionavigation-satellite service	No. **1.47**
ARS	amateur service	No. **1.56**
ARSS	amateur-satellite service	No. **1.57**
BS	broadcasting service	No. **1.38**
BSS	broadcasting-satellite service	No. **1.39**
EESS	Earth exploration-satellite service	No. **1.51**
FS	fixed service	No. **1.20**
FSS	fixed-satellite service	No. **1.21**
ISS	inter-satellite service	No. **1.22**
LMS	land mobile service	No. **1.26**
LMSS	land mobile-satellite service	No. **1.27**
MetAids	meteorological aids service	No. **1.50**
MetSat	meteorological-satellite service	No. **1.52**

Radio service abbreviations (2/2)

Abbreviations	Radio services	RR definition
MMS	maritime mobile service	No. **1.28**
MMSS	maritime mobile-satellite service	No. **1.29**
MRNS	maritime radionavigation service	No. **1.44**
MRNSS	maritime radionavigation-satellite service	No. **1.45**
MS	mobile service	No. **1.24**
MSS	mobile-satellite service	No. **1.25**
RAS	radio astronomy service	No. **1.58**
RDS	radiodetermination service	No. **1.40**
RDSS	radiodetermination-satellite service	No. **1.41**
RLS	radiolocation service	No. **1.48**
RLSS	radiolocation-satellite service	No. **1.49**
RNS	radionavigation service	No. **1.42**
RNSS	radionavigation-satellite service	No. **1.43**
SOS	space operation service	No. **1.23**
SFTSS	standard frequency and time signal service	No. **1.53**
SFTSSS	standard frequency and time signal-satellite service	No. **1.53**
SRS	space research service	No. **1.55**

Other abbreviations (1/3)

Abbreviations	Description	RR Nos.
ADS-B	Automatic Dependent Surveillance-Broadcast	-
AIS	Automatic Identification System	-
Art. or AP/App	An Article or an Appendix of the RR	-
BB	Broadband	-
BIPM	International Bureau of Weights and Measures	-
(D)BiU	(Date of) Bringing Into Use	-
BR	ITU Radiocommunication Bureau	-
DCS	Data Collection System	-
E-s, s-E	Earth-to-space, space-to-Earth	-
ES	Earth station	No. **1.63**
ESIM	ES In Motion	-
ESV	ES on board Vessels	-
GE06	Geneva 2006	-
GFT	Global Flight Tracking	-

Other abbreviations (2/3)

Abbreviations	Description	RR Nos.
GMDSS	Global Maritime Distress and Safety System	-
GSO	Geostationary-Satellite Orbit	No. **1.190**
HAPS	High Altitude Platform Station	No. **1.66A**
HF VHF UHF	High Frequency: 3 to 30 MHz Very High Frequency: 30 to 300 MHz Ultra High Frequency: 300 to 3000 MHz	No. **2.1**
ICAO	International Civil Aviation Organization	-
IMT	International Mobile Telecommunications	-
ITS	Intelligent Transport Systems	-
ITU	International Telecommunication Union	-
ITU-R	ITU Radiocommunication Sector	-
PPDR	Public Protection and Disaster Relief	-
SARPs	Standards and recommended practices	Nos. **5.2** to **5.9**
R1, R2, R3	RR Regions 1, 2 or 3	Nos. **5.2** to **5.9**

Other abbreviations (3/3)

Abbreviations	Description	RR Nos.
Rec. / Rap.	Recommendation / Report	-
Res.	Resolution	-
RLAN	Radio Local Area Network(s)	-
RR	ITU Radio Regulations	-
RRB	ITU Radio Regulations Board	-
TT&C	Telemetry, Tracking and Command	(See Nos. **1.131**-**1.136**)
UA / UAS	Unmanned Aircraft / Unmanned Aircraft Systems	-
UTC	Coordinated Universal Time	No. **1.14**
VDES	VHF Data Exchange System	-
VSAT	Very Small Aperture Terminal	-
WAIC	Wireless Avionics Intra-Communications	-
WAS	Wireless Access System(s)	-
WRC	World Radiocommunication Conference	-

Thank you!

Further info:

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