Preparations for CPM19-2, RA-19 and WRC-19 (including outcome of RA-15 and WRC-15)

Radiocommunication Bureau, ITU
Purpose of ITU WRCs

- Create regulatory certainty for a multi-trillion dollars industry which plays a increasingly important role in the development of our societies

- For fixed, mobile, satellites and broadcasting industries, global spectrum harmonization is essential to create economies of scale, roaming and interoperability

- Creating certainty requires consensus in order to achieve stable results. This demands time, efforts and patience.
The WRC Cycle

ITU Member States

ITU-R Study Groups
- SG-1: Spectrum management
- SG-3: Radiowave propagation
- SG-4: Satellite services
- SG-5: Terrestrial services
- SG-6: Broadcasting service
- SG-7: Science services

CPM: Conference Preparatory Meeting
Rec: ITU-R Recommendation
RoP: Rules of Procedure
RR: Radio Regulations (treaty status)

ITU-R Study Groups
- SG-1: Spectrum management
- SG-3: Radiowave propagation
- SG-4: Satellite services
- SG-5: Terrestrial services
- SG-6: Broadcasting service
- SG-7: Science services

CPM-1
CPM Report
WRC
Director
Radiocommunication Bureau

RRB: Radio Regulations Board
SGs: Radiocommunication Study Groups
RA: Radiocommunication Assembly
WRC: World Radiocommunication Conference

Final Acts
Revisions to the Radio Regulations

Next WRC Agenda
Adopted by ITU Council

January 2018
Overview of the preparations

Agenda: draft in WRC Res & final in Council Res

Informal Group (Structure & Chairmanship)

Proposals

Coordinated common proposals

RA

RA Report (Doc. 216)

CPM Report (Doc. 3)

Director’s Report (Doc. 4 & Doc. 5)

Conference Secretariat (BR & GS)

Final Acts

Radio Regulations (CS89)

Member States

Proposals

Regional preparation Resolution 72 (Rev.WRC-07)

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)

(WRC-15 Docs)
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 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

[ 389 ]

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

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


Available in

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

List of the WRC-19 agenda items (issues)

2016 Edition of the Radio Regulations
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

Chairman
Mr K. AL-AWADHI (UAE), E-mail: khalid.alawadi@tra.gov.ae

Vice-Chairmen, CPM
Mr M. AL BADI (OMA), E-mail: albadi@tra.gov.om
Ms C. BEAUMIER (CAN), E-mail: chantal.beaumier@canada.ca
Mr X. GAO (CHN), E-mail: gaoxiaoyang@chinasatcom.com
Mr V. GOEL (IND), E-mail: viresh.goel@gmail.com
Mr A. KÜHN (D), E-mail: alexander.kuehn@bnetza.de
Dr H. SEONG (KOR), E-mail: seong@msip.go.kr
Mr T. SHAFIEE (IRN), E-mail: shafiee@cra.ir
Mr. A. V. VASSILIEV (RUS), E-mail: alexandre.vassiliev@mail.ru

(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.1)
Topics on the WRC-19 Agenda

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

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

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

1.15 Aeronautical
(GADSS needs)

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

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

Note: WRC-19 agenda item numbers indicated in italic
**Agenda item 9.1 Issues**

9.1.1 Res. 212 – Terrestrial & Satellite components of IMT co-existence & compatibility @1885-2025 & 2110-2200 MHz (Rev.WRC-15)

9.1.2 Res. 761 – IMT and BSS sound @ 1452-1492 MHz in Regions 1 and 3 (WRC-15)

9.1.3 Res. 157 – Technical/Operational/Regulatory studies for new N-GSO Sat. in “C-Band” allocated to FSS (WRC-15)

9.1.4 Res. 763 – Stations on board sub-orbital vehicles (WRC-15)

9.1.5 Res. 764 – IbrR of Rec. ITU-R M.1638-1 & M.1849-1 (MS(RLAN)@5GHz & new radar characteristics) (WRC-15)

9.1.6 Res. 958 – 1) Urgent studies on Wireless Power Transmission (WPT) for electric vehicles (WRC-15)

9.1.7 Res. 958 – 2) Managing unauthorized operations of Earth Station terminals (WRC-15)

9.1.8 Res. 958 – 3) Narrowband & BB machine-type communication infrastructures (WRC-15)

9.1.9 Res. 162 – FSS needs @ 51.4-52.4 GHz (WRC-15)
Overlapping frequency bands (GHz) between some WRC-19 agenda items

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<tr>
<td>24.25-27.5</td>
<td>24.25-27.5 (Reg. 2)</td>
<td>38-39.5 (globally)</td>
<td>51.4-52.4 (E-s*)</td>
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<tr>
<td>37.5-39.5 (s-E*)</td>
<td>37-40.5</td>
<td>38-39.5 (globally)</td>
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<td>39.5-42.5 (s-E*)</td>
<td>40.5-42.5</td>
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<td>47.2-50.2 (E-s*)</td>
<td>47.2-50.2</td>
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<tr>
<td>50.4-51.4 (E-s*)</td>
<td>50.4-52.6</td>
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</table>

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

(see Annex 6 to CA/226)
# CPM Chapter Rapporteurs

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

WRC-19 agenda items & Resp. Groups

1.1 Amateur @ 50-54 MHz
1.2 MSS/MetSat/EESS ES @ 400MHz
1.3 MetSat/EESS @ 460-470MHz
1.4 BSS Plans/Lists & FSS
   App. 30 Annex 7 limitations
1.5 FSS ESIM
1.6 N-GSO QV-FSS
1.7 TT&C for NGSO of Short duration
1.8 GMDSS, incl. Sat.
1.9 Maritime radio devices
1.9.1 VDES Sat. comp.
1.9.2 GADSS
1.10 ** Relevant part

2, 4, 10

Footnotes

WP 5A
WP 7B
WP 4A
WP 5B
TG 5/1**
** see slide 17
WP 5C
WP 1A
WP 4C***
*** WP 4C is in charge of developing studies and draft CPM text on resolves to invite ITU-R 2 of Res. 359 (Rev.WRC-15) (AI 1.8) and sending that to WP 5B
WP 5D
WP 1B
CPM19-2
WRC-19

Railway in MS
ITS in MS
24.25 GHz < IMT < 86 GHz
HAPS
WAS/RLAN
Sat. RR procedures
MS/FS Apps Id. @ 275-450 GHz

Resp. Groups

9.1 Issues
BR Dir.'s Report (9)

January 2017
**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

<table>
<thead>
<tr>
<th>Service/Application</th>
<th>Frequency Bands (GHz)</th>
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<tbody>
<tr>
<td>NGSO FSS Res. 159</td>
<td>1.6 – 24.25-27.5</td>
</tr>
<tr>
<td>IMT Res. 238</td>
<td>1.13 – 24.25-27.5 (Reg. 2)</td>
</tr>
<tr>
<td>HAPS Res. 160</td>
<td>1.14 – 24.25-27.5 (Reg. 2)</td>
</tr>
<tr>
<td>FSS Res. 162</td>
<td>9.1 (9.1.9) – 51.4-52.4 (E-s*)</td>
</tr>
</tbody>
</table>

**Studies**
- **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**)

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

1. **Res. 361** – Spectrum for GMDSS modernization & implementation of e-navigation
   - Responsible ITU-R Groups: WP 5B

2. **Res. 656** – Possible new allocations for EESS (active) for spaceborne radar sounders @ 45 MHz
   - Responsible ITU-R Groups: WP 7C

3. **Res. 657** – Spectrum needs & designation of radio services for space weather sensors
   - Responsible ITU-R Groups: WP 4A

4. **Res. 161** – Possible new allocations for FSS @ 37.5-39.5 GHz
   - Responsible ITU-R Groups: WP 4A

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
   - Responsible ITU-R Groups: none

**Res. 804 (Rev.WRC-12)**

Principles for establishing WRC agendas & template for submission of related proposals
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
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**

(see the Proposed detailed Structure for the Draft CPM Report to WRC-19 at: http://www.itu.int/oth/R0A0A00000A/en)

* Not more than half a page of text

** Not applicable to issues under agenda item 9.1, instead:

N/9.1.X/4 Conclusions
Chapter N
Agenda Item 1.XY
(typical example with a single issue in the Agenda item)
...
N/1.XY/4  Methods to satisfy the Agenda Item
  N/1.XY/4.1  Method A* - ...
  N/1.XY/4.2  Method B - ...
...
N/1.XY/5  Regulatory and procedural considerations
  N/1.XY/5.1  For Method A* - ...
  N/1.XY/5.2  For Method B - ...
...
* Alternatives to Method A (or B, etc.) could be Sub-Methods A1, A2, etc., and be presented in Sub-section N/1.XY/4.1.1, N/1.XY/4.1.2, etc., and same in the corresponding sub-sections of Section 5
**Chapter N**

**Agenda Item 1.XY**

*(typical example with multiple issues in the Agenda item)*

<table>
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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>N/1.XY/4</td>
<td>Methods to satisfy the Agenda Item</td>
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<tr>
<td>N/1.XY/4.1</td>
<td>Issue A - ...</td>
</tr>
<tr>
<td>N/1.XY/4.1.1</td>
<td>Method A1* - ...</td>
</tr>
<tr>
<td>N/1.XY/4.1.2</td>
<td>Method A2 - ...</td>
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<tr>
<td>N/1.XY/4.2</td>
<td>Issue B - ...</td>
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<td>N/1.XY/4.2.1</td>
<td>Method B1 - ...</td>
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<td>N/1.XY/4.2.2</td>
<td>Method B2 - ...</td>
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<td>Regulatory and procedural considerations...</td>
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<td>For Issue B - ...</td>
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<td>N/1.XY/5.2.1</td>
<td>For Method B1 - ...</td>
</tr>
<tr>
<td>N/1.XY/5.2.2</td>
<td>For Method B2 - ...</td>
</tr>
</tbody>
</table>

* Alternatives to Method A1 (or A2, B1, etc.) could be Sub-Methods A1a, A1b, etc., and be presented in Sub-sections N/1.XY/4.1.1.1, N/1.XY/4.1.1.2, etc., and same in the corresponding sub-sections of Section 5.

(see CPM Chairman’s Doc. at: [www.itu.int/md/R15-WP1A-C-0077](http://www.itu.int/md/R15-WP1A-C-0077))
Information for the preparation of the draft CPM texts

- Resolution ITU-R 2-7 with Annexes 1 and 2 (Rev. RA-15)
  www.itu.int/pub/R-RES-R.2-7-2015

- BR Administrative Circular CA/226, its Add. 1 & Corr. 2
  www.itu.int/md/R00-CA-CIR-0226

- Proposed detailed Structure for the Draft CPM Report to WRC-19
  www.itu.int/oth/R0A0A00000A/en

- CPM Chairman’s Document to ITU-R Responsible Groups

- Additional information and examples of RR modifications in Sections 2.5, 3.4, 3.6 to 3.9 and Annex 2 of the former Guidelines for the Preparation of Proposals for WRC15
Summary of CPM Report Preparation

Responsible ITU-R Groups

WP 1A
WP 1B
WP 4A
WP 4C
WP 5A
WP 5B
WP 5C
WP 5D
WP 7B
TG 5/1
CPM19-2

WRC-19 agenda items (AI), incl. issues under AI 9.1

1.15
9.1.6
9.1.7
1.4
1.5
1.6
1.7
9.1.2*
9.1.3
9.1.9
9.1.1*
* Relevant part

WP 4C for studies & CPM text on resolts to invite ITU-R 2 of Res. 359 (Rev.WRC-15) to be sent to WP 5B

1.8**
1.11
1.12
1.16
9.1.5
1.9.2
1.10
9.1.4

Chapter 1 (draft texts)
Chapter 2 (draft texts)
Chapter 3 (draft texts)
Chapter 4 (draft texts)
Chapter 5 (draft texts)
Chapter 6 (draft texts)

CPM Management Team Meeting

Draft CPM Report

CPM19-2

CPM Report to WRC-19

Dates/Deadlines

To CPM-19 Chapter Rapporteurs prior to 31 August 2018

{6-7 Sep. 2018}

> 3 months prior to CPM19-2

{18-28 Feb. 2019 in CICG}

{Prior to Apr. 2019}

{planned}
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
## Overview of the ITU-R Calendar towards WRC-19

### Up-to-date information on ITU-R meetings at:

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

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<th>April – June</th>
<th>July – September</th>
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<td>WS on WRC-15</td>
<td>RA-15</td>
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<td>WP 5D (1st)</td>
<td>WP 4C+WP 4A (1st)</td>
<td>WP 4C+WP 4A (2nd)</td>
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<td>2016</td>
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<td>WPs 7B &amp; 7C (3rd)</td>
<td>TG 5/1 (3rd)</td>
<td>WP 5D (6th)</td>
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<td>WP 4C+WP 4A (3rd)</td>
<td>TG 5/1 (2nd)</td>
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<td>WP 5D (5th)</td>
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<td>2017</td>
<td>TG 5/1 (4th)</td>
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<td>Wps 7B &amp; 7C (5th)</td>
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<td>[Last meetings of the Responsible Groups]</td>
<td>[WS on WRC-19]</td>
<td>RA-19</td>
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[... ] = planned meetings

**WS on WRC-19 = ITU Inter-regional Workshop on WRC-19 Preparation**
### ITU-R Preparatory Studies for WRC-19

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

[www.itu.int/go/rcpm-wrc-19-studies](http://www.itu.int/go/rcpm-wrc-19-studies)

<table>
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<th>WRC-19 agenda Item (Chapter)</th>
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<th>Responsible Group(s)</th>
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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)

Res. ITU-R 64 – Guidelines for the management of unauthorized operation of earth station terminals (referred to in WRC-15 Res. 958 (i.e. Al 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 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
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)
Pursuant to Resolution 72 (Rev. WRC-07)

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

Informal Group (Chairman: Mr. T. Al Awadhi, tariq.alawadhi@tra.gov.ae)
ITU Inter-Regional Workshops on WRC-19 Preparation

1st Workshop on 21-22 Nov. 2017

• 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 - 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.


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

Access to the information exchanged during the Workshop

- 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
Thank you for your attention

Additional slides on

- Results and implications of WRC-15 and WRS-16
- Agenda for WRC-19 / Preliminary Agenda for WRC-23
- Numbers for WRC-15 new Res. & new Art. 5 footnotes
- Radio services and other abbreviations
Results and implications of World Radiocommunication Conference, 2015

Radiocommunication Bureau
International Telecommunication Union
Mobile Broadband
(agenda items 1.1, 1.2)
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 secure future access to spectrum by other services
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

- **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

- **4 800–4 990 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)

<table>
<thead>
<tr>
<th></th>
<th>Region 1</th>
<th>Region 2</th>
<th>Region 3</th>
<th>Worldwide</th>
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Worldwide
IMT Spectrum after WRC-07 (MHz)

Region 1 (121 Countries)

Region 2 (35 Countries)

Region 3 (37 Countries)

World

- 1085 MHz
- 951 MHz
- 1177 MHz

<20% of countries  20 to 80% of countries  80 to 99% of countries  100% of countries
IMT Spectrum after WRC-15 (MHz)

Region 1 (121 Countries)
- 1372 MHz
  - <20% of countries: 0
  - 20 to 80% of countries: 140
  - 80 to 99% of countries: 0
  - 100% of countries: 1232

Region 2 (35 Countries)
- 1764 MHz
  - <20% of countries: 0
  - 20 to 80% of countries: 438
  - 80 to 99% of countries: 0
  - 100% of countries: 1242

Region 3 (37 Countries)
- 1786 MHz
  - <20% of countries: 0
  - 20 to 80% of countries: 516
  - 80 to 99% of countries: 976
  - 100% of countries: 910

World
- 1886 MHz
  - <20% of countries: 0
  - 20 to 80% of countries: 514
  - 80 to 99% of countries: 144
  - 100% of countries: 318

- +26%
- +85%
- +52%
- +60%
IMT harmonized Spectrum after WRC-15 (MHz)

Region 1 (121 Countries)
- 1232 MHz
  - +39%

Region 2 (35 Countries)
- 1242 MHz
  - +31%

Region 3 (37 Countries)
- 976 MHz
  - +10%

World
- 1228 MHz
  - +39%

- 80 to 99% of countries
- 100% of countries
Importance of WRC-15 decisions

- 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)**

**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)

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. See [www.itu.int/ITU-R/go/res647](http://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)
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.
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
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.
- 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 because placing FSS earth station on aircraft changes interference situation
- need for taking decision in the absence of available ICAO standards
Use of fixed-satellite service for unmanned aircraft systems (2)

**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
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 cables. WAIC provides safety-related data in single aircraft (e.g. from sensors to cockpit)

WRC-15 results
- allocation of 4200-4400 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)

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: not claiming protection from ARNS, ability to operate in 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

**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

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 downlink, only 750 MHz for 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)

Before WRC-15
- 250 MHz
- 10.95 GHz
- 11.2 GHz
- 11.45 GHz
- 11.7 GHz
- 12.5 GHz
- 12.75 GHz
- Total 750 MHz

After WRC-15
- 250 MHz
- 10.95 GHz
- 11.2 GHz
- 11.45 GHz
- 11.7 GHz
- 12.5 GHz
- 12.75 GHz
- 250 MHz
- Total 1000 MHz
- New allocation: 13.4 – 13.65 GHz
Ku-band frequency allocation for unplanned FSS uplink (R1)

Before WRC-15

250 MHz
13.75 GHz

500 MHz
14.00 GHz

14.50 GHz

After WRC-15

250 MHz
13.75 GHz

500 MHz
14.00 GHz

New allocation for 22 countries: 14.5 – 14.75 GHz

Total 750 MHz

Total 1000 MHz

Existing allocation

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

agenda item 1.6

Improved balance between uplink and downlink

- Existing allocation
- New allocation

Downlink:
- 250 MHz
- 250 MHz
- 500 MHz

Uplink:
- 50 MHz
- 250 MHz
- 500 MHz
- 250 MHz

Total 1000 MHz

New allocation for 8 countries: 14.5 – 14.75 GHz
Ku-band Frequency allocation for unplanned FSS (Region 3)

Improved balance between uplink and downlink

- **Downlink**:
  - 250 MHz from 10.95 GHz to 11.2 GHz
  - 250 MHz from 11.45 GHz to 11.7 GHz
  - 550 MHz from 12.2 GHz to 12.75 GHz
  - Total 1050 MHz

- **Uplink**:
  - 250 MHz from 13.75 GHz
  - 500 MHz from 14.00 GHz to 300 MHz
  - New allocation for 10 countries: 14.5 – 14.8 GHz
  - Total 1050 MHz

- **New allocation for 10 countries**: 14.5 – 14.8 GHz

**Existing allocation**

**New allocation**
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

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)

**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

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<th>After WRC-15</th>
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<td><strong>Frequency band</strong></td>
<td>5 925-6 425 MHz</td>
<td>14-14.5 GHz</td>
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<td><strong>Minimum diameter of ESV antenna</strong></td>
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<td>0.6 m</td>
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<td><strong>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</strong></td>
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**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

**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)

**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

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 uplink 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.
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
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
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)
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 months 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’s 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.
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.
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

- 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 Al 1.12 new EESS (active) allocations in 9.2-9.3 & 9.9-10 GHz)

agenda item 2 (see Res. 27 (Rev.WRC-12) and Res. 28 (Rev.WRC-03)*)
*revised at WRC-15
Review of W(A)RC Res. & Rec.

- 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

- 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

- **New RR Art. 1 definitions 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

*agenda item 9.2*
Agenda for the 2019 World Radiocommunication Conference
The following bands, which are already allocated to mobile, will be studied with a view to an **IMT-2020 identification**:

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

The following bands will also be studied, although they do not currently have global mobile allocations:

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

Appropriate regulatory actions, incl. additional MS allocations, for **WAS/RLAN** will be studied in the bands between 5 150-5 925 MHz

**Res. 238 (WRC-15)**

**Res. 239 (WRC-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 GHz (**outside Reg. 2, +5 ADMs @6.5/6.5 MHz** or study new bands: 38-39.5 GHz & 21.4-22 GHz & 24.25-27.5 GHz (**in Region 2**)

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

**Res. 160 (WRC-15)**

**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 within existing MS allocations

- Res. 236 (WRC-15)

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

- 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)

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.

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 1stary status & a possible 1stary 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 short duration missions & 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)
5 preliminary agenda items, Res. 810 (WRC-15)

- Res. 361 – (WRC-15) Spectrum for GMDSS modernization & implementation of e-navigation
- Res. 656 – (WRC-15) Possible new allocations for EESS (active) for spaceborne radar sounders @ 45 MHz
- Res. 657 – (WRC-15) Spectrum needs & designation of radio services for space weather sensors
- Res. 161 – (WRC-15) Possible new alloc. for FSS @ 37.5-39.5 GHz
- Res. 235 – (WRC-15) Spectrum use and needs of existing services @ 470-960 MHz in Region 1 and possible regulatory actions @ 470-694 MHz in Region 1
The ITU is celebrating this year the 110th anniversary of the Radio Regulations, a success story of international cooperation among Members States with the inestimable support of telecommunication industry partners.

**Description**

International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies – ICTs.

ITU manages the radio spectrum and satellite orbits resources, develop the technical standards that ensure networks and technologies seamlessly interconnect, and strive to improve access to ICTs to underserved communities worldwide.

**History**

ITU's history is closely linked to the development of radiocommunications. The crucial role wireless systems are playing in the efficient and timely deployment of communications infrastructure is key in the efforts being undertaken by the global community to bridge the digital divide and in helping the world communicate.

In 1906 the first International Radiotelegraph Conference gathered 29 states in Berlin to sign the “International Radiotelegraph Convention” establishing the principle of compulsory intercommunication between vessels at sea.
2017 marks the 90th anniversary of the CCIR/ITU-R Study Groups, a testimony of global collaboration to produce universally applied regulations, standards and best practices and enable the sustainable development of the wireless ecosystem.

Currently, more than 5,000 specialists, from administrations, the telecommunications industry and academic organizations throughout the world, participate in the work of the ITU-R Study Groups on topics such as efficient use and management of spectrum/orbit resources, radio wave propagation, definition of future radiocommunication systems, characteristics and performance, including fixed communications, aeronautical, maritime and land mobile communications, public protection and disaster relief, sound and television broadcasting, radio location, satellite communications and radionavigation, Earth exploration, meteorology, space science and radio astronomy.

As part of the celebrations, a series of events have taken place throughout the anniversary year of 2017, including:

- A high-level session of the WSIS Forum on "ITU enabling the wireless ecosystem" showcasing ITU-R Study Groups achievements at the Ministerial level which was held on 12 June, 16h30 - 18h15 at ITU Headquarters, Geneva, Switzerland.

- A dedicated session at ITU TELECOM World 2017 "Enabling and shaping the wireless ecosystem" which was held on 27 September, 16h45 - 18h00 in Busan, Republic of Korea.

- A celebration in honour of the 90th Anniversary of the CCIR/ITU-R Study Groups which was held on 21 November, 16h00 - 18h00 during the 1st ITU Inter-regional Workshop on WRC-19 Preparation at ITU Headquarters, Geneva, Switzerland.

Targeting primarily ITU membership, ITU-R Study Groups participants and delegates, specialized technical magazines, research institutions, media, ITU staff and the general public, these events highlighted the eminent role of the ITU-R Study Groups in enabling and shaping the overall wireless ecosystem and ensuring its sustainable development.

*CCIR - International Radiocommunication Consultative Committee
Include RR text(s) in a draft document

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

*More information in relevant parts of CPI User Guide for WRC-19*

**(main steps)**

1. **RR text search**
2. **agenda item/(issue) selection**
3. **RR text view**
4. **Action selection (e.g. MOD) for “My skeleton”**
5. **Repeat steps 1 to 4 to add other RR text(s) (provisions, etc.)**

**January 2018**
Sample Doc. generated by CPI when clicking on *. The Doc. is also attached to an email sent by CPI to the User.


No button yet in CPI to submit WRC-19 proposals (will be in a future version).

Sample RR texts correctly formatted.

* An intermediate screen appears to enter the name of the country/regional group and the Doc. suffix number. This information is not necessary at this stage and can be ignored by clicking on “Save my skeleton”.

January 2018
# WRC-15 new Resolutions

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