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ITUWORKSHOPS

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

21 – 22 November 2017

Geneva, Switzerland

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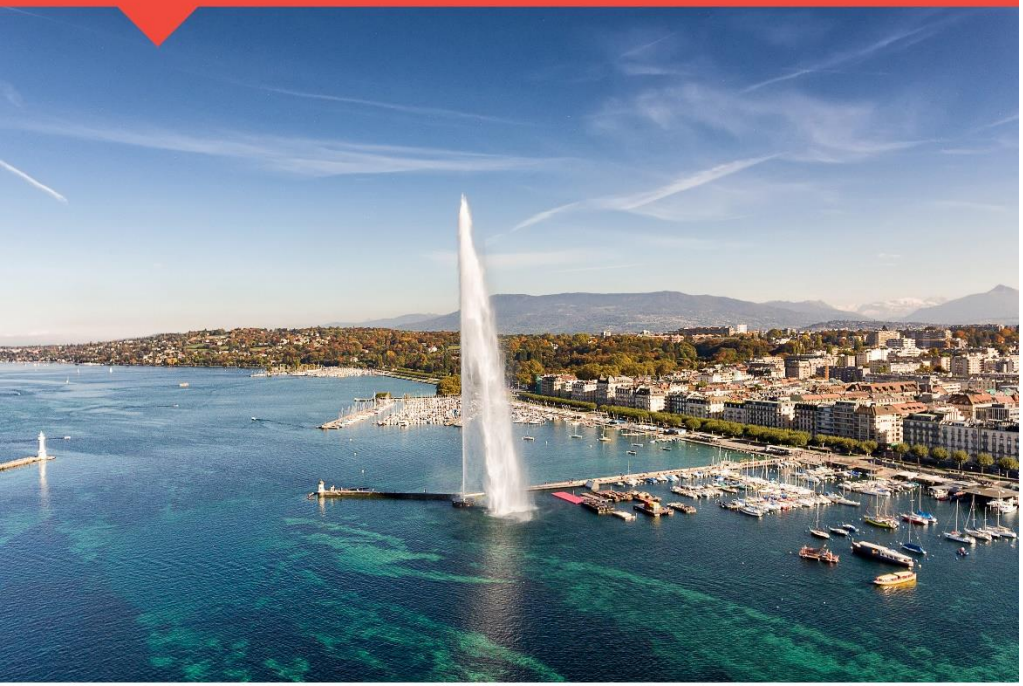

ITUWRC WORLD RADIOCOMMUNICATION CONFERENCE

Organized by:

90th Anniversary CCIR - ITU-R Study Groups (1927-2017)

ITU

1st ITU INTER-REGIONAL WORKSHOP ON WRC-19 PREPARATION (Geneva, 21-22 November 2017)

Satellite Issues

WRC-19 agenda items 1.5, 1.6, 7

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Chairman, WP 4A

Satellite Issues

- **AI 1.5** - *to consider the use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service and take appropriate action, in accordance with Resolution* ***158 (WRC-15)***

- **AI 1.6 -** *to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency 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), in accordance with Resolution* ***159 (WRC-15)***

- **AI 7** - *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution* ***86 (Rev.WRC-07)****, in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit*

Agenda Item 1.5

- **AI 1.5** - *to consider the use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion (ESIM) communicating with geostationary space stations in the fixed-satellite service and take appropriate action, in accordance with Resolution* ***158 (WRC-15)***

- **Issues:**

➢ **Technical characteristics of different types of ESIM, ie. land, aeronautical and maritime**
  - ❖ **General agreement on the characteristics to be used**

➢ **ESIM operating in 17.7-19.7 GHz**
  - ❖ **Generally agreed that introducing ESIM in the FSS downlink band does not change the interference environment for other services**
  - ❖ **Agreement in the 17.7-19.7 GHz band that ESIMs will not claim protection from FS or MS operations**

➢ **Analysis of ESIM sharing with Fixed Service (FS)**
  - ❖ **Multiple studies submitted for each type of ESIM in the 27.5-29.5 GHz band. Results vary and are still being discussed**

Agenda Item 1.5

- **AI 1.5** - *to consider the use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion (ESIM) communicating with geostationary space stations in the fixed-satellite service and take appropriate action, in accordance with Resolution* ***158 (WRC-15)***

- **Issues:**

➢ **Analysis of ESIM sharing with Mobile Service (MS)**

- ❖ **Multiple studies submitted for each type of ESIM in the 27.5-29.5 GHz band. Results vary and are still being discussed**

➢ **Analysis of ESIM sharing with MSS feeder-links**

- ❖ **Initial study submitted but not yet adequately discussed**

➢ **In-country operation of ESIMs**

- ❖ **Recognition that operation of ESIMs requires a license by the administration where the ESIM operates**
- ❖ **Licenses will include technical and operational conditions as required by each administration**

Agenda Item 1.5

- Working document towards draft new Report
  - Report will address ESIM sharing with FS, MS, MSS feeder-links as well as techniques to improve sharing between land based ESIM and FS and MS

- **Working document towards draft CPM text**
  - Notwithstanding the need to continue addressing the various sharing issues, there is general consensus that a WRC Resolution, along the lines of Resolution **156 (WRC-15)** for the 19.7-20.2 GHz and 29.5-30.0 GHz bands, could serve as a method to address this agenda item
  - General consensus that operation of maritime ESIMs in these bands would operate under similar regime to ESVs as contained in Resolution **902 (WRC-03)**

Agenda Item 1.5

- Resolution: ***158 (WRC-15)***
- ITU-R Responsible Group***: WP 4A, next meeting: 20 Feb. – 2 March, 2018***

- Latest Information**: Doc 4A/519, Annexes: 10, 11, 12, 13, 21, 22, 28, 29**
- **Ongoing studies to satisfy the agenda item:**
- **ESIM sharing with FS in 27.5-29.5 GHz**
- **ESIM sharing with MS in 27.5-29.5 GHz**
- **ESIM sharing with MSS feeder-links in 19.3-19.7 GHz and 29.1-29.5 GHz**

Agenda Item 1.6

- **AI 1.6 -** *to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency 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), in accordance with Resolution* ***159 (WRC-15)***

- **Issues:**

➢ **Technical characteristics of different types of non-GSO FSS systems and a set of reference GSO FSS parameters**

➢ **Non-GSO FSS systems sharing with GSO networks**

- ❖ **Multiple studies being considered**
- ❖ **Protection criteria and sharing approaches being considered via aggregate EPFD or impact to GSO availability**
- ❖ **Analyze the impact of propagation**
- ❖ **Effectiveness of various mitigation techniques**

➢ **Non-GSO FSS systems sharing amongst themselves**

- ❖ **Effectiveness of various mitigation techniques**

Agenda Item 1.6

- **AI 1.6 -** *to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency 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), in accordance with Resolution* ***159 (WRC-15)***

- **Issues:**

➢ **Protection of EESS passive in 36-37 GHz and 50.2-50.4 GHz**

- ❖ **Multiple studies being considered, but it appears mitigation measures will be necessary**

➢ **Protection of RAS in 42.5-43.5 GHz, 48.94-49.04 GHz and 51.4-54.25 GHz**

- ❖ **For RAS in 42.5-43.5 GHz, a worst case study shows exceedances, but needs to be improved with more realistic analysis**
- ❖ **For 48.94-49.04 GHz and 51.4-54.25 GHz, coordination zones of various sizes around RAS sites will be needed**

Agenda Item 1.6

- Resolution: ***159 (WRC-15)***
- ITU-R Responsible Group***: WP 4A, next meeting: 20 Feb. – 2 March, 2018***

- Latest Information**: Doc 4A/519, Annexes: 1, 14, 15, 16, 23, 30, 31**
- **Ongoing studies to satisfy the agenda item:**
- **Non-GSO FSS sharing with GSO FSS**
- **Non-GSO sharing with non-GSO**
- **Non-GSO sharing with EESS and RAS**
- **WD- Preliminary Draft New Recommendation outlining non-GSO/GSO sharing conditions**

Agenda Item 1.6

- Working documents towards draft new Reports on non-GSO/GSO sharing, non-GSO/non-GSO sharing and non-GSO/passive service sharing

- **Working document towards draft CPM text**
  - Method A – Expand Article 22 to include epfd limits

  - Method B – Expand Article 22 to include regulatory framework to enable non-GSO systems based upon a maximum allowable percent increase in GSO unavailability

  - Method C –
    - i) Modify RR No. **5.484A** to address the coordination between non-GSO FSS systems under RR No. **9.12**,
    - ii) modify Article **22** to include epfd limits,
    - iii) modify Resolution **750 (Rev. WRC-15)** to include unwanted emission power limits in order to protect EESS and SRS systems from non-GSO FSS systems

Agenda Item 7

- **AI 7** - *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit*

- **Issues:**
  - **Currently Issues A through K have been identified**
  - **As is usually the case, some issues are more straightforward, and others more complicated or controversial**
  - **Focus here is on those that have generated the most discussion within ITU-R, i.e. Issues A, E, F, G**

Agenda Item 7

Issue A: Bringing into use for non-GSO systems

- *WRC-15 invited ITU-R to examine, under AI 7, the possible development of regulatory provisions requiring additional milestones beyond those under RR Nos. **11.25** and **11.44** for non-GSO FSS/MSS systems*

- **Issues:**
- **What does bringing into use mean for non-GSO systems?**
  - **Currently two possibilities being discussed**
    - **Single satellite into a notified orbital plane for 90 days**
    - **Single satellite into a notified orbital plane for < 90 days**
    - **For either case, single satellite must be deployed within 7 years**
- **What types of milestones could be developed?**
  - **Currently one approach with 4 options**
  - **Two option have 3 milestones with different timing and deployment targets**
  - **Two other options have [4] milestones, again with different timing and deployment targets**
  - **Maximum deployment time varies from 12 to [15] years**

Agenda Item 7

Issue A: Bringing into use for non-GSO systems

- **Issues:**
  - **To what types of non-GSO systems should such milestones apply?**
    - **This is recognized as an issue that needs to be addressed**
  - **In what frequency bands should such milestones apply?**
    - **This is recognized as an issue that needs to be addressed**
  - **Transitional measures for non-GSO systems BIU'ed before WRC-19**
    - **This is recognized as an issue that needs to be addressed**

Agenda Item 7

- **Issue A: Bringing into use for non-GSO systems**

- ITU-R Responsible Group***: WP 4A, next meeting: 20 Feb. – 2 March, 2018***

- Latest Information**: Doc 4A/519, Annexes: 7, 33**
- WD towards draft new Report
- **Preliminary draft CPM text**

Agenda Item 7

Issue E: Harmonization of AP30B with AP30/30A

Should a 15 + 15 year limit of operation be placed on assignments in the List of AP30B as was done for the AP30/30A Plan for Regions 1 and 3?

- **Issues:**
  - **There is a view that such a time limit is necessary to align AP30B with *resolves 1* of Resolution 2 (Rev. WRC-03)**
  - **There is a counter view that questions the need for harmonization amongst these Plans, which were created for different purposes, and which differ between Region 2 and Regions 1&3**
  - **There is also a question as to what becomes of a satellite business that has been established at an orbital location at the end of this 15 or 30 year time period**

Agenda item 7

- **Issue E: Harmonization of AP30B with AP30/30A**

- ITU-R Responsible Group***: WP 4A, next meeting: 20 Feb. – 2 March, 2018***

- Latest Information**: Doc 4A/519, Annex 37**
- **Working document towards draft CPM text**

Agenda Item 7

Issue F: Concerns with lack of implementation of certain Radio Regulations provisions

Are certain RR provisions not being properly implemented by administrations?

- **Issue:**
- **There are AP30B filings with global coverage area and much more restricted service area, notwithstanding a NOTE in AP4 data element B.3.b.1 that addresses this issue**
- **There are cases of multiple AP30B filings with overlapping service areas being submitted for different orbital locations, notwithstanding No. 2.6*bis* of AP30B Article 2**
- ***Both of these issues are seen by some as causing difficulties for administrations wishing to modify their AP30B national allotments***

Agenda item 7

- **Issue F: Concerns with lack of implementation of certain Radio Regulations provisions**

- ITU-R Responsible Group***: WP 4A, next meeting: 20 Feb. – 2 March, 2018***

- Latest Information**: Doc 4A/519, Annex 38**
- **Working document towards draft CPM text**

Agenda Item 7

Issue G: Updating the reference situation for Region 1 and 3 networks under RR AP30/30A when provisionally recorded assignments are converted into definitive recorded assignments

- *WRC-15 invited ITU-R to examine this issue, under AI 7, with the aim of finding an appropriate regulatory and technical solution to this issue.*

- **Issue:**
- **When assignments recorded under §§ 4.1.18-4.1.20 of AP30 are converted to from provisional to definitive, the reference situation of all affected assignments is updated, including those for which agreement has not been given**
  - **On the one hand, some view this as the only viable means, in some cases, for incoming AP30/30A networks to be definitively recorded**
  - **On the other hand, others see the updating of the reference situation as inappropriate when specific disagreement still exists**

Agenda item 7

- **Issue G: Updating the reference situation for Region 1 and 3 networks under RR AP30/30A when provisionally recorded assignments are converted into definitive recorded assignments**

- ITU-R Responsible Group***: WP 4A, next meeting: 20 Feb. – 2 March, 2018***

- Latest Information**: Doc 4A/519, Annex 39**
- **Working document towards draft CPM text**