



**ITU APT FOUNDATION  
OF INDIA**



**ITUWRC**  
**SHARM EL-SHEIKH 2019**

28 October - 22 November  
Sharm El-Sheikh, Egypt

# **Introduction to World Radio Conference 2019 (WRC-19)**

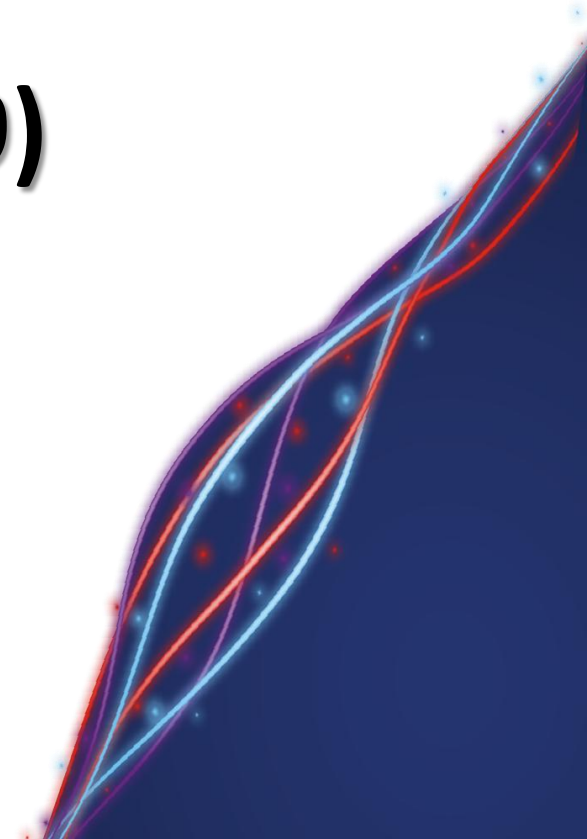
**Bharat Bhatia**

**President, ITU-APT Foundation of India**

**Chair, ITU-R WP5D SWG PPDR**

**Chair, AWG Task group on PPDR**

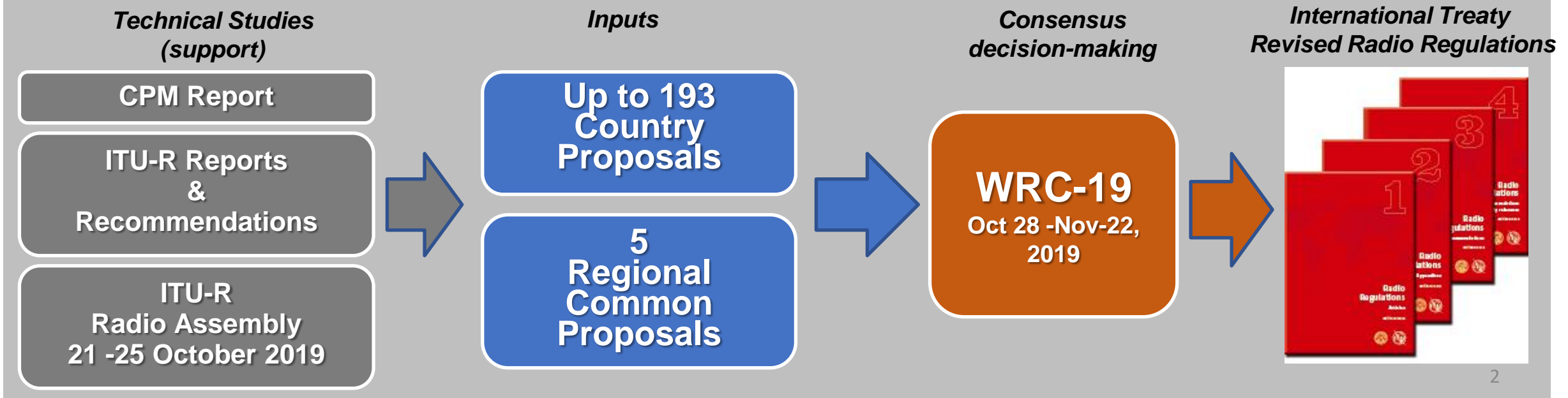
**Head of International Spectrum, Motorola Solutions**



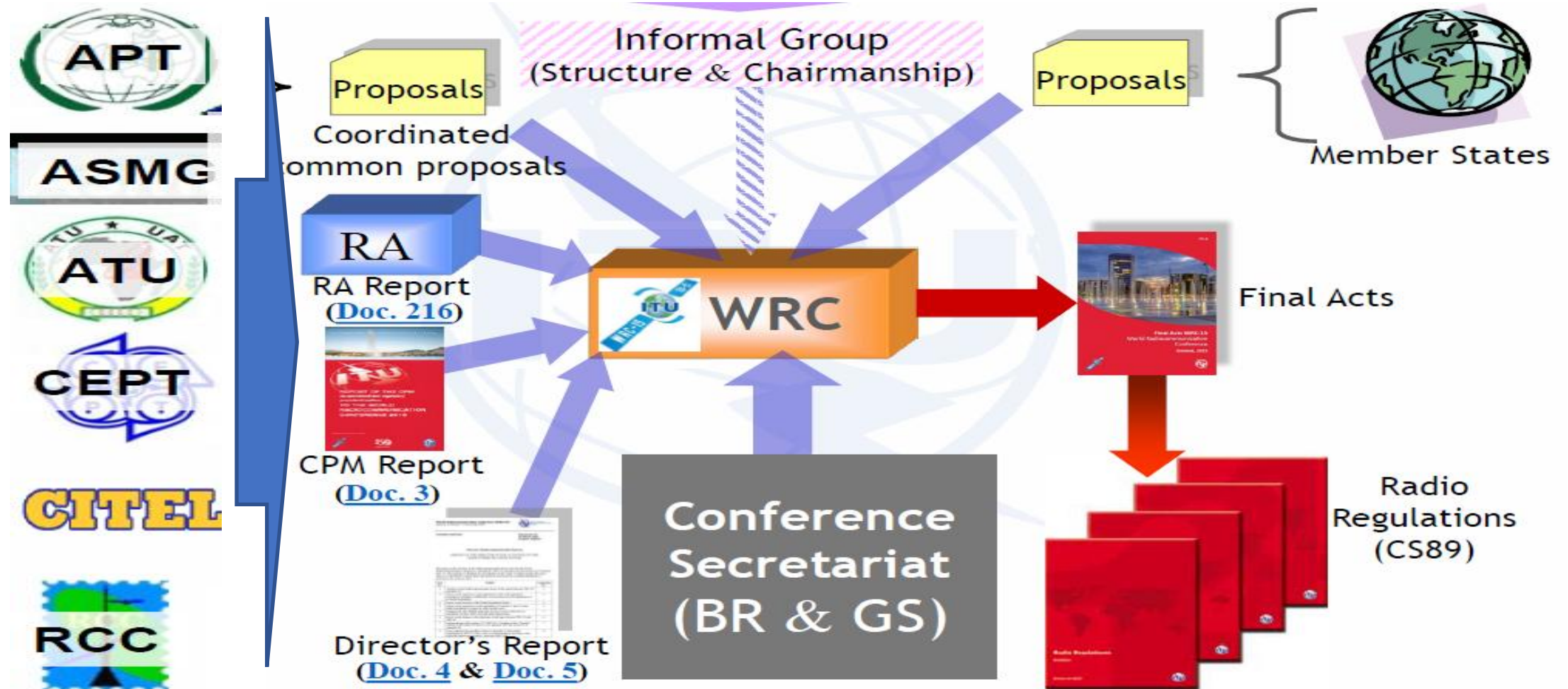
# What are World Radio Conferences (WRC)

- WRC is the Global conference organized by the ITU every 3-4 years to update Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and satellite orbits
- Each WRC prepares the agenda for the next WRC and initiates a new study cycle, in preparation for the next WRC
- Technical Studies, including methods to satisfy the agenda items for WRC Agenda items are done by ITU-R Study Groups during the study cycle and are presented in the CPM Report

High level process landscape diagram of WRCs:



# WRC – Role of Regional Organizations



# WRC-19 Preparations

WRC-19 Agenda finalized by WRC-15  
First Conference Preparatory meeting in 2015

2<sup>nd</sup> Session of Conference Preparatory Meeting: CPM19-2  
in Geneva from 18 to 28 February 2019

Final meetings of regional groups

5th Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-5) 31 Jul.-6 Aug. Japan

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

# Final Preparatory Meetings of the Regional Groups will happen in Q2-Q3/2019



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)

Chairman, APG:  
Dr. Kyu-Jin Wee  
(Rep. of Korea)

Chairman, AMSG:  
Mr. Tariq AL  
AWADHI, UAE

Chairman  
ATU:  
Mr.

Chairman, CPG:  
Mr. Alexander  
Kühn, Germany,

Chairman of the  
PCC.II CITEL  
Mr. Carmelo  
Rivera, USA

Chairman, WG  
WRC-19  
Mr. Albert  
Nalbandian,  
Armenia

Final Meeting:  
5<sup>th</sup> APG-19: 31  
July - 6 August  
2019, Tokyo,  
Japan

Final Meeting:  
25<sup>th</sup> ASMG: [27  
July - 1  
August 2019,  
Cairo, Egypt]

Final  
Meeting:  
4<sup>th</sup> APM-19:  
26 - 30  
August 2019,  
South Africa

Final Meeting  
8<sup>th</sup> CPG-19: 20 -  
24 May 2019,  
Stockholm,  
Sweden

Final Meeting:  
34<sup>th</sup> PCC.II: 12 -  
16 August 2019,  
Ottawa, Canada

Final Meeting:  
8<sup>th</sup> RCC WG  
WRC  
28 - 31 May  
2019, Tashkent,  
Uzbekistan

# WRC-19 has 25 agenda items and 9 issues under agenda 9.1

<b>Agenda Item</b>	<b>Summary Issue</b>	<b>Agenda Item</b>	<b>Summary Issue</b>
<b>1.1</b>	Amateur service in 54 MHz in EMEA	<b>1.13</b>	identification of mm wave spectrum for 5G
<b>1.2</b>	Power Limit for Earth stations in 400 MHz	<b>1.14</b>	Regulatory actions for HAPS
<b>1.3</b>	Upgrade Metsat secondary allocation to primary in 460-470 MHz	<b>1.15</b>	bands above 275 GHz upto 450 GHz for Fixed and land mobile
<b>1.4</b>	Broadcasting Satellite Plan Appendix 30 Limits	<b>1.16</b>	5GHz Wireless LAN
<b>1.5</b>	ESIMS in 17.7-19.7 and 27.5-29.5 GHz	<b>2</b>	Review ITU Recommendations
<b>1.6</b>	NGSO in 37-51 GHz	<b>3</b>	consequential changes to RR
<b>1.7</b>	Spectrum for Space Operation TTC	<b>4</b>	Revision of resolutions
<b>1.8</b>	GMDSS Regulatory actions	<b>5</b>	Report of RA
<b>1.9.1</b>	Regulating autonomous Maritime radios devices in 156-162 MHz	<b>6</b>	Urgent studies by ITU-R studies
<b>1.9.2</b>	New VHF Data exchange system for Maritime in 156/160 MHz	<b>7</b>	satellite Regulatory Procedures
<b>1.10</b>	Regulatory Provisions for GADSS	<b>8</b>	Country Footnotes
<b>1.11</b>	Harmonized bands for RSTT	<b>9</b>	Report of the Director(with 8+1 specific Issues)
<b>1.12</b>	Harmonized bands for ITS	<b>10</b>	WRC--23 agenda

# 25 agenda Items and 8+1 issues of 9.1 have been organized in 6 chapters in the CPM Report

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

# 5 Key terrestrial Agenda items of Importance to India

Agenda N	Subject	India Impact	Status & Key Issue
1.13 (5G)	Identification of new mm wave Spectrum for IMT -5G	New Spectrum for 5G	Agreement on 24 and 40 GHz
1.16 (WiFi)	Regulatory actions for Wireless Access and WIFI in the frequency bands in 5GHz	Unlicensed WiFi spectrum is key to broadband penetration	Most support No Change
1.11 (Railway)	Harmonization of spectrum for Rail communications between train and Track (RSTT)	Spectrum harmonization for railways is critical for India High speed rail projects	Not much support a WRC Resolution. We should push
1.14	Spectrum for Haps	Connecting the unconnected	Look for 300 MHz useful spectrum in 28 GHz
10 (next WRC )	Agenda for WRC-23	Expand rural broadband through HAPS	Support for opening 600 MHz band at WRC-23



# 5 Key Satellite Agenda items of Importance to India

Agenda N	Subject	India Impact	Status & Key Issue
1.3 (MetSat & EESS)	Upgrading of Meteorological satellite and EESS from secondary to Primary in 460-470 MHz	Could Impact public safety adversely	Compromise Method – accept Primary with necessary PFD limits
1.5	Spectrum for ESIMs in 28 GHz	E –SIMs are important but 28 GHz spectrum is required for FSS as well as 5G	No agreement as yet on Altitude Limit and PFD mask
1.6	Regulations for NGSO-FSS in 40-50 GHz	Impact of NGSO on GSO FSS	FSS Vs. 5G vs E-SIM in 28 GHz
7	Satellite Regulatory Issues- issue A -Dates for bringing into use NGSO satellite constellations	Should not impact our FSS systems	Agreement on way forward being discussed
9.1.1	Satellite component of IMT in 2 GHz	Proposal to limit EIRP of IMT stations in <u>1 980-2 010 MHz</u> and <u>2 170-2 200 Mhz</u>	Need to consider impact on our fixed and Mobile services

# Agenda ITEM 1.3

*Upgrade MetSat and EESS to primary status in the frequency band 460-470 MHz*

# Agenda 1.3 (460-470 MHz) Met-Sat

- *To consider possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution 766 (WRC-15).*
- The CPM text for this agenda item proposes three Methods:
  - Method A – NOC
  - Methods B & C -Pfd limits for non-GSO and GSO.
- During the last APG, the following was agreed in APT preliminary views:
  - *”APT members note that further studies are required to address appropriate I/N protection criteria with regard to the PPDR systems. The decision on which Method to adopt will depend on the outcome of those studies.*
  - *Stations of the EESS and MetSat services shall not cause harmful interference to fixed, mobile, and broadcasting services in 460-470 MHz and adjacent bands. APT members note that further studies are required to address appropriate pfd limits for GSO and non-GSO satellites to ensure this.”*

# Way forward on Agenda 1.3

- **Our view:** Our view is that fixed and mobile services (both current and future) should be fully protected when upgrading the Met sat and EESS, We support suitable PFD limits and language that ensures protection of fixed and mobile services in this band.
- **Proposal:**
  - Support CPM Method B, Option 2 with pfd limits to ensure protection of PPDR and other fixed and mobile services with  $I/N = -10$  dB
  - Proposed pfd limits of  $-165$  dB(W/(m<sup>2</sup>.4kHz))

# Agenda ITEM 1.11

Train to Track Communications

# AI 1.11 Railways

- **Agenda Item 1.11:** *to take necessary actions, as appropriate, to facilitate global or regional harmonized frequency bands to support railway radiocommunication systems between train and trackside (RSTT) within existing mobile service allocations, in accordance with Resolution 236 (WRC-15);*
- **our Views:** Harmonization of spectrum for *railway radiocommunication systems between train and trackside (RSTT)* can facilitate our metro and rail operations. We can also promote use of IMT technologies to make Rail transport safer.
- We support harmonization of spectrum for Rail through a WRC resolution or an ITU-R recommendation.

# Status of 1.11 in ITU & APT

- *Draft CPM Report to WRC 19, for CPM19-2 proposes 3 methods:*
  - Method A: No change to the Radio Regulations and suppress Resolution 237 (WRC-15)
  - Method B: Add a new Resolution specifying frequency ranges for RSTT and referencing the most recent version of Recommendation ITU-R M.[RSTT\_FRQ]
  - Method C: Add a new Resolution without specifying frequency ranges for RSTT, while referencing the most recent version of Recommendation ITU-R M.[RSTT\_FRQ]
- *Final drafting session of WORKING DOCUMENT TOWARDS A PRELIMINARY DRAFT NEW RECOMMENDATION ITU-R M.[RSTT\_FRQ] ended with no agreement on methodology to define 'harmonized band/range' and the meeting could not agree on elevating the working document to preliminary draft new recommendation because it is not stable enough.*

## Our preliminary Views on agenda item 1.11

- From observation in drafting sessions of the working document of preliminary draft recommendation M.[RSTT\_FRQ], having a recommendation by itself may be too flexible and may require a resolution to provide guidance on the direction on which to develop and complete the recommendation.
- We recommend reviewing the Resolution in method B and improving it so that it is flexible and provide guidance for the recommendation.



# Agenda ITEM 1.14

Spectrum for HAPs

# Spectrum certainty is the missing enabler for HAPS

- WRC-19 AI 1.14 invites administrations to consider modifying existing identifications and adding new identifications to facilitate use of broadband HAPS
- Regions with large unconnected populations will gain from increased spectrum access for HAPS at WRC-19

Frequency	Application	Direction	BW	Current Coverage	Proposed Coverage
<b>Existing HAPS bands</b>					
<b>6 GHz</b>	GW	↓↑	80 MHz (x2)	5 Admins (R1, R3)	Global
<b>28/31 GHz</b>	GW, CPE	↓↑	300 MHz (x2)	23 Admins (R1, R3)	Global
<b>47/48 GHz</b>	GW, CPE	↑↓	300 MHz (x2)	Global	Global
<b>Candidate HAPS bands</b>					
<b>21.4-22 GHz</b>	GW CPE	↓	600 MHz	-	R2
<b>24.25-27.5 GHz</b>	GW, CPE	↑↓	3250 MHz	-	R2
<b>38-39.5 GHz</b>	GW, CPE	↑	1500 MHz	-	Global

# Agenda ITEM 1.16

Wireless LANs in 5 GHz

# Agenda item 1.16 (Wifi in 5 GHz)

- **Agenda Item 1.16:** *to consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution **239 (WRC-15)***
- **our Views:** 5GHz band has become an important band for Broadband since it is now permitted in the outdoor areas. We support relaxed technical rules for these bands in Line with what India has already done and some other countries have followed. We do not support any additional restrictions in RLANS in these bands

# Agenda ITEM 9.1

Issue 9.1.8 - MTC

# Agenda Item 9.1 Issue 9.1.8:

- **Agenda Item 9.1 Issue 9.1.8:** *Studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within the ITU Radiocommunication Sector (ITU-R) scope of work, in accordance with Resolution 958 (WRC-15)*
- **our Views:** We are of the view that narrowband and broadband machine-type communication infrastructures should be able to use any and all existing frequency bands allocated to MOBILE service. This includes frequency bands identified for IMT.
- Therefore , as concluded in the CPM text: there is no need to identify specific spectrum for those applications in the Radio Regulations and there is no need for any regulatory action in the Radio Regulations with regard to specific spectrum requirement for MTC.

# Agenda Item 10

# Proposals on AI 10

- **Agenda Item 10:** *to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention*
- **Following new agenda items are likely to be proposed for consideration under Agenda item 10 that our can support.**
  1. Identification of the band 614-698 MHz in the MOBILE service for IMT in all three Region
  2. Permitting IMT base stations below 3 GHz on HAPS platforms
  3. Ku Band Expansion for IFC





**THANK  
YOU**

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