



Spectrum Management & WRC-19

Mario Maniewicz
2019



Radio frequencies and any associated orbits, including the geostationary-satellite orbit are **limited natural resources** and they must **be used rationally, efficiently and economically**, in **conformity with** the provisions of these **Regulations**, so that countries or groups of countries may have **equitable access** to those orbits and frequencies, taking into account the special needs of the developing countries and the geographical situation of particular countries.

Radio Regulations (RR)

- ITU Radio Regulations (RR) is an International Treaty, elaborated and revised by administrations and membership, during World Radio Conferences (WRC)
- The Radio Regulations has a binding nature for ITU Member states
- Includes Resolutions, Recommendations and ITU-R Recommendations incorporated by reference
- Stable and predictable global framework
- Basis for a sustainable ecosystem
- Long-term protection of public and private sector investments

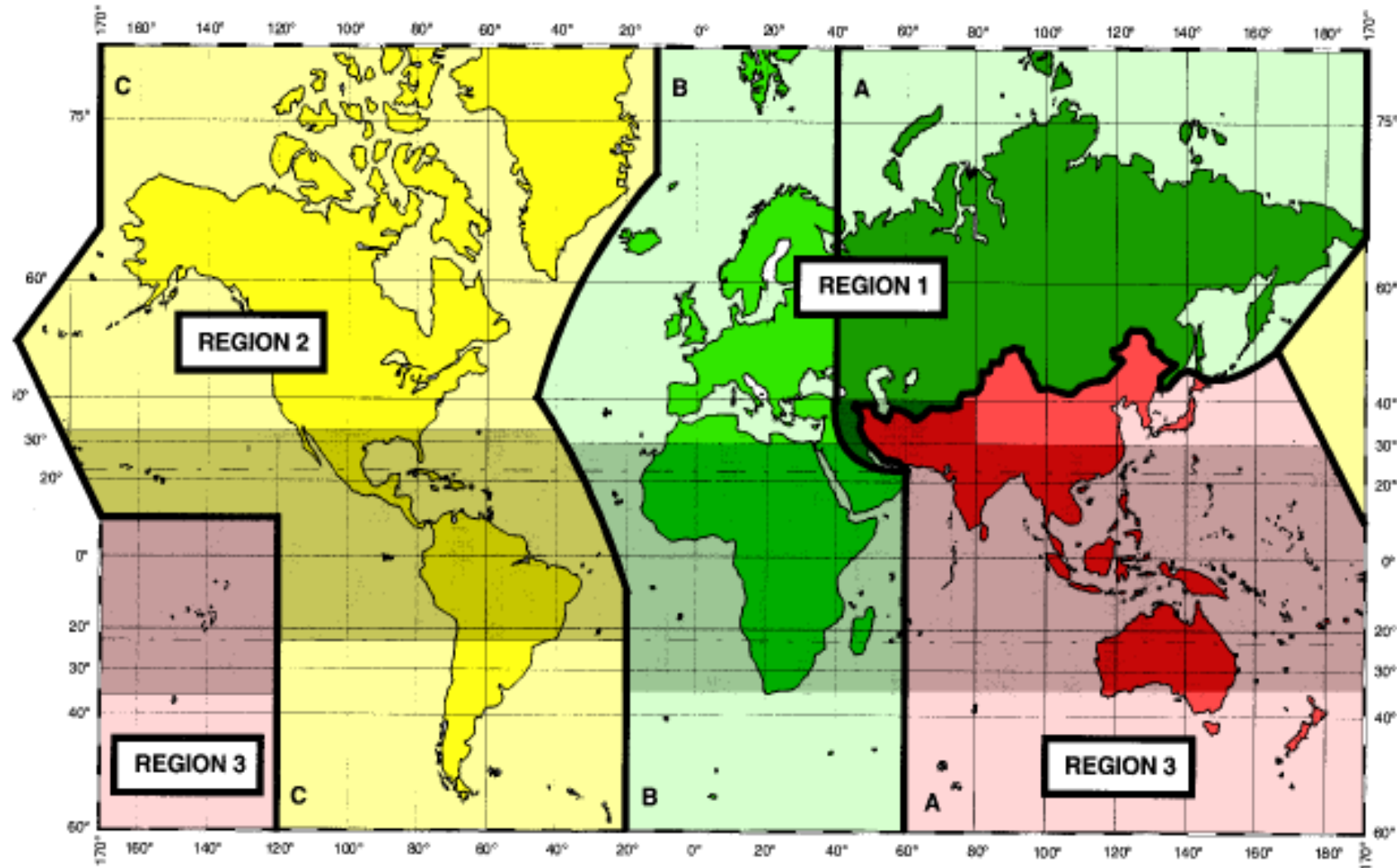


Spectrum Harmonization

- Why harmonize spectrum?
 - Ensure systems are interoperable
 - Minimize cross border interference (since electromagnetic radiation cannot be limited to a given territory)
 - Support emergency communications
 - Support global roaming (citizens can use the same devices across the globe)
 - Ensure the ecosystem is in place with available devices and network equipment
 - Provide affordable devices and services (due to the economies of scale)

Ultimate goal is to achieve Global Harmonization

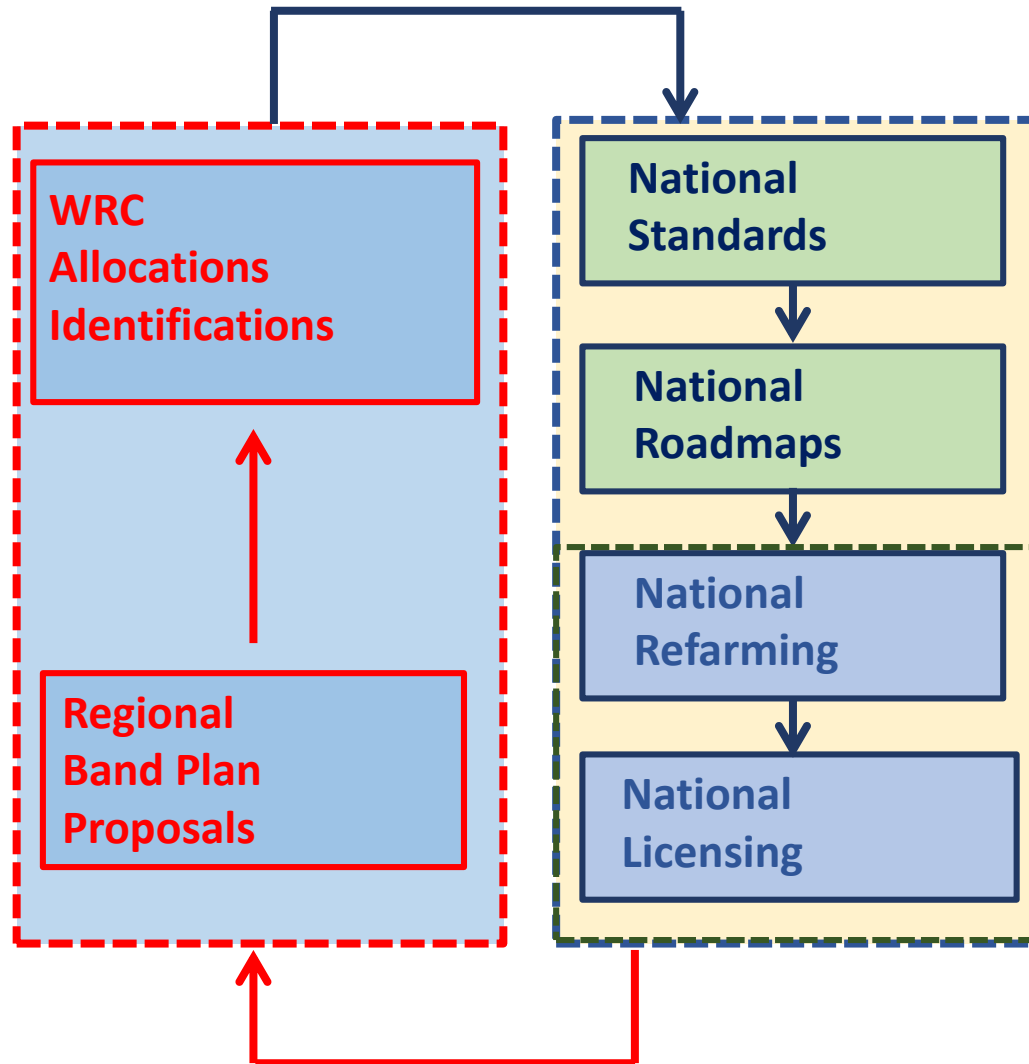
RR - Regions



Spectrum Management

	International	National
1 - Legal Framework	ITU Radio Regulations, RR	National Spectrum Laws
2 - Planning	International Table of Frequency Allocations, ITFA (RR, Art. 5)	National Table of Frequency Allocations, NFAT
3 - Licensing	Master International Frequency Register, MIFR (RR, Art. 8)	National Spectrum Database
4 - Monitoring	International Monitoring System (RR, Art. 16)	National Monitoring System
5 - Enforcing	ITU Radiocommunication Bureau, BR ITU Radio Regulations Board, RRB	National Regulators National Courts

Spectrum Management

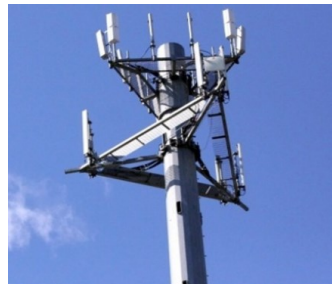


Handbook on National
Spectrum Management:
[http://web.itu.int/dms_p
ay/itu-r/opb/hdb/R-HDB-
21-2015-PDF-E.pdf](http://web.itu.int/dms_p/ay/itu-r/opb/hdb/R-HDB-21-2015-PDF-E.pdf)

Spectrum Sharing

Licensed model

- Large and long-term investments
- Wide geographic areas, with quality obligations
- Security of tenure
- E.g. Fixed, mobile and satellite services



Unlicensed model

- Small, short-term investments
- Short range services, with no guaranteed quality
- Do not require security of tenure
- Very last meters of the connection, heavily rely on the existing networks
- E.g. Wi-Fi



Spectrum Licensing

- Administrative fees support spectrum management infrastructure
- Encourages spectrum efficiency by providing appropriate incentive
- Relinquishes spectrum that is not being used efficiently or effectively
- Assess fees according to the amount of spectrum used
- Considers economic principles (e.g. takes into account the benefits that occupants derive from the spectrum)

Not too low to be negligible in the eyes of spectrum users nor too high to exceed what market would set, in which case spectrum will sit idle and generate no benefits

RA-19 & WRC-19

**Radiocommunication Assembly 2019
(RA-19)**

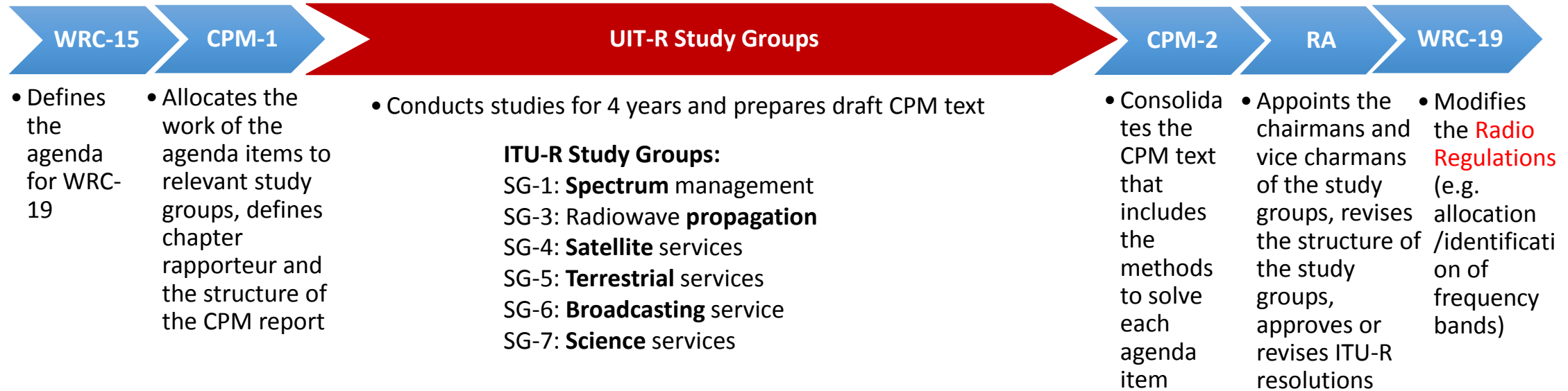
- 21-25 October 2019

**World Radiocommunication Conference 2019
(WRC-19)**

- 28 October to 22 November 2019



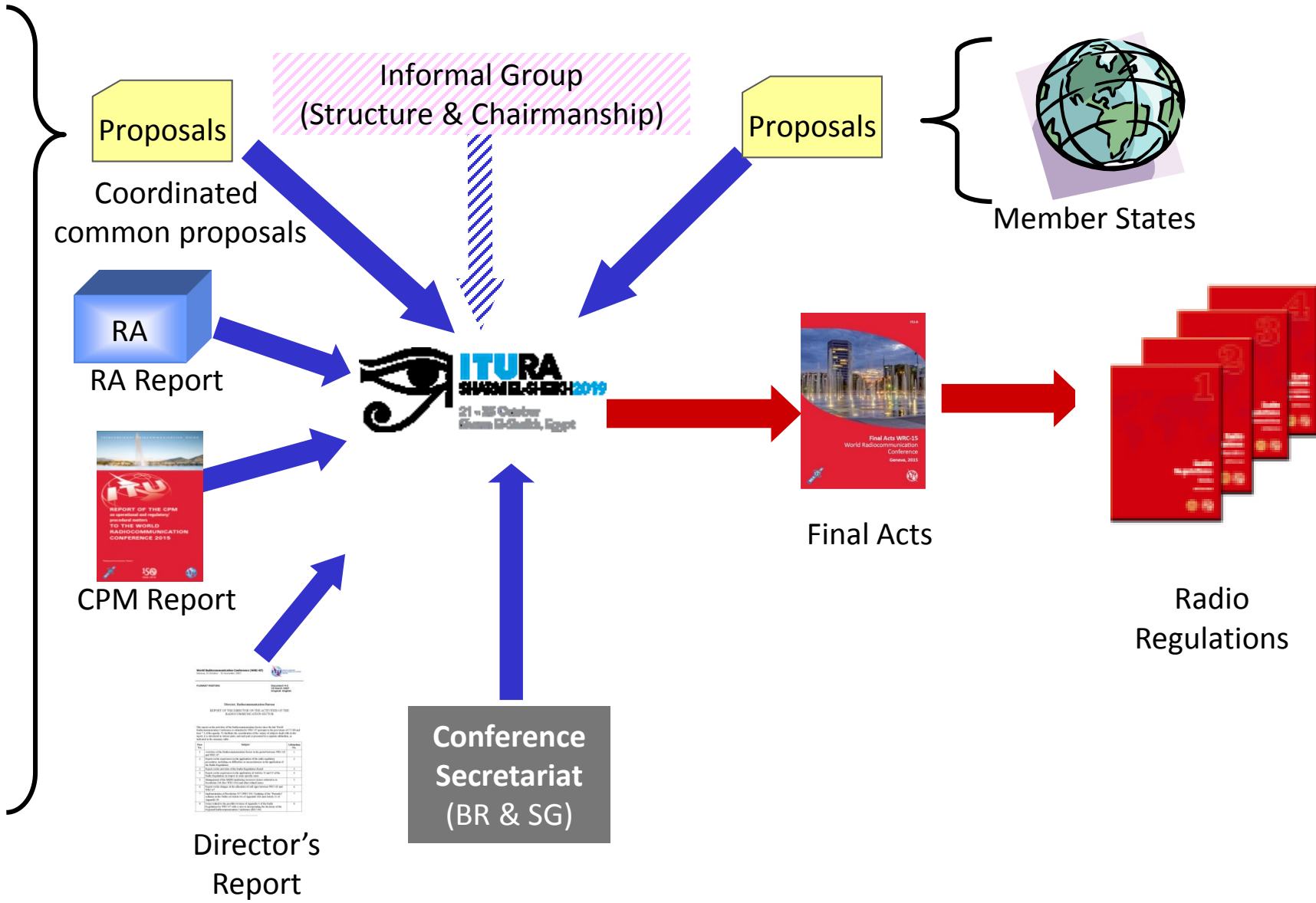
WRC-19



- Consolidates Regional and Multicountry proposals



WRC-19



WRC-19

<https://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/default.aspx>

Information on:

- Visa
- Transportation
- Accommodation
- Venue

Proposals for WRC

- Guidelines
- Conference Preparatory Interface

[WRC-19 Homepage](#)

[ITU Inter-regional Workshops on WRC-19 Preparation](#)

[Regional preparation for WRC-19](#)

[Registration to RA-19 and WRC-19](#)

[WRC-19 Documents and Proposals](#)

[Preparation of proposals for the work of WRC-19](#)

[Network of Women for WRC-19 \(NOW4WRC19\)](#)

[WRC-19 Logos](#)

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 >](#)

Registration to RA-19/WRC-19

NEW RA-19 and WRC-19 registration will open on 22 May. [More >](#)

Host Country website

NEW The [Host Country website](#) containing practical information for WRC-19 participants (accommodations, visa matters, etc.) is now available.

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, \[tariq.alawadhi@tra.gov.ae\]\(mailto:tariq.alawadhi@tra.gov.ae\)\)](#)

[Invitation Letters and Credentials](#)

[Contacts](#)

[CL-18/48 - Letter sent on 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/245 \(13-02-2019\)](#)

Credentials:

[CL-19/13 \(02-04-2019\)](#)

[Model instrument of credentials](#)

Report of the CPM-19

<https://www.itu.int/en/ITU-R/study-groups/rcpm/Pages/cpm-19.aspx>

- The Report of the CPM to WRC-19 contains, for each WRC-19 agenda Item:
 - Summary of the results of technical studies
 - Regulatory text with examples of actions (i.e. ADD, MOD, SUP, NOC etc) to the Radio Regulations
- These can be considered in the preparation of proposals to WRC-19

REPORT of the Conference Preparatory Meeting to WRC-19

<https://www.itu.int/md/R15-CPM19.02-R-0001/en>

Agenda Item 1.13 – IMT

5G

1.13 to consider **identification** of frequency bands for the future development of **International Mobile Telecommunications (IMT)**, including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **238 [COM6/20] (WRC-15)**

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

Bands that may require additional allocations to the mobile service on a primary basis:

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

▶ [Res. 238 \(WRC-15\)](#)



Agenda Item 1.13 – IMT

By some countries of the following Region	Frequency bands (GHz) mentioned in Resolution 238 (WRC-15) in which identification is being considered											
	24.25-27.5	31.8-33.4	37-40.5	40.5-42.5	42.5-43.5	45.5-47	47-47.2	47.2-50.2	50.4-52.6	66-71	71-76	81-86
CEPT	MOD	NOC		MOD	MOD					MOD	NOC	NOC
ASMG	X	X		X	X							
RCC	MOD	NOC			NOC	NOC				NOC	NOC	NOC
APT	MOD	NOC	MOD	MOD	MOD	MOD M-C	MOD M-C	MOD M-C	MOD M-C	MOD M-C	MOD M-C	MOD M-C
ATU	MOD	NOC	MOD	MOD	MOD			MOD	MOD	MOD		
CITEL	MOD	NOC									NOC	NOC

Grey color indicates:

- Support the studies in these bands
- Multi-country (M-C) proposal (not regional)
- Bands are still under consideration

Reference docs:

<https://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/reg-prep.aspx>

Agenda Item 1.14 – HAPS

1.14 to consider, on the basis of ITU R studies in accordance with Resolution **160 [COM6/21] (WRC-15)**, appropriate regulatory actions for **high-altitude platform stations (HAPS)**, within existing fixed-service allocations.

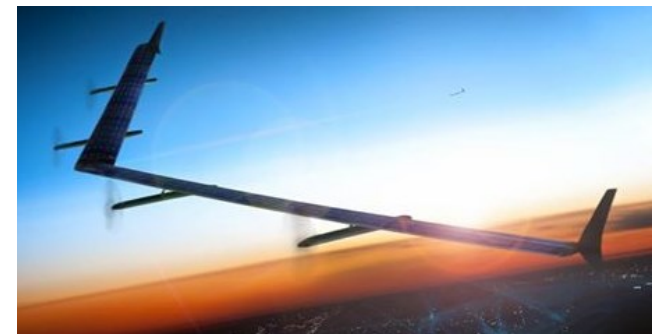
Existing HAPS identifications:

- on a global level: 47.2-47.5, 47.9-48.2 GHz
- on a regional level, outside Region 2: 27.9-28.2 GHz and 31.0-31.3 GHz
- and in 5 countries (Footnote 5.457): 6 440-6 520 MHz and 6 560-6 640 MHz

Study new frequency bands:

- on a global level: 38-39.5 GHz,
- on a regional level, in Region 2: 21.4-22 GHz and 24.25-27.5 GHz

▶ [Res. 160 \(WRC-15\)](#)



Agenda Item 1.14 – HAPS

	Frequency bands (GHz) being considered by some countries of the Region					
	6 440-6 520 MHz	21.4-22 (Region 2 only)	24.25-27.5 (Region 2 only)	27.9-28.2 and 31-31.3	38-39.5	47.2-47.5 and 47.9-48.2
CEPT	MOD			MOD	MOD	MOD
ASMG	NOC	NOC	NOC	NOC	NOC	NOC
RCC	MOD	MOD	MOD	MOD	MOD	MOD
APT				MOD M-C	MOD M-C	
ATU				MOD	MOD	MOD
CITEL		MOD	MOD M-C		MOD	MOD M-C

Grey color indicates:

- Support in initiating studies in these bands
- Multi-country proposal (not regional)
- Bands are still under consideration

Reference docs:

<https://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/reg-prep.aspx>

Agenda Item 1.16 – RLAN



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 [COM6/22] (WRC-15)**

▶ [Res. 239 \(WRC-15\)](#)

Agenda Item 1.16 – RLAN

	Frequency bands (GHz) being considered by some countries of the Region				
	5 150-5 250 MHz	5 250-5 350 MHz	5 350-5 470 MHz*	5 725-5 850 MHz	5 850-5 925 MHz*
CEPT		NOC	NOC		NOC
ASMG		NOC	NOC		NOC
RCC	MOD	NOC	NOC	NOC	NOC
APT		NOC	NOC		NOC
ATU	NOC/MOD	NOC	NOC	NOC/MOD	NOC
CITEL	MOD	NOC	NOC	NOC	NOC

Grey color indicates:

- Support in initiating studies in these bands
- Multi-country proposal (not regional)
- Bands are still under consideration

Reference docs:

<https://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/reg-prep.aspx>

* Bands that would require additional mobile allocation

Agenda Item 1.6 – non-GSO FSS

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 [COM6/18] (WRC-15)**;

▶ [Res. 159 \(WRC-15\)](#)



Agenda Item 1.5 – ESIM

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 [COM6/17] (WRC-15)**;

▶ [Res. 158 \(WRC-15\)](#)





Thank you

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